

# Safety Learning System based on Analysis of Recent Accidents

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Norwegian Safety Investigation Authority



*Norwegian Safety  
Investigation Authority*

And

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CEO

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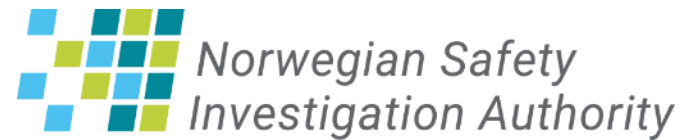
**Road Supervisory  
Authority Norway**

BUSWORLD foundation

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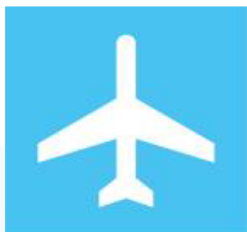
# SAFETY INVESTIGATIONS OF ACCIDENTS IN NORWAY



# BUSWORLD foundation

*the global bus alliance*

The Norwegian Safety Investigation Authority (NSIA) investigate accidents in a safety perspective



# HEAD-ON COLLISION BETWEEN TWO BUSES, 17th NOVEMBER 2017



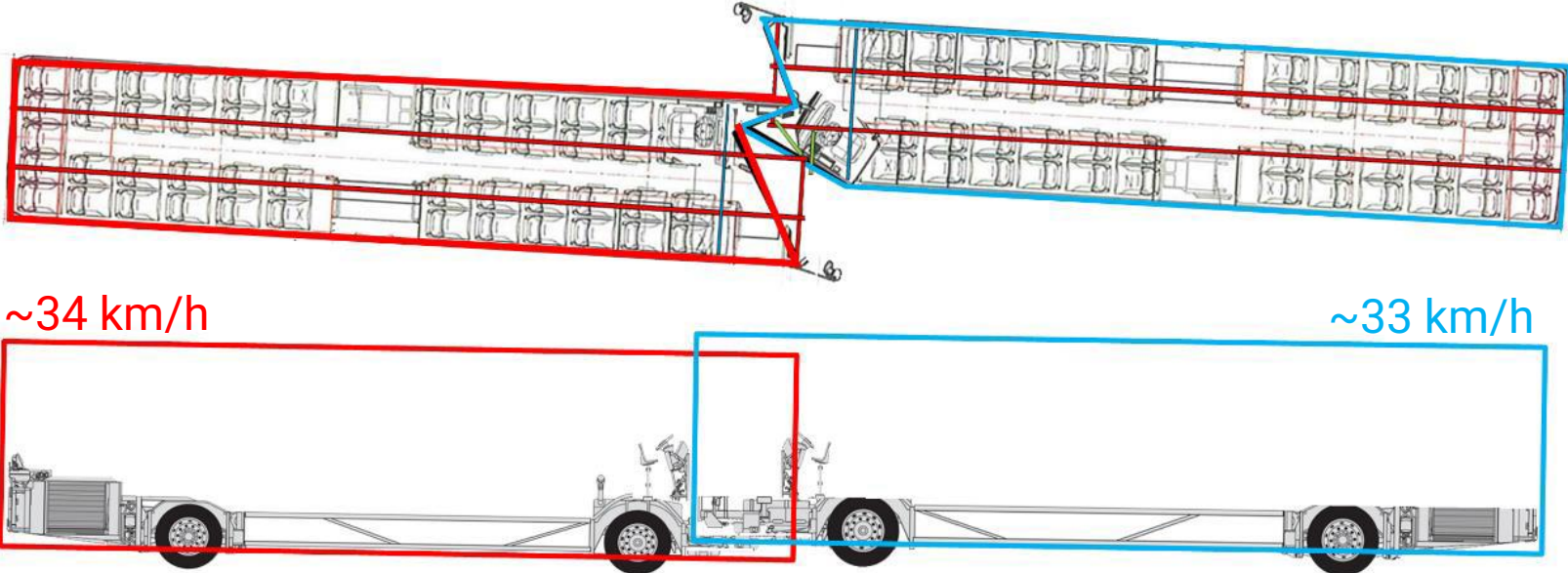
- Head on collision in on a slippery road.
- One bus driver was killed instantly, and the other was critically injured

