



## **Contingency plan for episodes of high air pollution in Bergen, based on the City Council's decision of 20 April 2016.**

Bergen experiences exceedances of the limit values set out in the Pollution Regulations and the national targets for air, which are more stringent than the limit values.

The health risk associated with local air pollution depends on the concentration of pollutants and on the length of exposure to the pollutants. It has been documented that both short-term and long-term exposure entail an increased risk of harm to health. Long-term exposure has the greatest impact on people's health.

The municipality as the pollution authority and owners of installations as responsible emitters share a responsibility for implementing measures.

The City of Bergen prepared a detailed contingency plan in connection with the prolonged period of inversion that occurred in 2010. Since then, the contingency plan has been further developed and tested in practice in several contexts, most recently in connection with the implementation of driving on alternate days in January 2016. It is important to improve the measures employed so that they have a better effect on air quality, and this is an important reason why the contingency plan is now being updated.

The contingency plan is part of the municipality's assessment of measures to improve the air quality in Bergen.

### **New air quality alert categories**

The Norwegian Environment Agency, the Directorate of Public Roads and the Institute of Public Health have revised the alert categories for air quality and changed the colour codes. The new alert categories reflect the most recent knowledge about the health effects of air pollution, among other things by taking greater account of the harmful health effects of lower concentrations of particulate matter than was previously the case.

The alert categories provide information about the pollution situation and about the health effects of current and forecast pollution levels. In addition, health tips have been established and linked to each category. The new alert categories have been available at [www.luftkvalitet.info](http://www.luftkvalitet.info) since mid-October 2015.



More information about alert categories can be found here: [Information pamphlet – alert categories](#).

Each alert category has a colour code showing how polluted the air is. Green stands for a low pollution level, orange for a moderate pollution level, red for a high pollution level and purple for a very high pollution level.

### **Consequences for the contingency plan**

The new alert categories and colour codes are incorporated into the City of Bergen’s contingency plan for episodes of high air pollution. In addition, adjustments have been made by reorganising the City Government departments.

New knowledge about the adverse health effects of air pollution has also led to adjustment and more stringent use of various policy instruments and implementation of pertaining measures. When considering immediate measures, priority shall be given to safeguarding people’s health.

Among other things, driving on alternate days shall be considered when poor air quality is forecast for two days or more.



**Alert categories and designations. The values are hourly values**

Level	PM <sub>10</sub> 24 hours µg/m <sup>3</sup>	PM <sub>2.5</sub> 24 hours µg/m <sup>3</sup>	PM <sub>10</sub> Hour* µg/m <sup>3</sup>	PM <sub>2.5</sub> Hour* µg/m <sup>3</sup>	NO <sub>2</sub> Hour µg/m <sup>3</sup>	Alert categories	Health effects	Health tips
<b>Low</b>	<30	<15	<50	<25	<100		<b>Low or no health risk</b>	Outdoor activity recommended
<b>Moderate</b>	30–50	15– 25	50–80	25–40	100– 200		<b>Moderate health risk</b> May affect the health of some people suffering from asthma and other respiratory diseases, and severe cardiovascular diseases.	Outdoor activity is recommended for the vast majority of people, but some people should avoid exertion in areas of heavy traffic or other high emissions.
<b>High</b>	50– 150	25– 75	80– 400	40– 150	200– 400		<b>Significant health risk</b> May affect the health of people suffering from asthma and other respiratory diseases, and severe cardiovascular diseases.	Children with respiratory problems (asthma, bronchitis) and adults with severe cardiovascular or respiratory problems should limit outdoor activity and avoid the most polluted areas.
<b>Very high</b>	<150	<75	<400	<150	<400		<b>Severe health risk</b> May affect the health of sensitive population groups. Mucous membrane irritation and discomfort may occur in healthy persons.	People with cardiovascular or respiratory problems should limit outdoor activity and avoid the most polluted areas.

\* The hourly values for PM<sub>10</sub> and PM<sub>2.5</sub> are calculated based on daily values, so that they reflect Norwegian conditions.



## Contingency situations – responsibility

### Introduction

On 26 January 2015, Bergen City Council adopted the report 'Assessment of measures for improved air quality in Bergen'.

[https://www.bergen.kommune.no/bk/multimedia/archive/00224/Tiltaksutredning\\_lu\\_224633a.pdf](https://www.bergen.kommune.no/bk/multimedia/archive/00224/Tiltaksutredning_lu_224633a.pdf)

The text of the assessment report has been revised in line with the decisions of the City Council.

