



Supplier Conference Electric Bus

December 15th 2014

Ruter



City of Oslo



Greening the transport system

Guri Melby

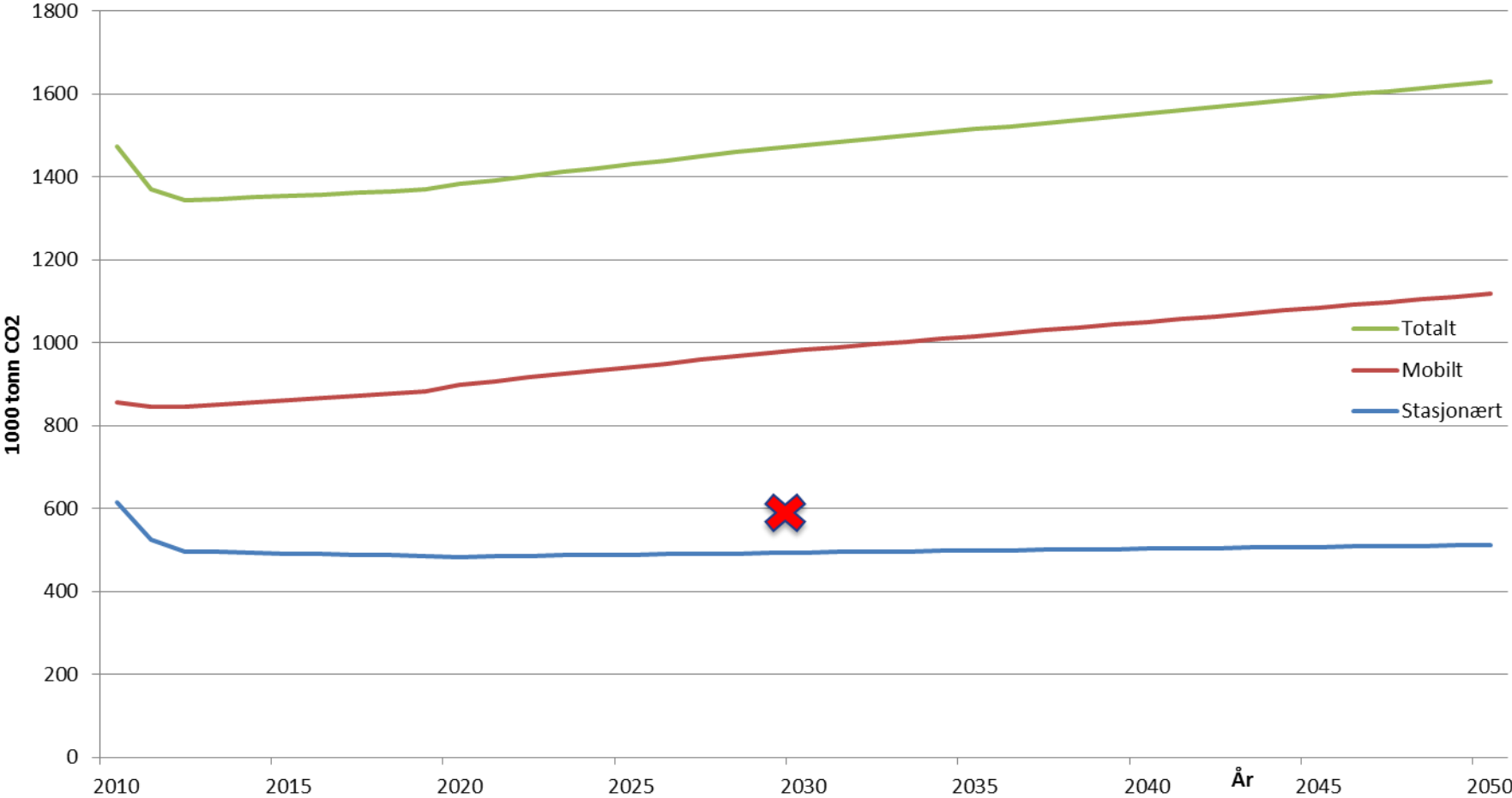
Vice Mayor (V)

Department of Environment and Transport

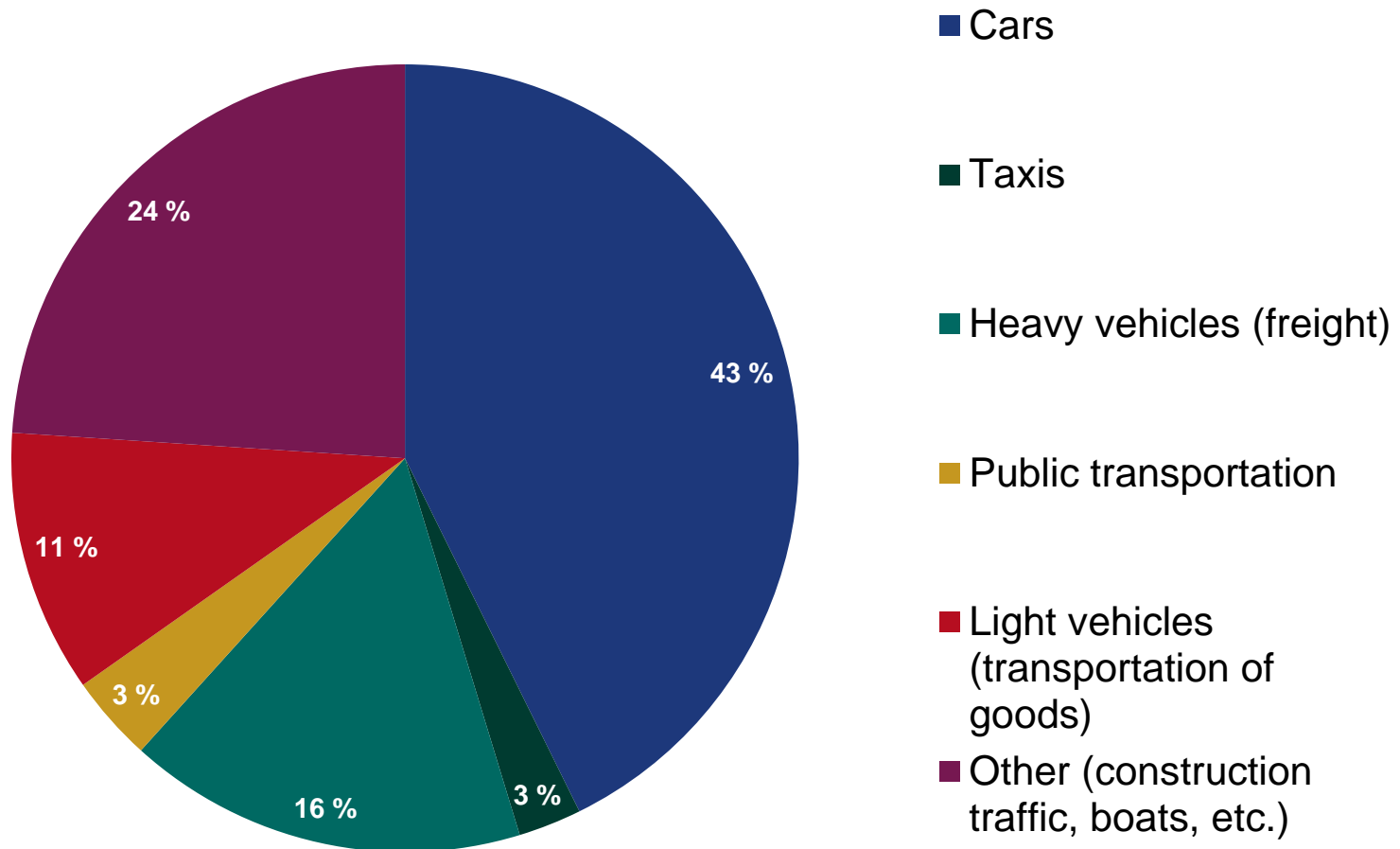
50 % reduction in greenhouse gas emissions
by 2030 – zero by 2050



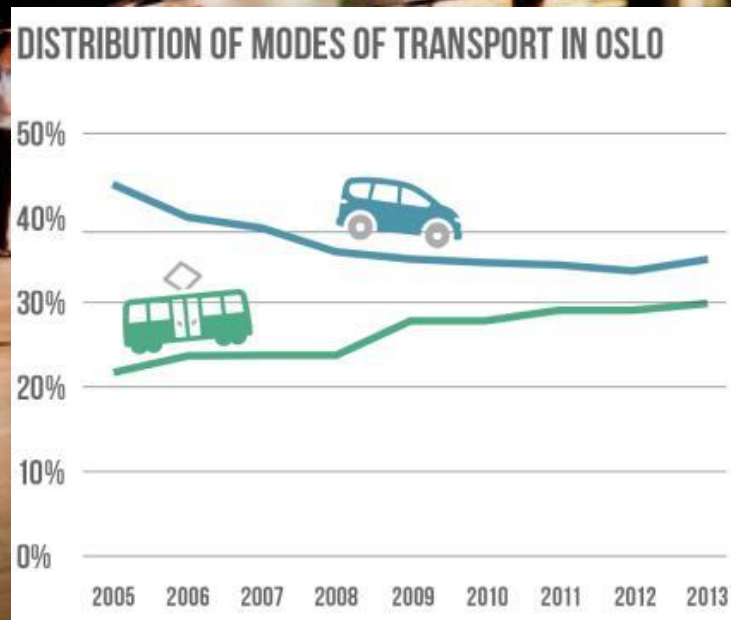
CO2 emission forecast for Oslo



Greenhouse gas emission from transport in Oslo (2012)



Increasing the share of public transportation



Carbon neutral public transport by 2020

BUSSENE SKAL BLI KLIMANØYTRALE INNEN 2020

2012 - 1200 BUSSE



2016 - 1300 BUSSE



2020 - 1400 BUSSE



DIESEL BIODIESEL BIOGASS BIOETANOL
HYDROGEN ELEKTRISITET



The electric car capital

- 11 300 EV's in Oslo and Akershus
- 1000 municipal vehicles will be zero emission by 2015
- Busses are next





City of Oslo

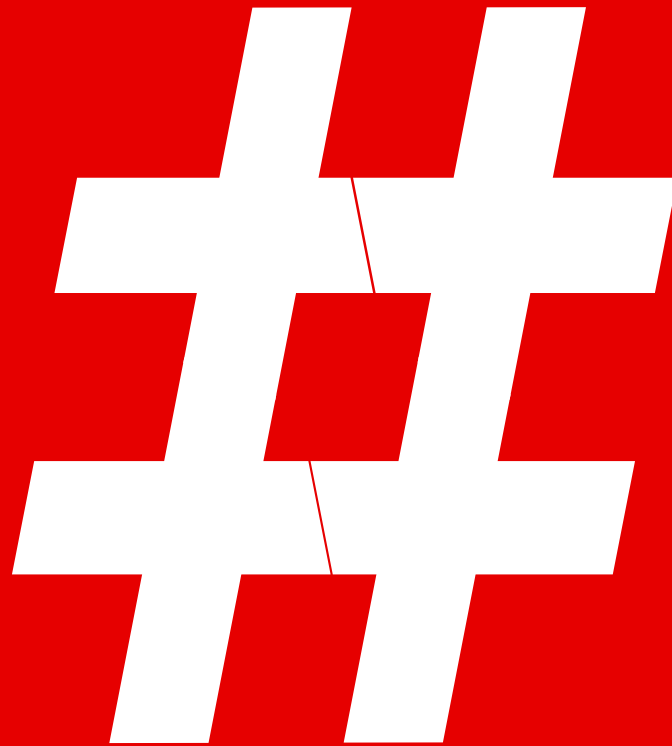


Thank you for your attention!