# HEAD-ON COLLISION BETWEEN TWO BUSES, 17th NOVEMBER 2017

Collision speed:

~34 km/h

~33 km/h



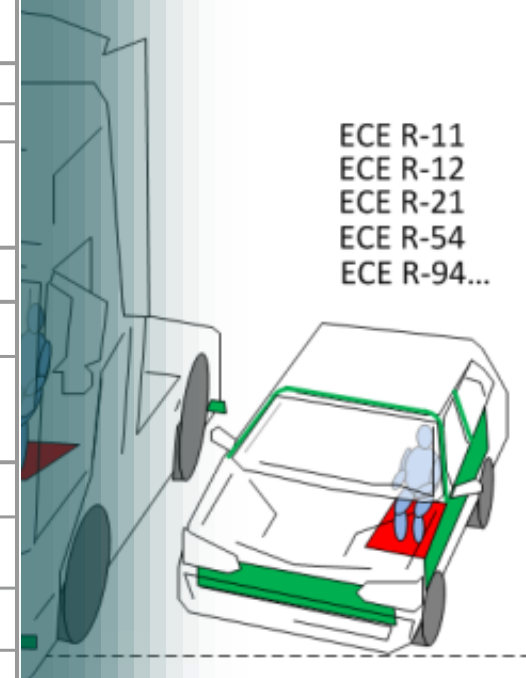
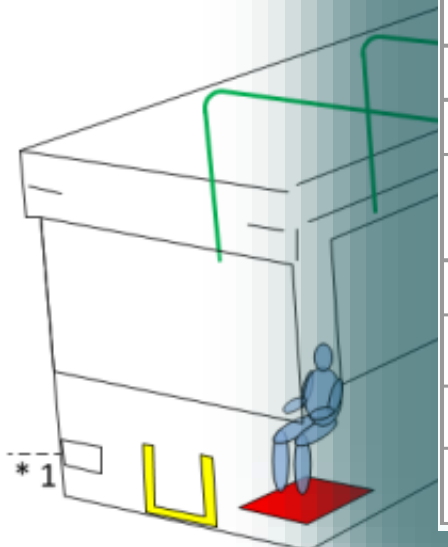
# HEAD-ON COLLISION BETWEEN TWO BUSES, 17th NOVEMBER 2017

Requirement area	Basis/legal act	Latest directive, regulation, rules	Entry into force in Norway	Applies to vehicle groups											
				M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	O <sub>1</sub>	O <sub>2</sub>	O <sub>3</sub>	O <sub>4</sub>		
46: Tyres	92/23/EEC	2005/11/EC	31/12/2005	X	X	X	X	X	X	X	X	X	X		
52A: General structure	EC 661/2009	EU 2016/1004	16/11/2016		X	X									
	UNECE 107	UNECE 107.05	16/11/2016		X	X									
52B: Strength of body	EC 661/2009	EU 523/2012	11/12/2012		X	X									
	UNECE 66	UNECE 66.02	19/08/2010		X	X									
53A: Protection of passengers in head-on collision	EC 661/2009	EU 523/2012	11/12/2012	X											
	UNECE 94	UNECE 94.02	23/06/2011	X											
54: Collision from side	96/27/EC		25/11/1997	X			X								
54A: Protection of passengers in side-on collision	EC 661/2009	EU 2016/1004	16/11/2016	X			X								
	UNECE 95	UNECE 95.03	16/11/2016	X			X								
57A: Front underrun protective devices	EC 661/2009	EU 523/2012	11/12/2012					X	X						
	UNECE 93	UNECE 93.00	27/02/1994					X	X						
71: Strength of driver's cab	EC 661/2009 UNECE 29	EU 2015/166	15/06/2015				X	X	X						