The report is divided into three parts as recommended in the Norwegian Environment Agency's guidelines. Part I comprises an expert review and mapping of the pollution situation. Part II presents the actual action plan (10-point programme), and Part III addresses contingency measures to prevent episodes of high air pollution.

The contingency plan describes how measures are to be administered and how owners of installations and the population are to be informed in time.

It is the permanent measures that are most effective in relation to air quality. Owners of installations should therefore primarily ensure that good, permanent measures are put into place. Pursuant to the Pollution Regulations, owners of installations have an independent responsibility for implementing measures.

New permanent measures that are expected to affect air quality include the introduction of time-differentiated road tolls as from 1 February 2016. In addition to the work on establishing environmentally differentiated road tolls, the City Government will seek to establish low and zero emission zones in all city districts as soon as this is authorised by the central authorities. There will nonetheless be a need for immediate measures to reduce pollution levels on days when there is a risk of exceeding the hourly/daily limit values. In order for such measures to have an effect on the concentration level, they must be introduced before the limit values are exceeded.

### Return scheme for wood-burning stoves

Emissions from old wood burners, primarily in the form of particulate emissions (PM<sub>2,5</sub>), contribute to poor air quality. Replacing old inefficient wood burning stoves is not part of the contingency plan, but emissions due to incomplete combustion in old stoves contribute significantly to air pollution. NOK 2 million has been allocated to continuing the return scheme for old inefficient wood burners in 2016.



The measure primarily has an effect on particulate emissions on cold winter days with inversion. Old inefficient wood burning stoves can be a significant source of emissions, while clean-burning fireplaces are almost emission-free, and reduce particulate emissions by 82%.



### **Organisation:**

In connection with its consideration of the overall contingency plan for the City of Bergen on 5 June 2000 (agenda item 122/00), the City Council adopted the following resolution:

*'Authorisation. Bergen City Council hereby delegates to the crisis management team all powers that are necessary for the implementation of relevant damage control measures in a crisis situation or when there is a risk of a crisis...'*

The crisis management team comprises the City Government, or the City Government represented by the Chief Commissioner, who handles crises and undesirable incidents in Bergen. For incidents that require immediate measures against air pollution, it is the Director General of the Department of Climate, Culture and Business Development who is responsible for mobilising personnel and for keeping records of the decision-making bases and the decisions made.

Measures to improve poor air quality are divided between state, county and municipal undertakings. The crisis management team can seek help from all or parts of the municipal Contingency Council.

The Contingency Council may also be expanded as required. The Council is convened when the need arises to exchange information, and coordinate and implement measures.

### **Contingency Council:**

The Contingency Council consists of representatives of:

- The Norwegian Public Roads Administration (NPRA)
- The police
- Hordaland County Council
- Skyss (public transport agency)
- The Meteorological Institute
- Bergen Port Authority
- City of Bergen (internal contingency group)
  - The Department of Climate, Culture and Business Development
  - The Agency for Road and Transport
  - The Health Protection Agency
  - The Information Section
  - The Section for Civil Protection and Emergency Planning



### Immediate measures:

The following measures are available:

- Health tips (City of Bergen)
- Other information measures (City of Bergen)
- Removal of ships from the Port of Bergen (Bergen Port Authority)
- Road surface measures to reduce the dispersion of particulate matter (NPRA)
- Driving on alternate dates (requires a decision by the City Government, which must be announced by the City of Bergen and the NPRA)
- Temporary time-differentiated road tolls in accordance with Section 27 second paragraph of the Road Act (in the following referred to as 'contingency tolls'). This may be used when central regulations are introduced by the Ministry of Transport and Communications based on local policy decisions adopted by Hordaland County Council and the City of Bergen. Such regulations may only be introduced based on decisions by the City Government and Hordaland County Council.
- Extra public transport services will be considered in conjunction with other measures. Skys has prepared a plan for such services.

In order for immediate measures to have a positive effect on air quality, they must be introduced before the limit values are exceeded. Among other things, this must be assessed on the basis of weather conditions, weather forecasts and forecast air pollution levels. Having a contingency plan for issuing alerts based on weather forecasts, pollution forecasts and health assessments is important as a basis for deciding whether measures are to be implemented. If the forecast indicates that a situation involving high pollution will arise, it is paramount that measures are implemented soon enough.