City of Oslo





Ruler #

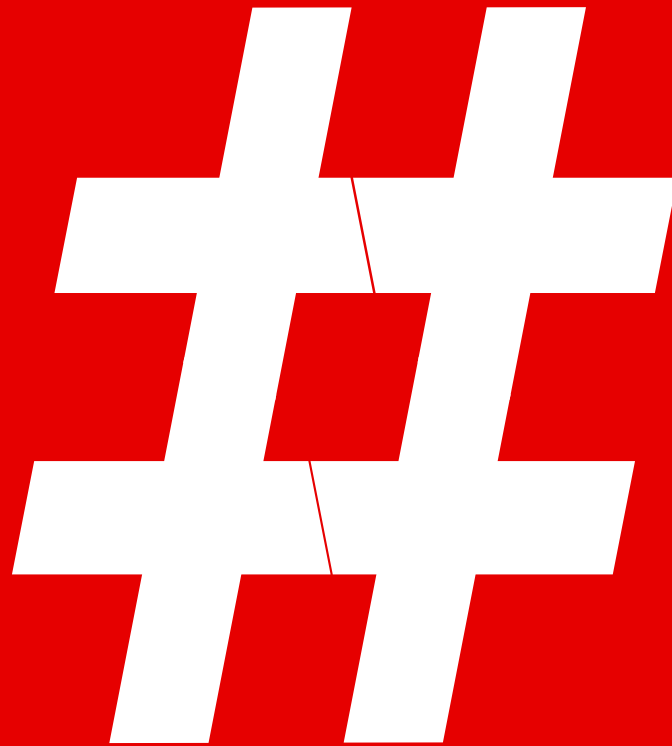


Akershus Regional County

Thomas Tvedt

Assistant Director, Department of transport

Ruter#



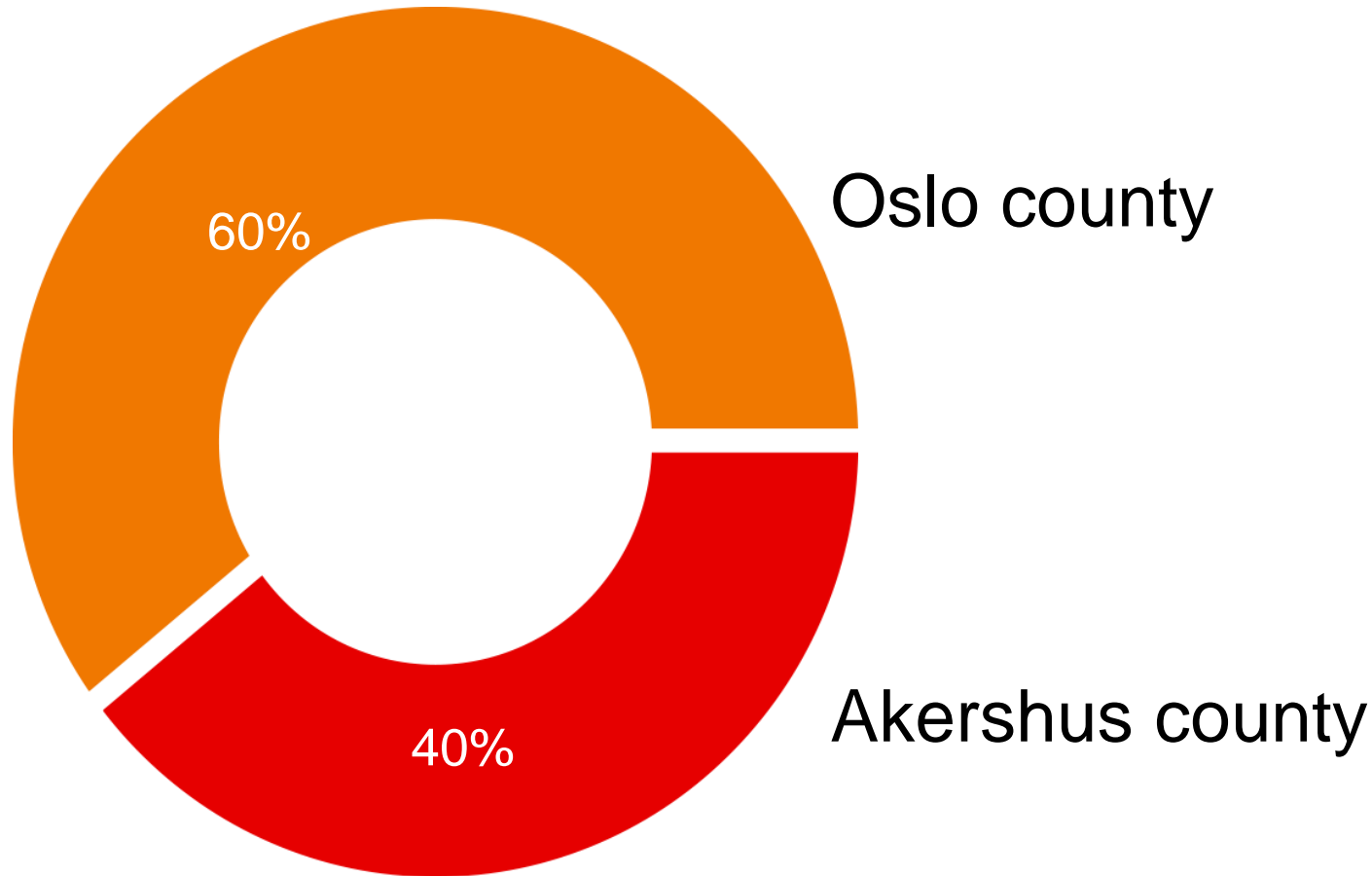
Ruler #



**Electric buses – an
answer to today's public
transport challenges?**

**Bernt Stilluf Karlsen
Chairman of the Board
Ruter**

Ruter As – a limited company owned by 2 counties



Public Transport Authority for the Capital Region



Norway

Population 5,1 mill
GDP per capita 190 %
of EU

Unemployment rate 3%

Oslo + Akershus

Population 1,2 mill
2 counties, including
22 + 1 municipalities

Price zones – differs
from the administrative
zones

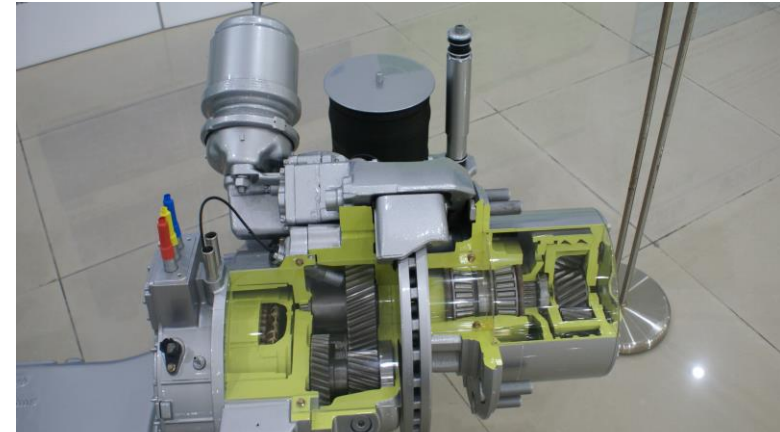
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High ambitions for the region

- Regional development, fastest growing capital in Europa
- Public transportation, growing even faster
- Environment, no CO₂ emissions in 2020 from the public transportation
- Battery electric buses can play an important role

Seeing is believing – and we have seen the future

Our ambition is to implement the future - NOW



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Our purchase strategy starts now

**We have the support from our owners*

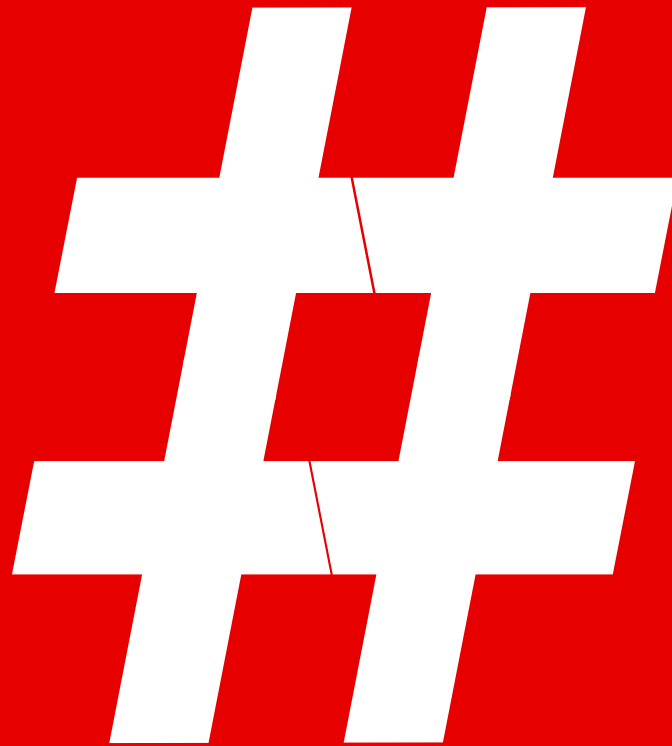
**We will collaborate with the market*

**We will take a leading position in Europe in electric drive trains for buses in public transport*

WELCOME!



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The background of the slide is a photograph of a modern building facade. On the left, a large, stylized logo is visible, consisting of four overlapping leaf-like shapes in shades of blue and green, arranged in a cross pattern. To the right, a prominent red architectural element, possibly a balcony or overhang, runs diagonally across the frame. The sky is a clear, bright blue.