Requirement  
 \*Voluntarily

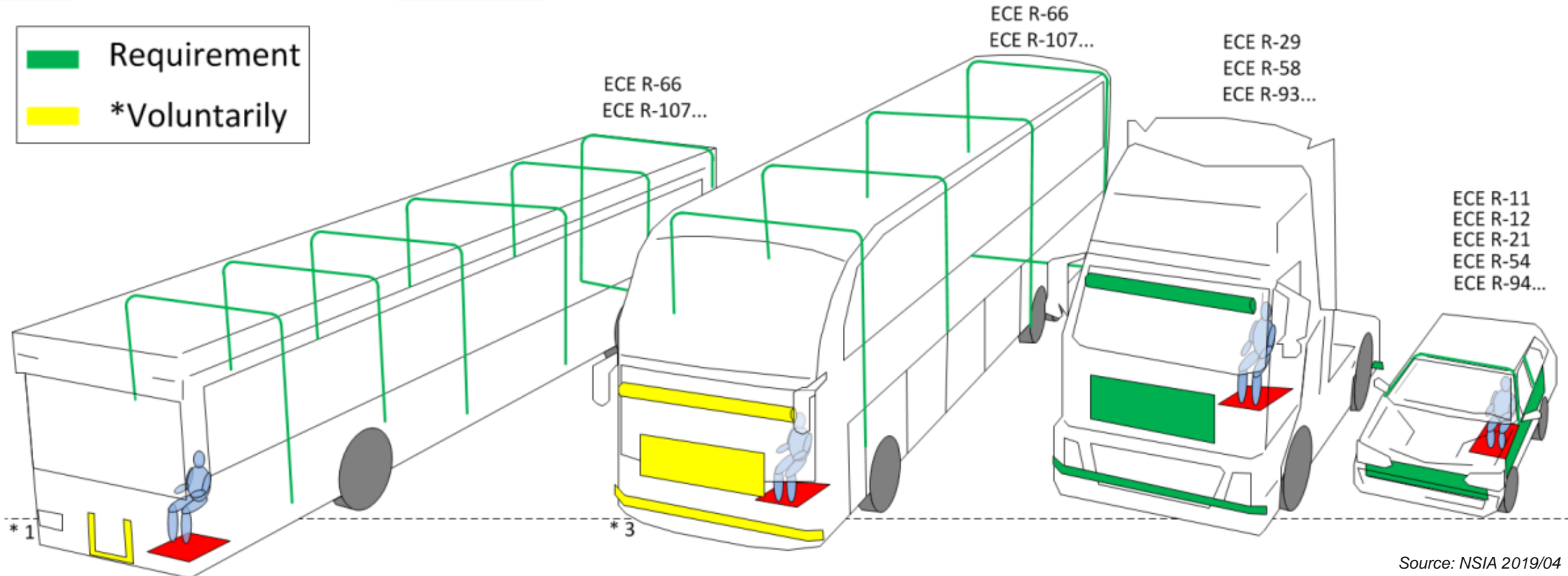
R-29  
R-58  
R-93...

ECE R-11  
ECE R-12  
ECE R-21  
ECE R-54  
ECE R-94...



# HEAD-ON COLLISION BETWEEN TWO BUSES, 17th NOVEMBER 2017

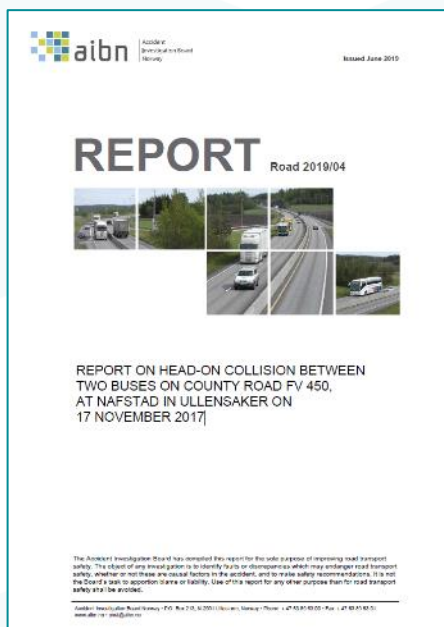
 Requirement  
 \*Voluntarily



# HEAD-ON COLLISION BETWEEN TWO BUSES, 17th NOVEMBER 2017

## 1,5 years after the accident, 6 safety recommendations were issued.

### We focus on two recommendations:



Public Transport Authority

....introduce crash protection requirements for drivers as a criterion in connection with tenders for new public transport services.