### Roles:

The composition of the Contingency Council reflects the division of decision-making and implementation powers pursuant to laws and regulations

- The Meteorological Institute is responsible for forecasting poor air quality caused by inversion.
- The City of Bergen is the pollution authority and may demand the implementation of measures by owners of installations. The City of Bergen is responsible for publishing health tips and information.
- The City of Bergen may only adopt measures related to road traffic for municipal roads. The county authorities are responsible for county roads, and the NPRA for national roads.

Based on prior discussions between the three road owners, the municipality's decisions



concerning measures to be implemented on municipal roads will also form the basis for corresponding measures on county and national roads.

The introduction of contingency tolls is conditional on Hordaland County Council having authorised the City Government to implement measures when certain conditions are met. It is underlined that such measures may only be implemented based on communication/consultation with Hordaland County Council before the decision is made. Furthermore, the effect of the measure must be documented.

The NPRA has decided that it will follow the City Government's decisions concerning driving on alternate dates. When driving on alternate dates is introduced, this shall be announced by both the NPRA and the City of Bergen. Skyss will consider extra public transport services in conjunction with measures such as driving on alternate dates and in accordance with its own contingency plan.

Bergen Port Authority is responsible for emissions from port activities, including for denying ships access /removing ships when poor air quality is forecast. It is now widely agreed that, under Section 39 of Ports and Fairways Act, ships may be denied access on days with high air pollution. In meetings with the local authorities in Bergen and Oslo, the Minister of Transport and Communications has stated that ships may be rejected if it can be documented that this has an effect.

#### **Forecasts from the Meteorological Institute:**

During the period 1 November to 30 April, the City of Bergen receives five-day forecasts on a daily basis from the Meteorological Institute about weather conditions that may lead to poor air quality.

Poor air quality forecasts are used as a basis for distributing information and convening the Contingency Council, and for implementing measures with related follow-up and control.

The Meteorological Institute uses the following main forecast categories:

- Low pollution forecast
- Moderate pollution forecast
- High pollution forecast
- Very high pollution forecast

#### **Action matrix:**

An action matrix has been prepared for different phases, with the five-day forecast from the Meteorological Institute as the triggering factor. When poor air quality is forecast, the NPRA and the Bergen Port Authority are alerted and required to take action. When the situation is likely to last for two days or more, driving on alternate days or contingency tolls will be considered once the



Ministry of Transport and Communications has issued central regulations. Contingency tolls are considered a more targeted measure than driving on alternate days.

Weather forecasts can be highly uncertain. The Meteorological Institute often issues combined forecasts, for example of low or moderate air pollution in some areas combined with high air pollution in areas of heavy traffic.

In such cases, priority shall be given to health considerations and the forecast shall be handled as a forecast of weather conditions that give rise to high air pollution.



## Action matrix: Overview of phases for handling high air pollution episodes

Phase	Triggering factor	Action	Primary responsibility
0 Continuously ongoing.	Long-term weather forecast	The Meteorological Institute issues daily forecasts to the municipality for the next five days on weather conditions that can give rise to poor air quality.	Meteorological Institute.
1	Forecast weather conditions that can give rise to moderate air pollution.	The forecast is sent to Bergen Port Authority and the NPRA for their information and so that they can consider taking action. The forecast is sent to the internal contingency group. The public is alerted about health effects.	The Climate Section  The Information Section
2	Forecast weather conditions that can give rise to a high level of air pollution.	The forecast is sent to Bergen Port Authority and the NPRA with a requirement for taking action before high air pollution episodes occur. Information is obtained about implemented measures.	The Climate Section
3	Forecast weather conditions that can give rise to high air pollution for a period of two days or more.	The forecast is sent to Bergen Port Authority and the NPRA with a requirement for taking action before high air pollution episodes occur. Information is obtained about implemented measures. Consideration is given to convening the internal contingency group or the Contingency Council to coordinate measures. Driving on alternate days or contingency tolls are considered continually, particularly when long inversion periods are forecast. The media and the public are kept informed about health effects and measures introduced via the municipality's information channels. Coordination of information with Bergen Port Authority and the NPRA.	The Climate Section Department of Climate, Culture and Business Development Driving on alternate dates may be adopted by the City Government and announced by the City of Bergen and the NPRA. The City Government and Hordaland County Council may adopt a decision on and announce the introduction of contingency tolls*. The plan is for the County Council to delegate authority to the municipality. The Information Section
4	Very high pollution forecast	Alert on use of all available instruments.	The City Government
5	Low risk of air pollution.	Discontinuation of measures. Evaluation of the effect of the measures**.	The City Government



**Footnotes to the action matrix:**

\*Contingency tolls pursuant to Section 27 second paragraph of the Road Act may be used if central regulations are issued by the Ministry of Transport and Communications. The central regulations are based on political decisions by Hordaland County Council and the City of Bergen. The following toll scheme has been proposed:

*Introduction of contingency tolls in connection with forecast high air pollution, defined as exceedance of the limit values for NO<sub>2</sub> and PM<sub>10</sub> for a period of more than two days*

Five times the regular toll is assumed.