Ruter's Goals and Challenges

Bernt Reitan Jenssen
CEO
Ruter

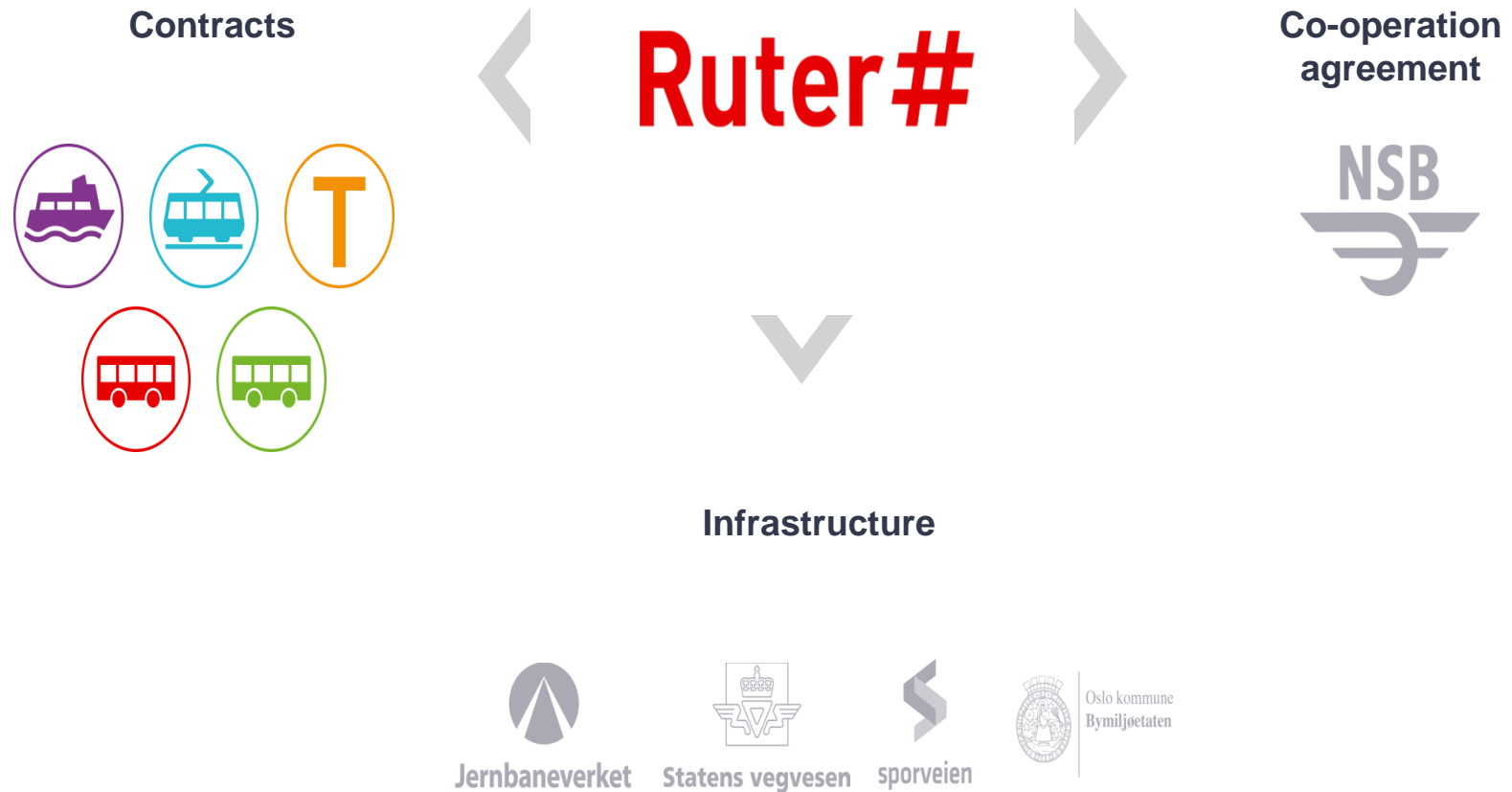
315

million passengers

boarding on metro, bus, tram, train and ferry 2013



Partners in PT Oslo and Akershus



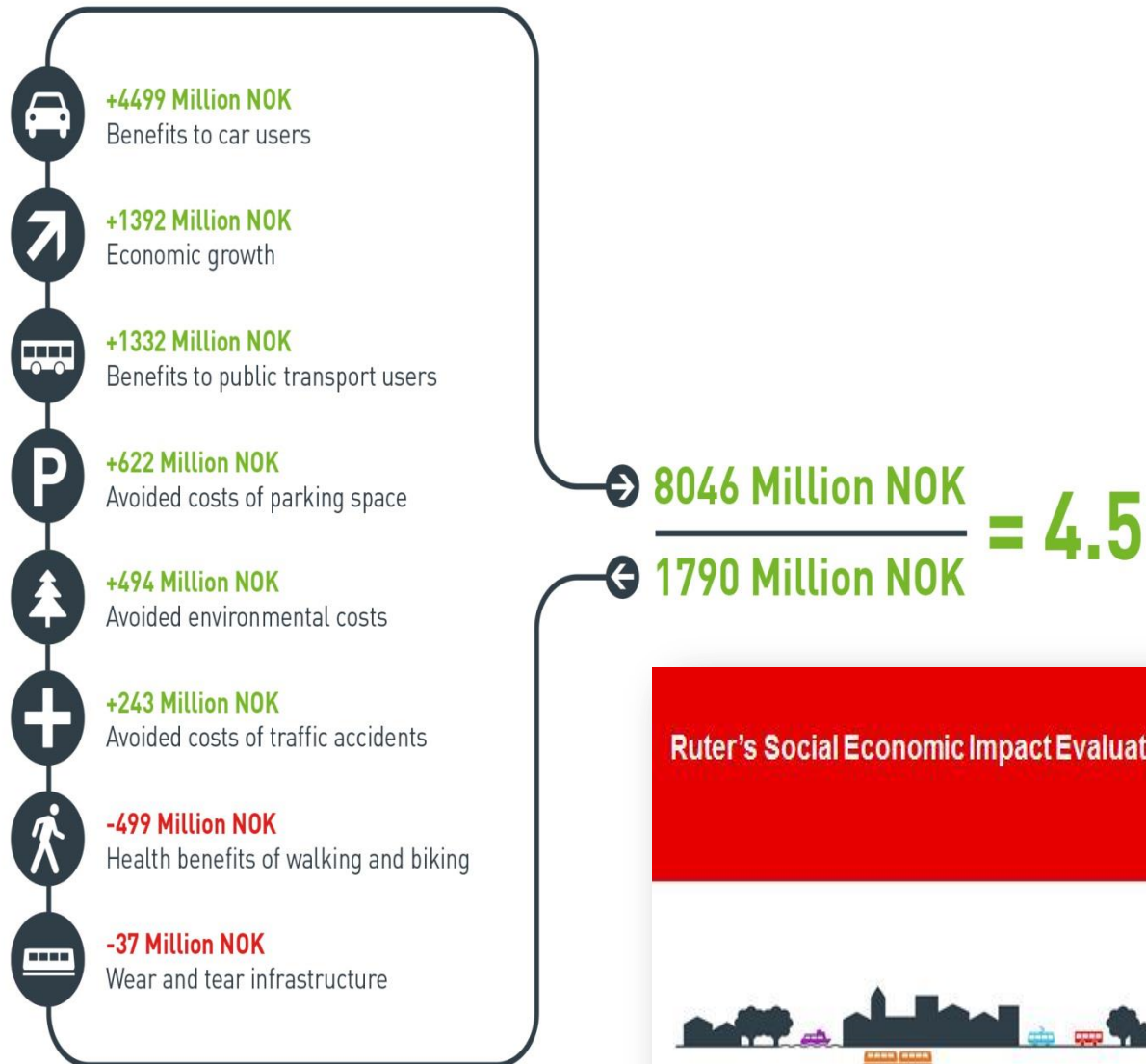
Moving on: PTx2 = 2030



From 285 mill trips in 2011

...to ~550 mill trips in 2030

Now we also know the value of this policy

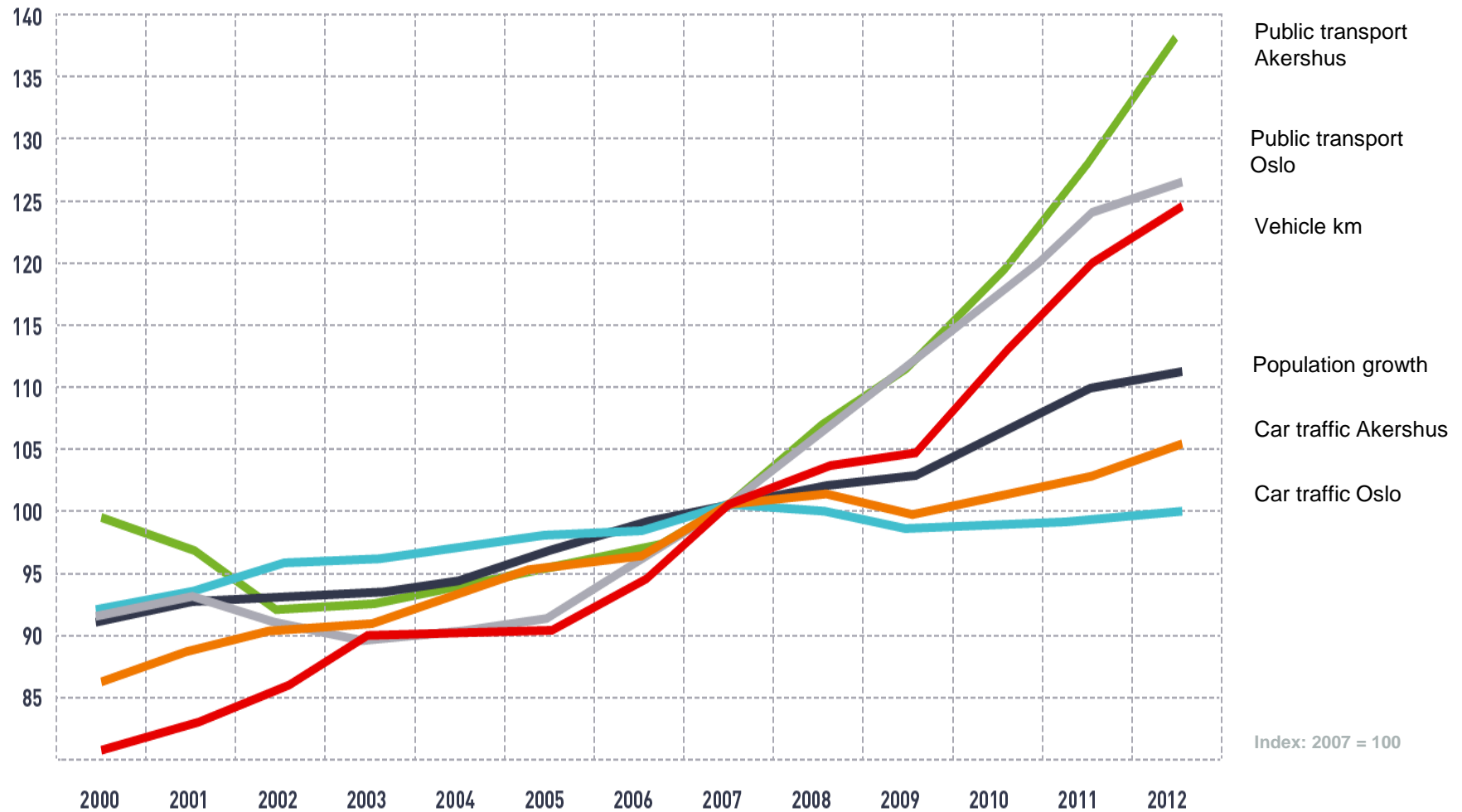


Ruter's Social Economic Impact Evaluation 2012



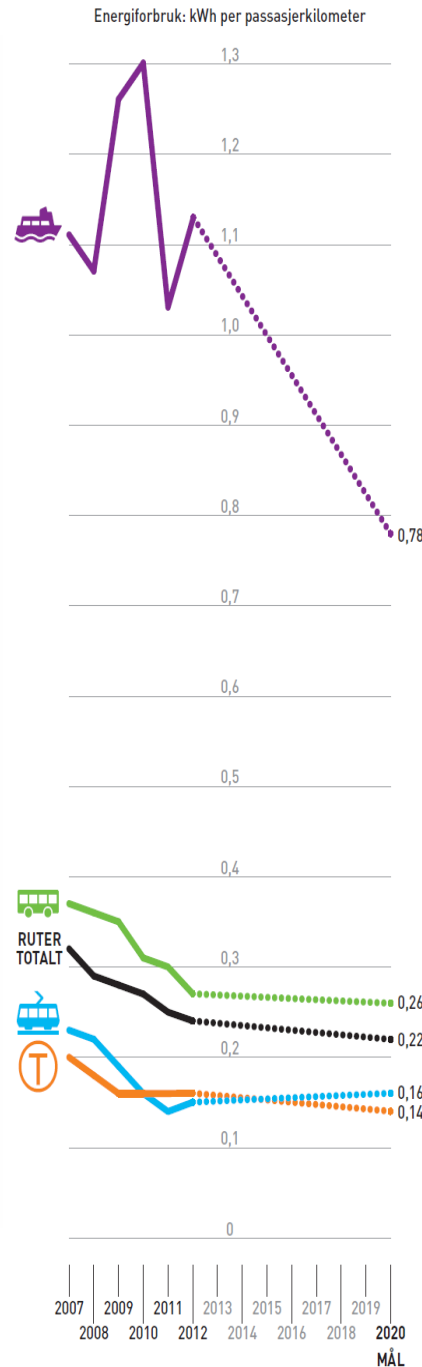
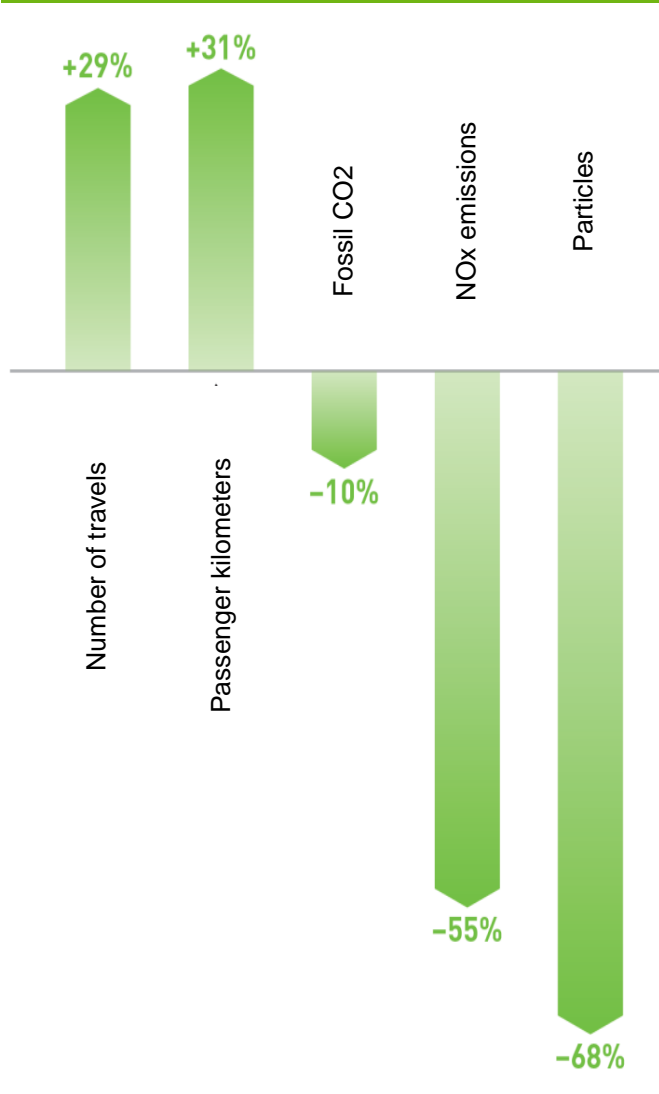
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Modal change



Kilde: Ruters Årsrapport, 2012.