**Statens vegvesen**  
Norwegian Public Roads  
Administration

....consider using national regulations as the basis for improving the crashworthiness of buses used in transport for which a permit is required in Norway

# FOLLOW UP PROCESS OF SAFETY INVESTIGATIONS

2021



Public Transport Authority

Akershus county authority and Ruter started making crash protection criteria in tenders for new public transport services:

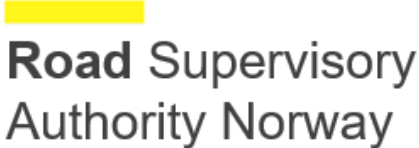
## NEW Tender Requirements for busses 2021



...constructions that meet requirements in accordance with UNECE-R93, roundabout UNECE-R66 and the like. Electronic stability control ESP or similar

**5.16 Passive safety system**  
All buses must be equipped with collision protection for the driver in accordance with requirements of UNECE-R29.

The operator must document that any similar collision protection is equivalent to UNECE-R29.



the global bus alliance

2023

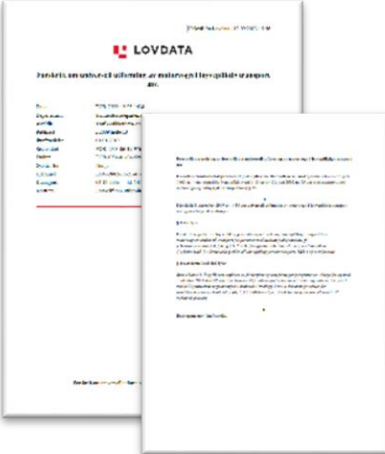


Statens vegvesen  
 Norwegian Public Roads Administration



ROYAL NORWEGIAN MINISTRY OF TRANSPORT AND COMMUNICATIONS

Norwegian public road authority suggested that new regulations (R29) was implemented by the road authorities 01.10.2023:



Public consultation held: 3-25th May 2023

Status: Implemented



# FOLLOW UP-PROCESS THE NORWEGIAN ROAD SUPERVISORY AUTHORITY

**Road Supervisory  
Authority Norway**

**BUSWORLD  
foundation**

*the global bus alliance*



**fatalities  
and severe  
injuries**

Improved Safety

Accident

**Road Supervisory  
Authority Norway**

Follow up and  
implemented measures

Safety investigation and  
Recommendations



# FOLLOW UP-PROCESS THE NORWEGIAN ROAD SUPERVISORY AUTHORITY

Road Supervisory  
Authority Norway

BUSWORLD  
foundation

the global bus alliance



ROYAL NORWEGIAN MINISTRY  
OF TRANSPORT AND COMMUNICATIONS



AKERSHUS  
fylkeskommune

Ruter#



Statens vegvesen  
Norwegian Public Roads  
Administration

Improved Safety



Road Supervisory  
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Follow up and  
implemented measures

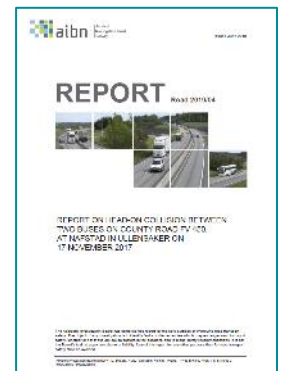


Norwegian Safety  
Investigation Authority

Accident



Safety investigation and  
Recommendations



## SIMILAR SAFETY INVESTIGATIONS ON BUS ACCIDENTS IN LOW SPEED

### Report on head-on collision at Tangen 11 March 2021



- Collision speeds: 55 km/h and 36 km/h
- One bus driver was killed instantly.



### Investigation of a head-on collision in Fredrikstad 28 December 2022



#### ONGOING INVESTIGATION

- Low collision speeds
- One bus driver was killed instantly, and the other was critically injured.



QR  
The accident  
report



## Safety investigations of road traffic accidents discovers safety issues in Norway

Is it possible learn more and faster  
from in-depth investigations internationally?