It is expected that the Ministry will issue central regulations in autumn 2016.

It is assumed that free public transport will be introduced in conjunction with the introduction of contingency tolls; see the City Council’s agenda item 58-16.

\*\*Some fundamental reporting procedures will be formalised in connection with the introduction of contingency tolls. This concerns the following indicators:

Indicator	Responsible
Pollution level, trends/changes	City of Bergen
Traffic count through the road toll ring, trends/changes	NPRA
Incidents on the road network	NPRA
Public transport statistics, revenues/capacity, incidents	Skyss on behalf of Hordaland County Council



### **Political consideration:**

Bergen City Council, decision of 20 April 2016, agenda item 89-16  
'Contingency plan for episodes of high air pollution in Bergen'

1. The City Council adopts the revised 'Contingency plan for episodes of high air pollution in Bergen'
2. The City Government will review the plan when new experience, new knowledge about the effects of the measures and new instruments become available.
3. The City Council refers to the City Council's decision on agenda item 58-16 'Immediate measures to improve air quality – contingency tolls and free public transport on days with a risk of high air pollution'. The City Council request that the City Government incorporate the measures adopted here in the contingency plan.

### **Comments**

#### **Comment 1**

The City Council requests that the City Government consider a collaboration with public sector employers, so that civil servants can work from home on days when contingency tolls are used. The City Government also urges private sector employers to use such a solution for their employees, so as to reduce the traffic load in Bergen city centre.

#### **Comment 2**

The City Council notes that a majority of the representatives to the Storting support the Office of the Auditor General's recommendation that the NPRA must accept measures imposed by the municipality, given that the municipality as the pollution authority is responsible for considering and implementing necessary measures.

Bergen City Council, decision of 16 March 2016, agenda item 58-16

'Immediate measures to improve air quality – contingency tolls and free public transport on days with a risk of high air pollution'

1. The City of Bergen requests that the Ministry of Transport and Communications, pursuant to Section 27-2 of the Road Act, introduce regulations on temporary time-differentiated road tolls in Bergen, for use on days when there is a risk of high air pollution.
2. The City of Bergen wishes for such regulations to be established for use in future situations when there is a risk of high air pollution in Bergen.



3. The City of Bergen assumes that the tolls will be used in accordance with the recommendations in the enclosed supporting memo, based on *inter alia* the following important considerations:
  - a) Toll level and pollution level:

Permission should be granted for a fivefold increase in the current road tolls in connection with forecast high air pollution, defined as exceedance of the limit values for NO<sub>2</sub> and PM<sub>10</sub> forecast for a period of two days or more.
  - b) Practical implementation:

The measure should be incorporated in the City of Bergen's currently applicable contingency plan at all times, adjusted and supplemented as recommended in the enclosed supporting memo.
  - c) Costs and funding:

Additional revenues or loss of revenues as a consequence of the implementation of measures shall be handled by the road toll company Bergen Bompengeselskap AS. This includes compensation to Hordaland County Council for the costs of providing free public transport. The NPRA will sign an addendum to its agreement with the company when the toll regulations have been adopted by the Ministry of Transport and Communications.
4. Up until the time of implementation, an assessment shall be made of possible exemption schemes for goods transport and utility vehicles.
5. The City Council assumes that the Ministry of Transport and Communications will adopt central toll regulations on the basis of a local proposal as soon as possible, and in close dialogue with the City of Bergen and Hordaland County Council. The City Council underlines that it is essential that this measure is ready for implementation well before the 2016/2017 winter season.
6. The City Council takes note of the enclosed overview of the policy instruments for improving air quality.
7. The City Council requests that the City Government include on the agenda a presentation of measures to avoid too heavy traffic loads on typical diversion routes leading to considerably poorer air quality in these areas.
8. The installation of air quality monitoring equipment should be considered where such equipment has not yet been installed.

**Comment:**



The City Council requests that the City Government consider a collaboration with public sector employers, so that civil servants can work from home on days when contingency tolls are used. The City Government also urges private sector employers to use such a solution for their employees, so as to reduce the traffic load in Bergen city centre.