Changes 2007 - 2012



More transport with less emissions!

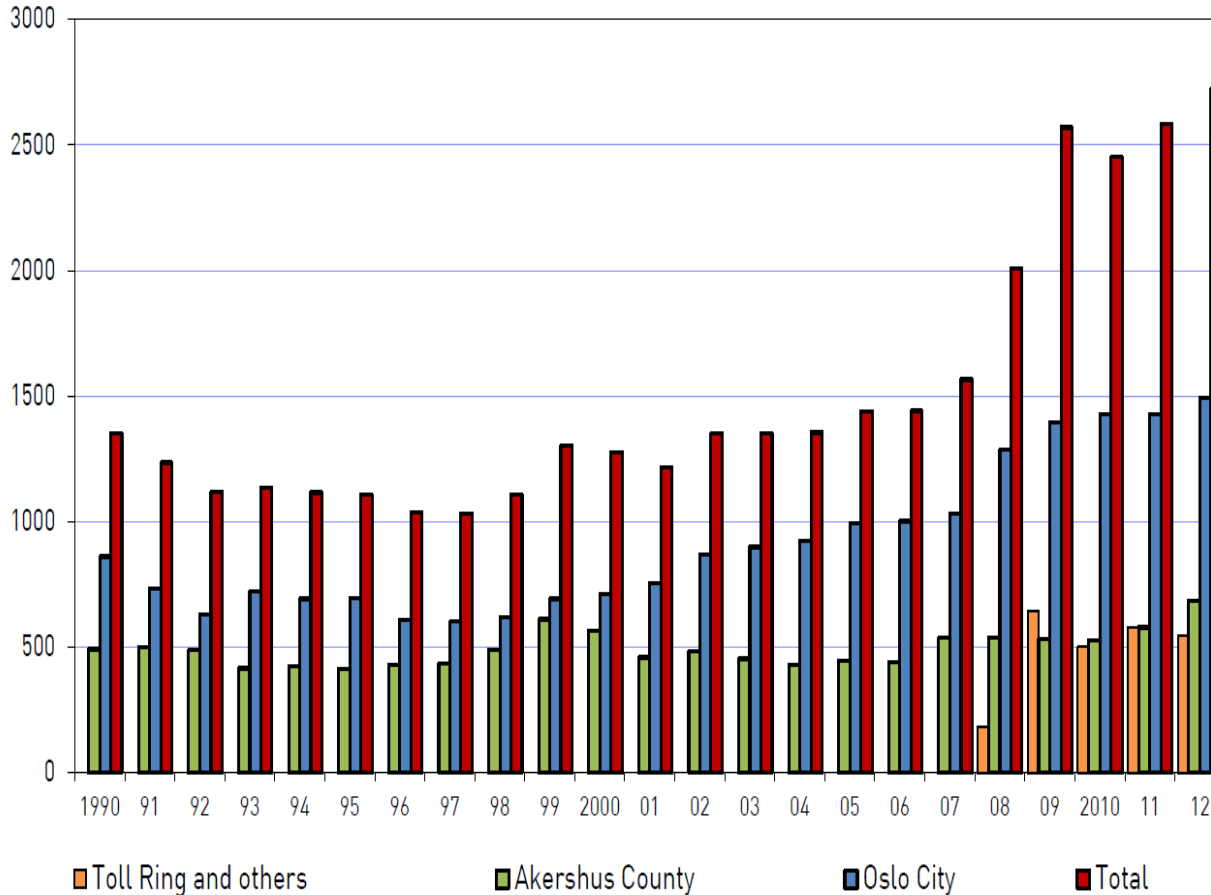
Boats consume more energy

2020-goal reached for tram

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Reasons for market success

MNOK 2012



- Increased public financing, incl. share of Toll Ring revenues
- Common regional organization
- Customer-driven development
- Production moved in direction of heavier markets
- Increased frequency
- New rolling stock (metro)
- Real time information
- Reduced fares Oslo 2008 and Akershus 2011/2012
- Increased Toll Ring fares 2008 (and 2013)

All modes playing together



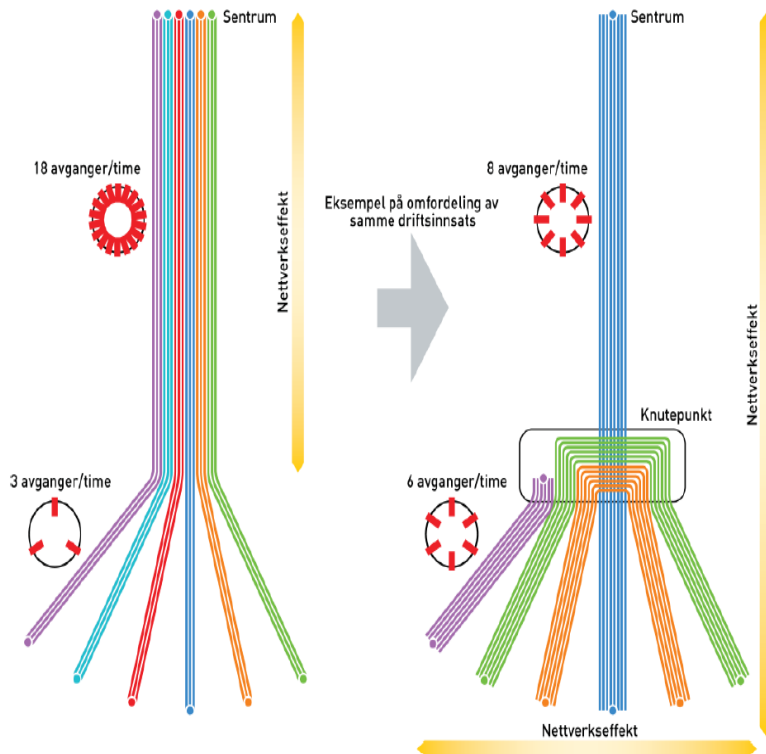
Bus		Metro	Tram	NSB Train	Airport Express Train	Passenger Ferry
City	Regional					
88 mill	47mill	85 mill	49 mill	35 mill	6 mill	4,5 mill
135 mill						
43 %		27 %	16 %	11 %	2 %	1,5 %




















54 % on rail, powered by electric renewable energy

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Optimizing resources



	Oppdrag	Frekvens	Begrunnelser
 Regiotog	Sentrale østlandsområdet	 Minimum 30 minutter	Miljø
 S-tog	By- og forstadsområdet	 Minimum 10 minutter	Regionens funksjonsdyktighet
 RuterMetro	Byområdet og deler av forstadsområdet	 Minimum 10 minutter	Mobilitet for alle
 RuterTrikk	Byområdet og deler av forstadsområdet	 Minimum 10 minutter	
 RuterBy	Byområdet Oslo + deler av nabokommunene	 Minimum 10 minutter	
 RuterEkspress	Pendler gjennom Oslo, knutepunktstopp	  ½ – 1 time	
 RuterBåt		 Minimum 1 time	
 RuterRegion	Mellom Oslo og Akershus + lokalt i Akershus	 Minimum 1 time	
RuterBestilling	Minibuss eller taxi på bestilling		

Mobile ticket – a success story

Awarded «App of the year»

Customer satisfaction 90 %

Used by 40 % of population

25 % of total revenue so far



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1

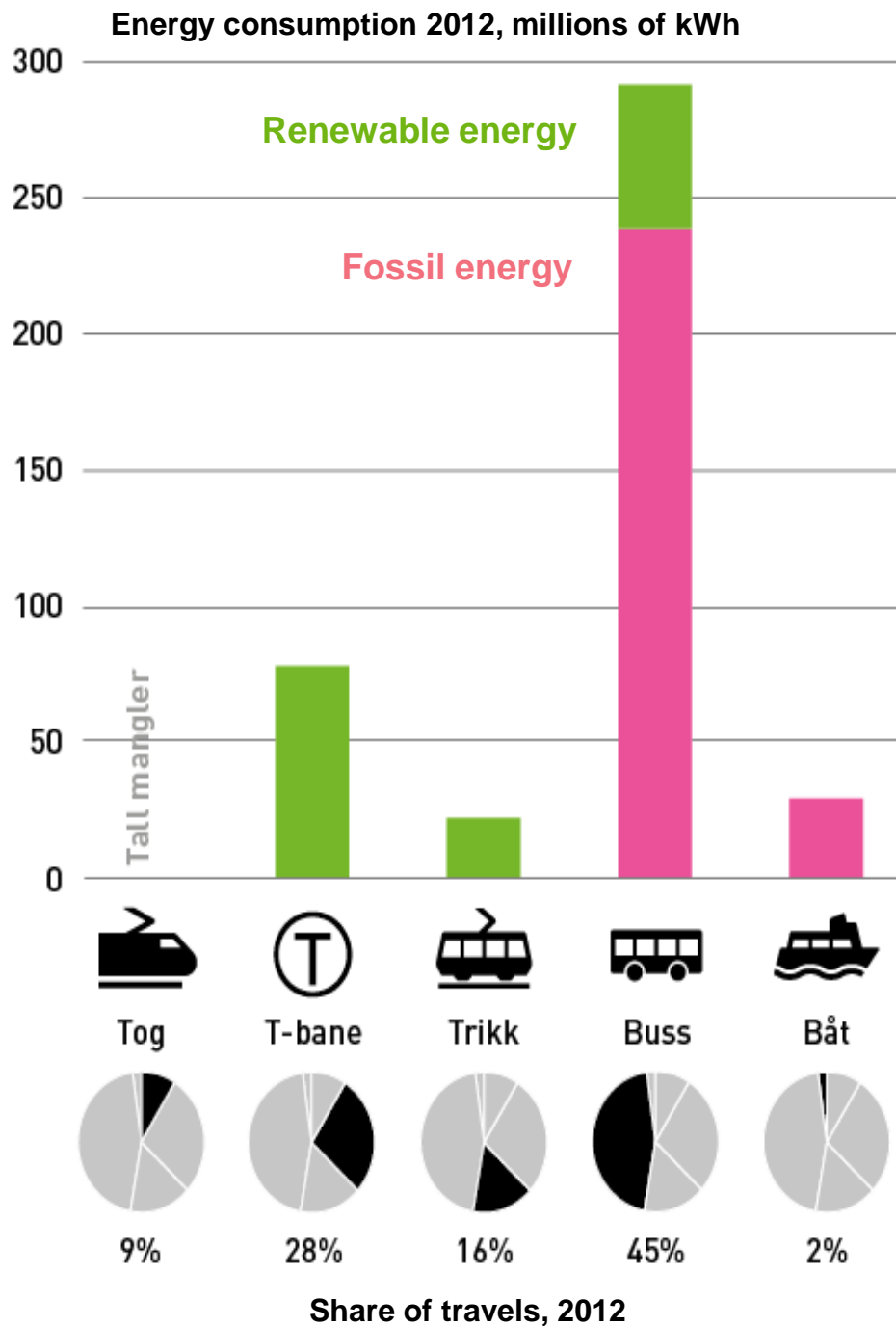
The increase in motorised transport is to be covered by public transport, bicycle or walking



2

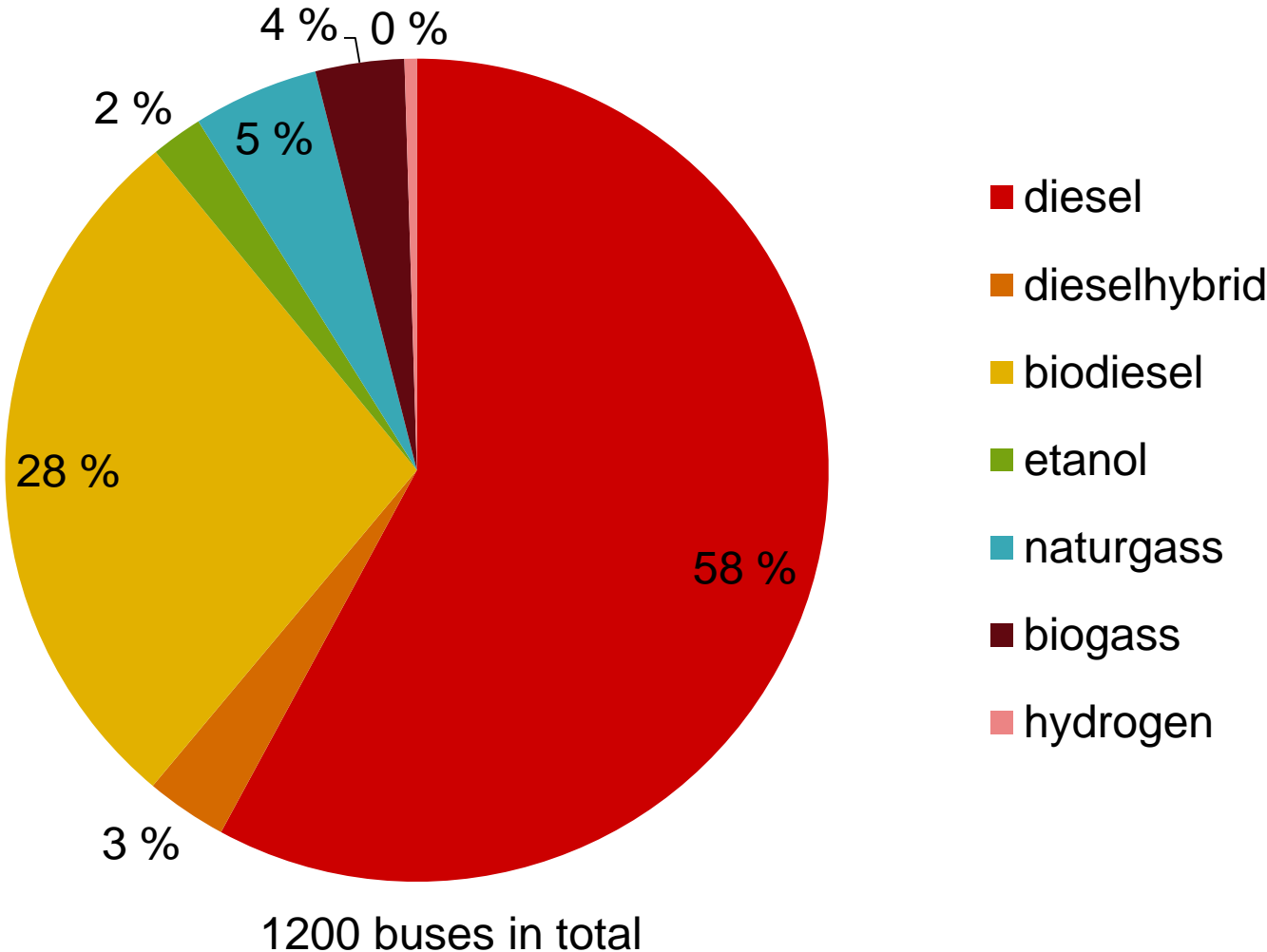
All public transport is to run on renewable energy in 2020





Buses and ferries use fossil fuel

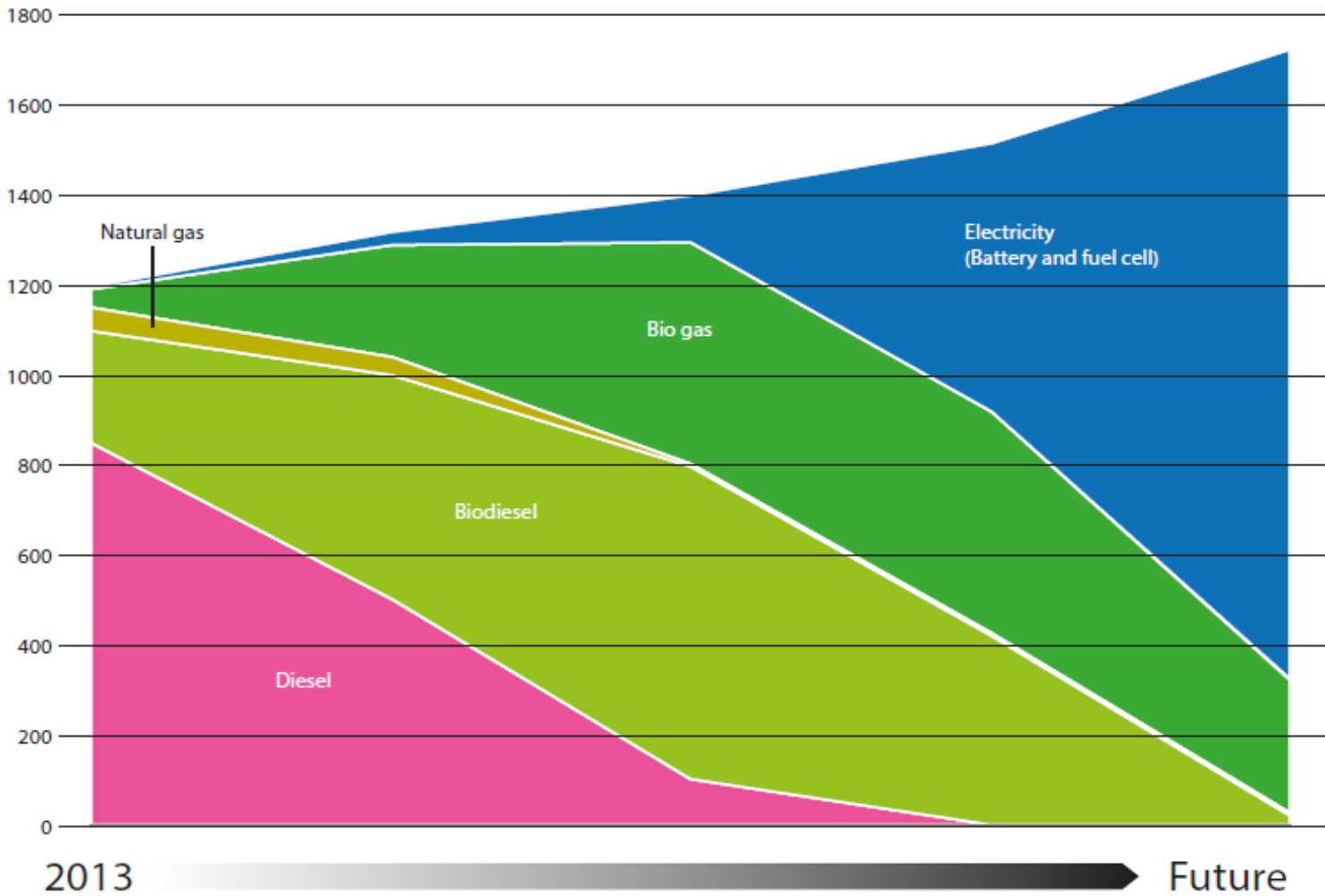
Fuels – as share of bus fleet 2014



Paradigm shift ahead



Number of buses



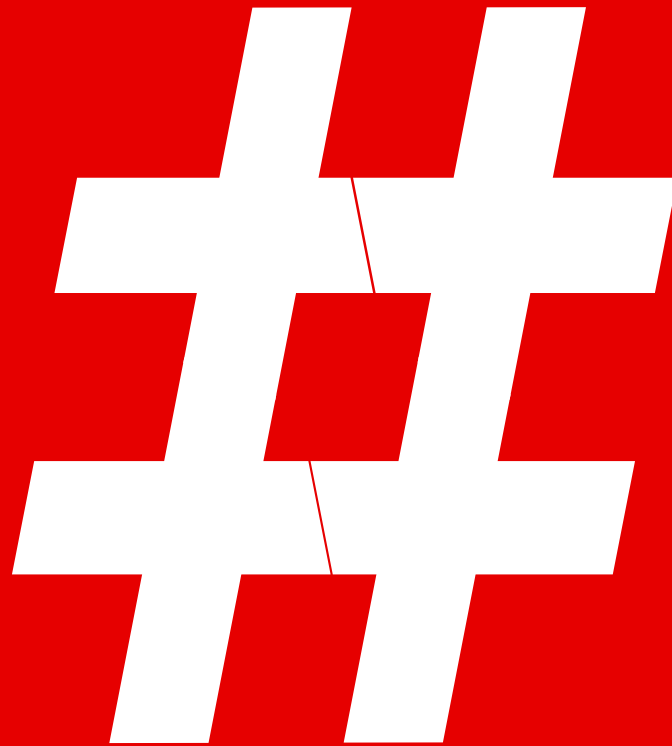
Fossil free in 2020

Ruter's ambition is to:

- Implement the renewable solutions that are the best in a long-term perspective
- Be a competent and active innovation partner to suppliers
- Stimulate the development of renewable and non emission solutions for buses and ferries
- Provide a real life testing ground for new solutions
- Conduct a large scale system test of battery electric buses

We are well positioned

- Owners with high and ambitious environmental targets
- Strong political support for going fossil free
- Experience in testing new bus technology
- High acceptance among customers for electricity in the transport sector
- Relevant «up-stream» industries and companies in the region



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Today's Conference: Goals and Practical Information

Pernille Aga
Project Manager
Ruter

Electric Bus Supplier Conference

- Goals:
 - Provide information about Ruter's future demand and plans
 - Get information on battery electric bus technology, related infrastructure and services
- No decisions will be made during the conference
- Any procurement will be in the form of competitive tenders publicly announced on Doffin/TED.
- All presentations will be published on Ruter's website



Norsk

Travel planner ▾

Traffic status ▾

Tickets ▾

Services ▾

MyPage

Search in F



Hjem > About Ruter > Reports and plans > Fossil Free 2020 > Information for suppliers

Fossil Free 2020 - Information for suppliers

- Written reply by January 15th
- One-to-one follow-up meetings.

Ruter are looking into testing a larger fleet of electric buses from 2016-20, as the project Fossil Free 2020. Here you will find documentation and information for suppliers.

Invitation to suppliers' conference

Ruter will arrange a suppliers' conference regarding electric buses on December 15, 2014, at 09:00 in Oslo. Enquiries about the suppliers' conference should be addressed to fossilfree2020@ruter.no, or Kåre Riseng at (+47) 975 92 400.

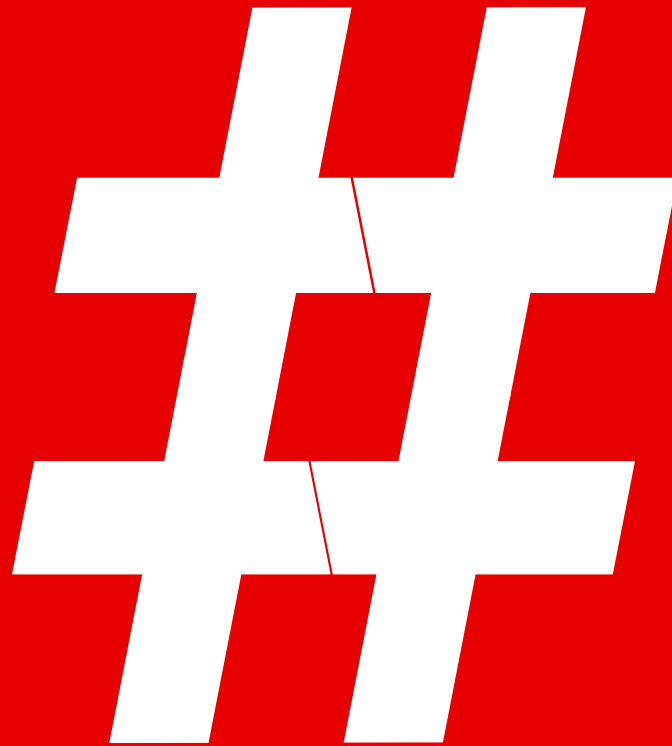
- [Invitation to suppliers' conference regarding electrical buses](#)
- [Program for suppliers' conference regarding electric buses](#)
- [Information and guidelines on Ruter's electric bus supplier conference](#)
- [Market information, Ruter's area of operation](#)
- [Questions concerning electric bus](#)

About the project Fossil Free 2020 and test of electrical buses

If the feasibility study leads to the desired result, any purchasing of buses and associated technology

Conference Program

10:45	Ruter's strategy for introducing renewable solutions to its bus fleet Frode Hvattum, Chief of Strategy, Ruter As
	Bus operations in Ruter's area – The overall picture Hanne B. Norli, Vice President Business Development, Ruter As
11:30	“Elevator pitch”: Brief presentation of participants Jenny Skagestad, Zero Emission Resource Organisation (ZERO)
12:00	Lunch
13:00	Bus depots and infrastructure Halvor Jutulstad, Head of Infrastructure Planning, Ruter As
	Ruter's contracts and public procurement: Are changes needed to facilitate for electric buses? Hellik Hoff, Contracts Manager, Ruter As
13:30	Q & A Ruter As
14:00	The way ahead. Concluding remarks. Pernille Aga, Ruter As
15:00 – 16.30	Guided tour of the public transport system. Starting from the meeting venue. Morten Stubberød, Ruter As



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Ruter's strategy for introducing renewable solutions in the bus fleet

Frode Hvattum
Chief of Strategy
Ruter



Fossil Free 2020

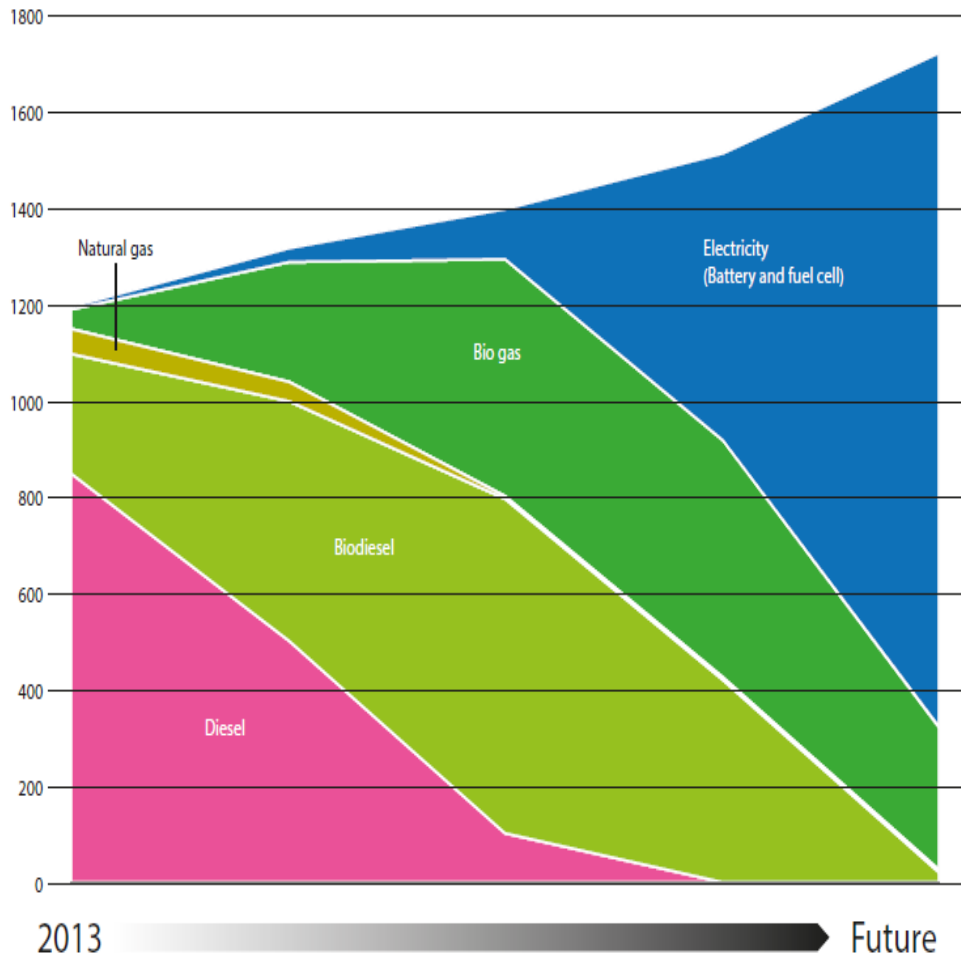
Objective:

- In 2020, all public transport shall use renewable energy sources.
- Dynamic approach when choosing renewable energy source and technology

Our response to the paradigm shift in the bus fleet



Number of buses

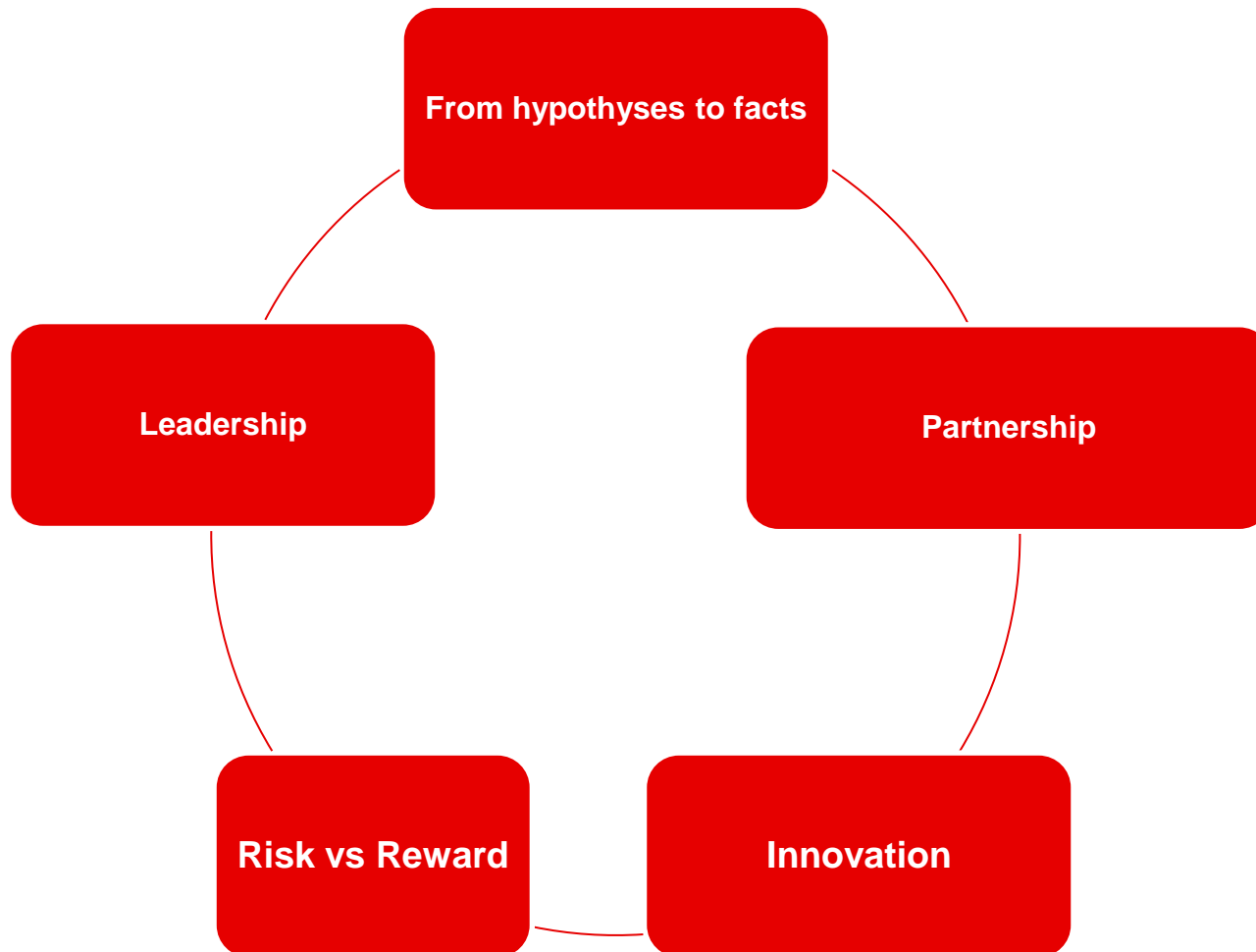


Ruter's aim is to introduce the most effective long-term solutions as quickly as possible.

Ruter will:

- Evaluate the renewable alternatives, monitor and stimulate developments in this dynamic market
- Test electric buses and ferries
- Kick off dialog with marked by arranging a supplier conference on battery electric buses in December

Success criteria



Fossilfree 2020 – first phase

**Existing
contracts**

Knowledge

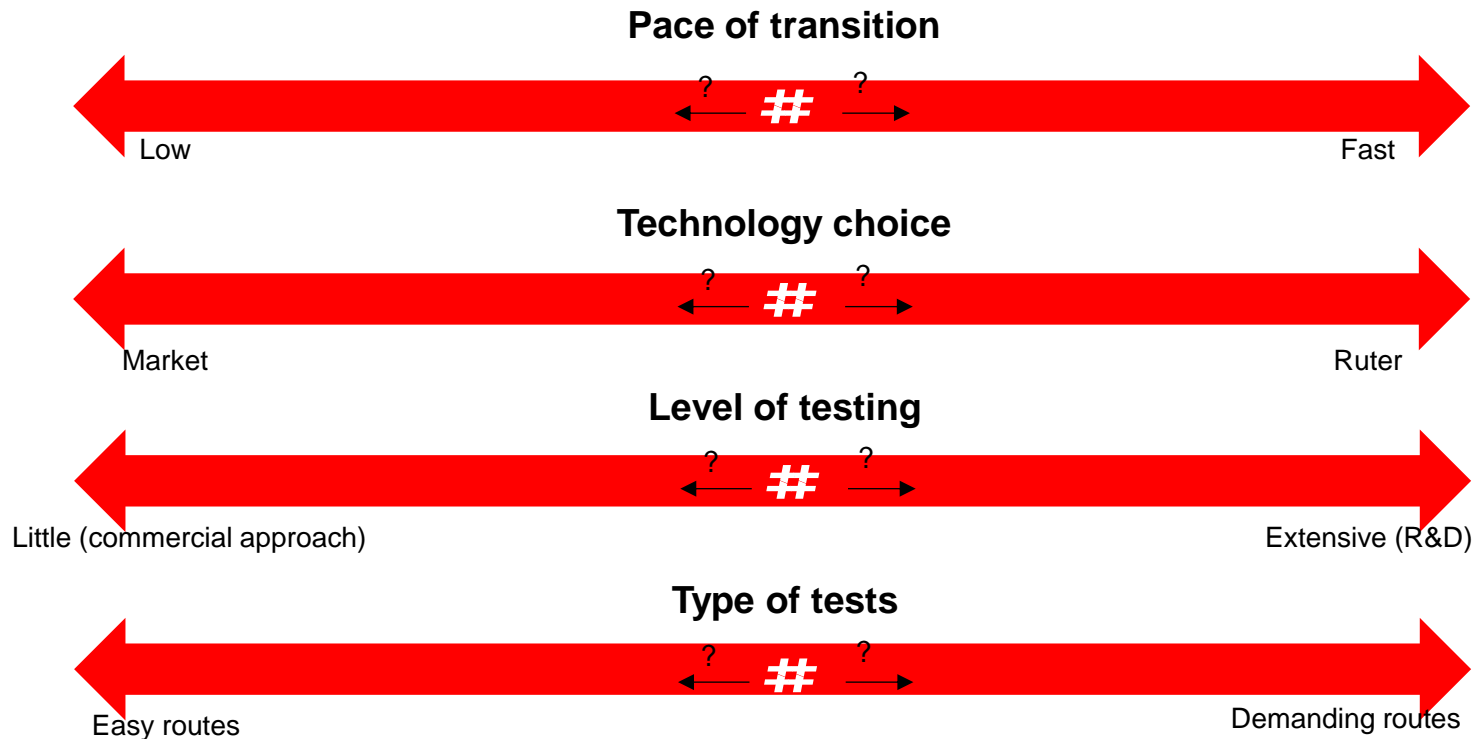
**Dialog with
the marked**

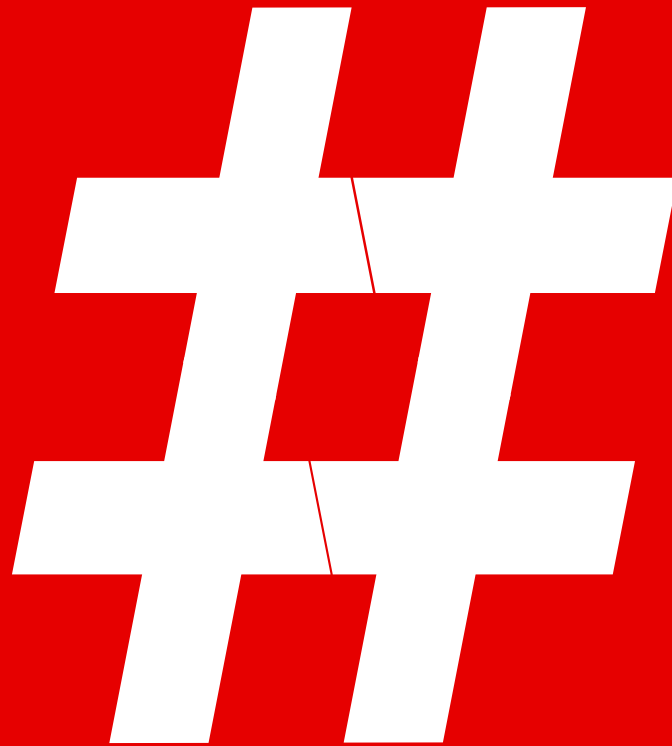
Summer
2015

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Key questions we want your help to answer

What is the optimal approach towards the 2020 target, based on cost, quality and environmental performance?





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The Region's Public Transport Market – Can Electric Buses Serve This Market?

Hanne B. Norli
Vice President
Business Development
Ruter

The bus is Ruters main service provider



Bus		Metro	Tram	NSB Train	Airport Express Train	Passenger Ferry
City	Regional					
88 mill	47mill	85 mill	49 mill	35 mill	6 mill	4,5 mill
135 mill						
43 %		27 %	16 %	11 %	2 %	1,5 %

1200 buses
23 contracts

54 % on rail, powered by electric renewable energy

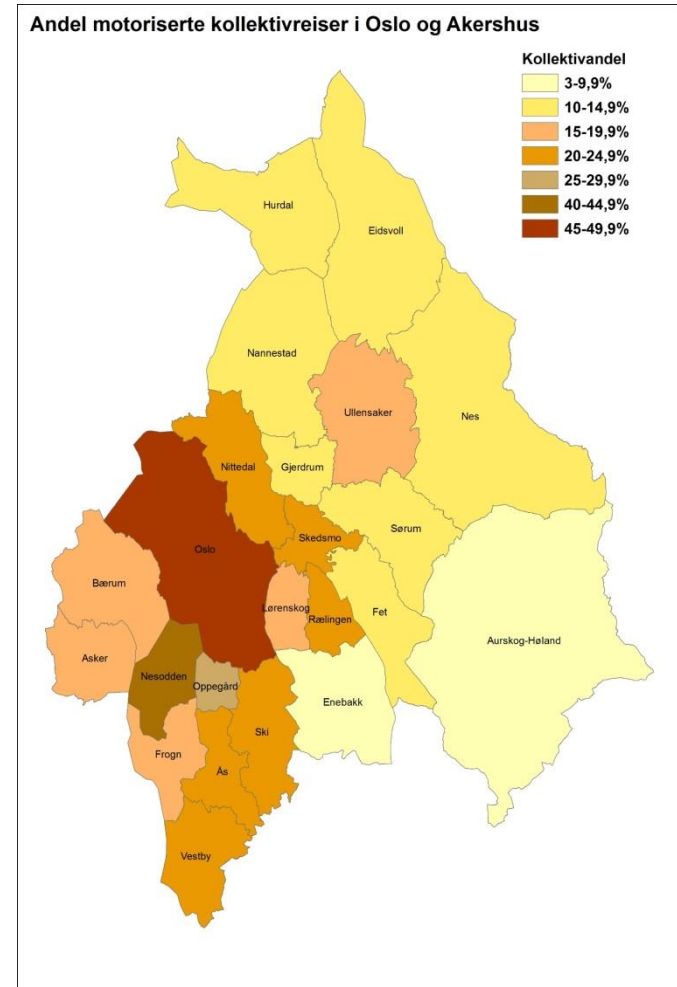
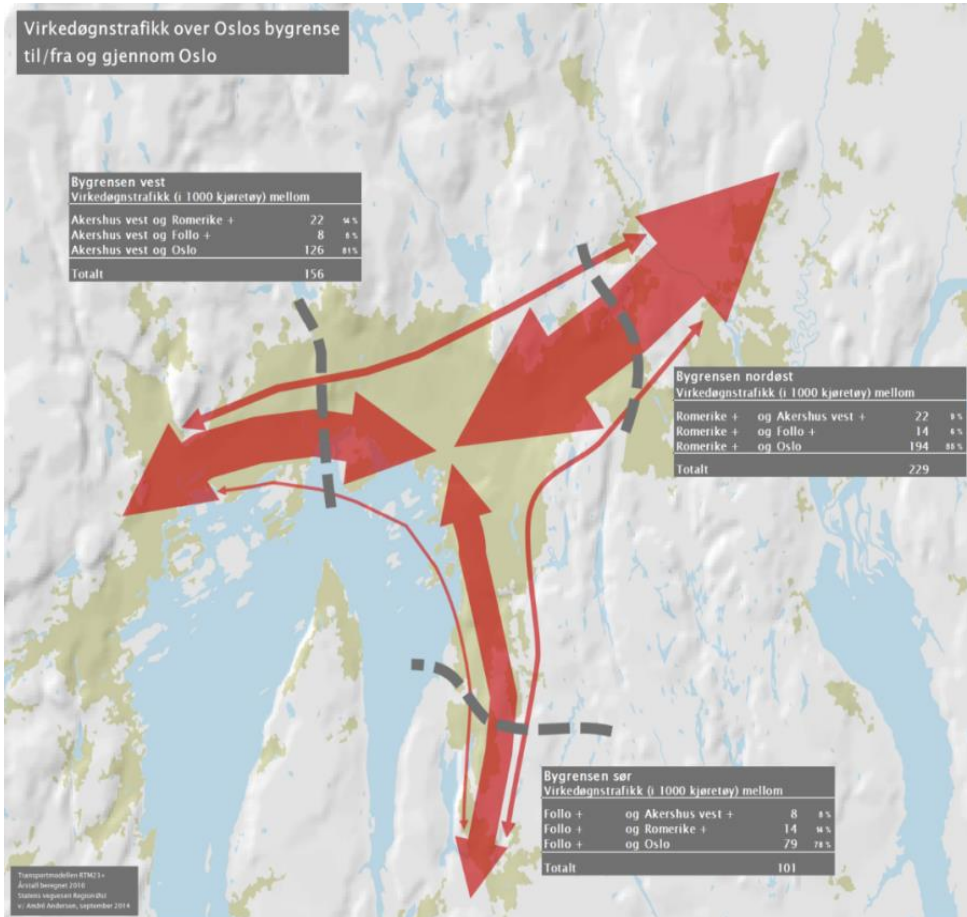
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Ruter`s region – total service area

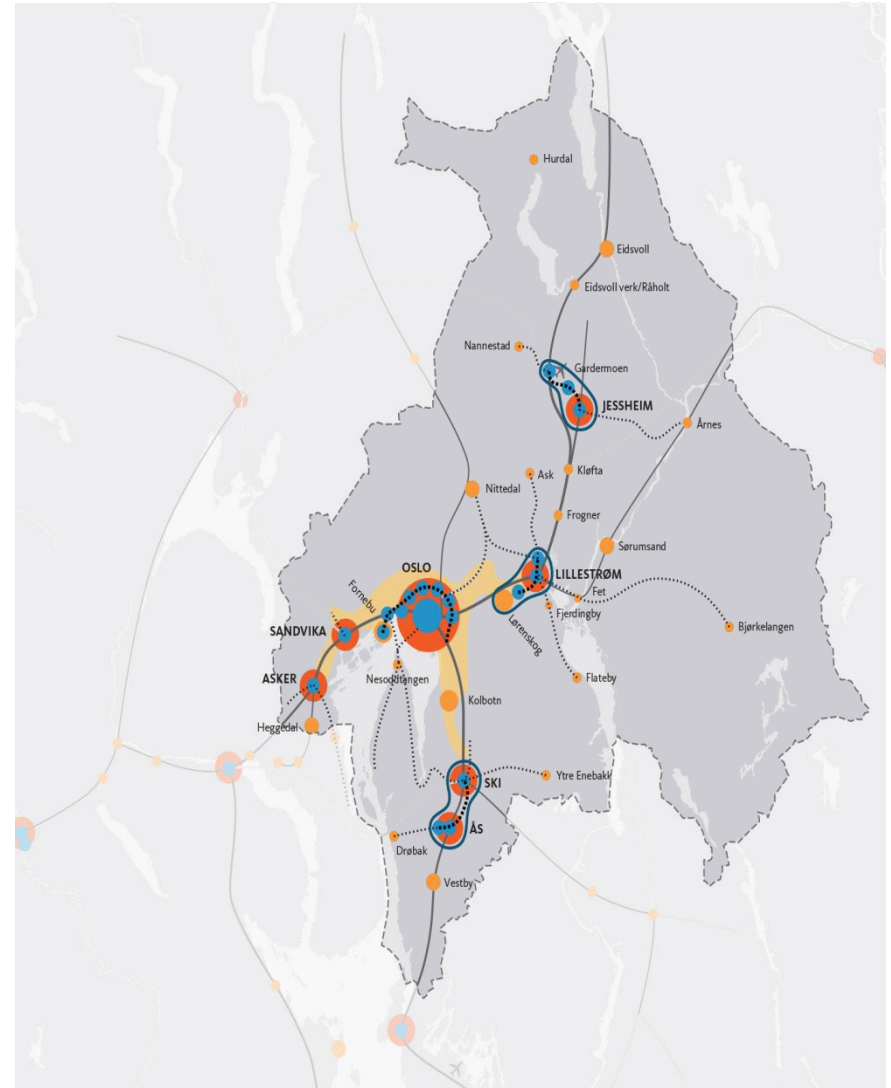
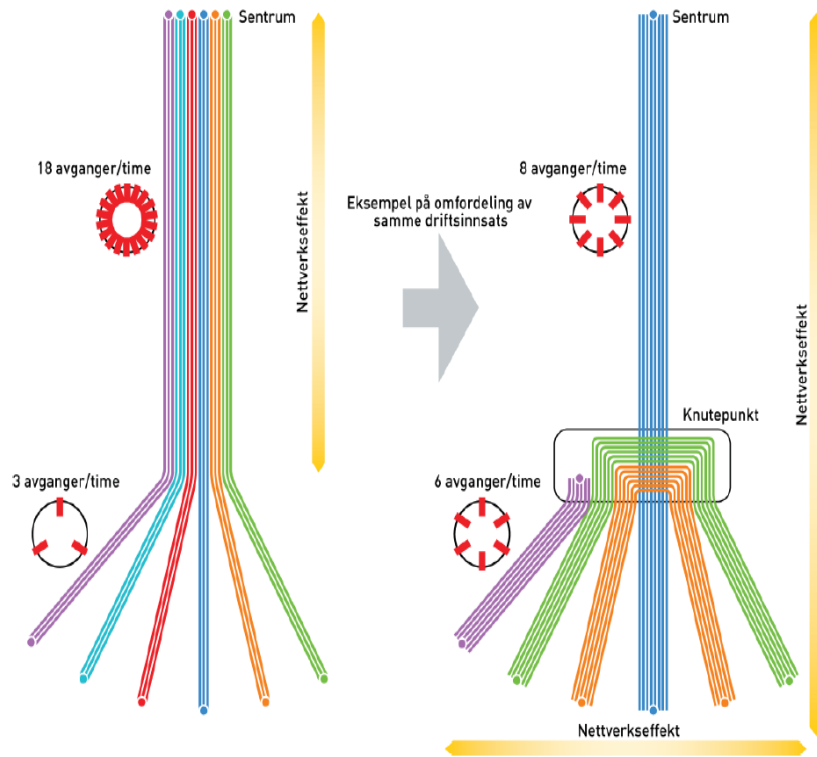
- Vast area, large rural region
- Densities highest in and near Oslo City
- Distance north to south is 100 km
- Cold in winter (-20° C) and warm in summer (30° C)



PT market share highest into and in the city

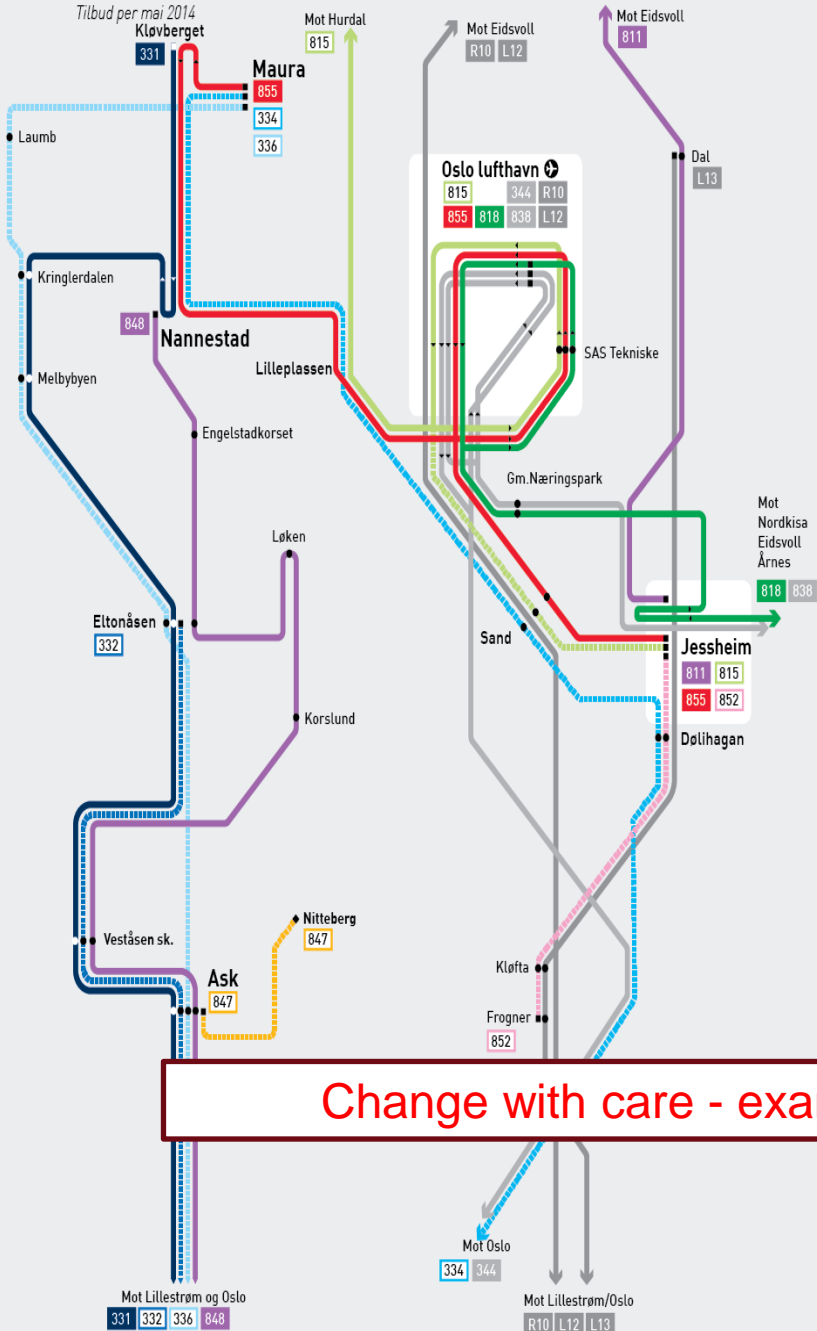


Planning strategy will make bus more local



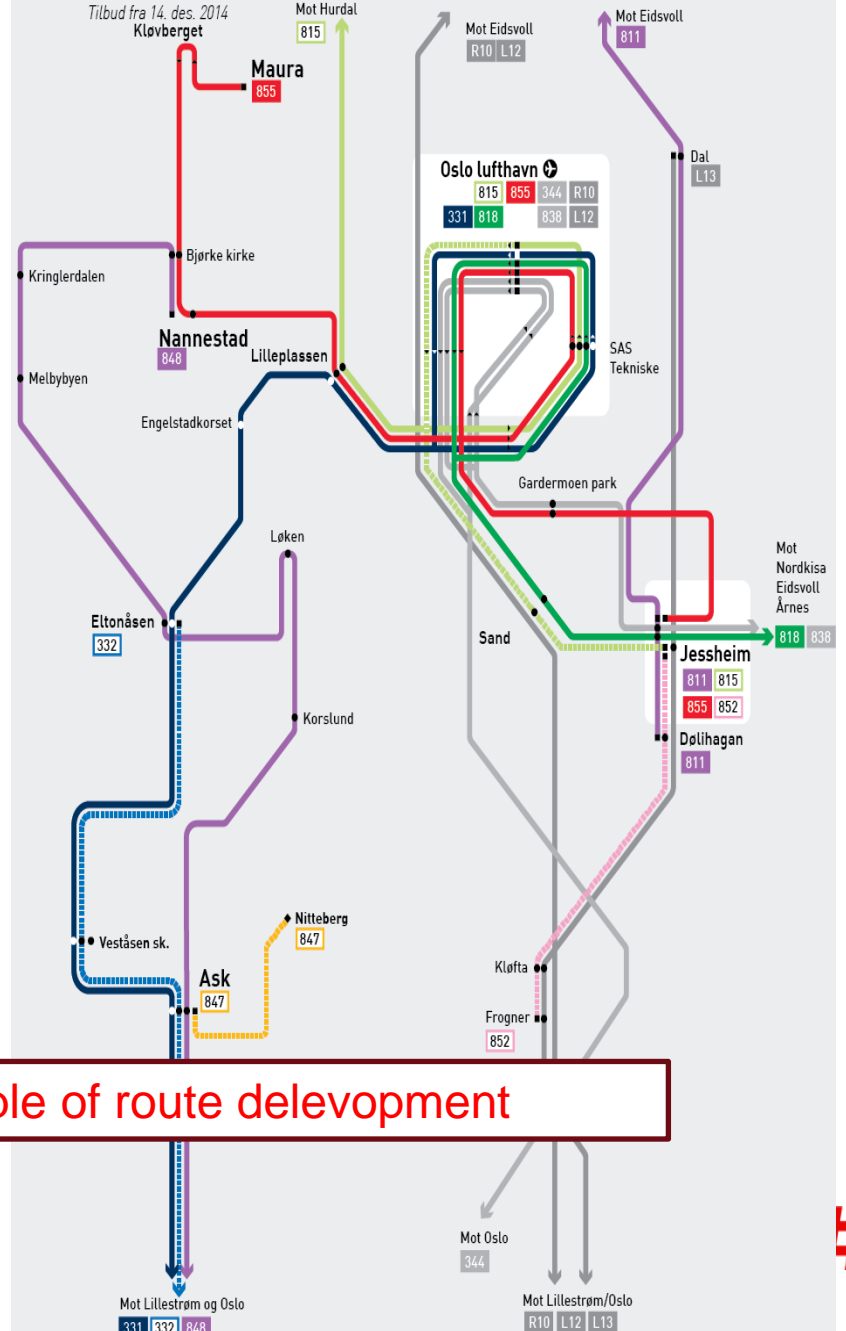
Gjerdrum, Nannestad og Ullensaker | Øvre Romerike
 Regionbuss & tog

Tilbud per mai 2014



Gjerdrum, Nannestad og Ullensaker | Øvre Romerike
 Regionbuss & tog

Tilbud fra 14. des. 2014



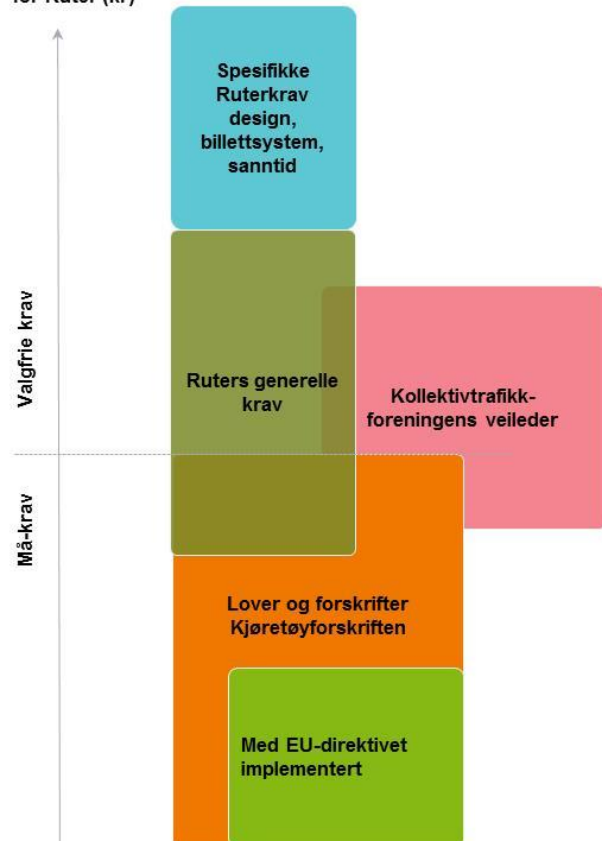
Change with care - example of route delevopment



Simplifying bus standard requirements

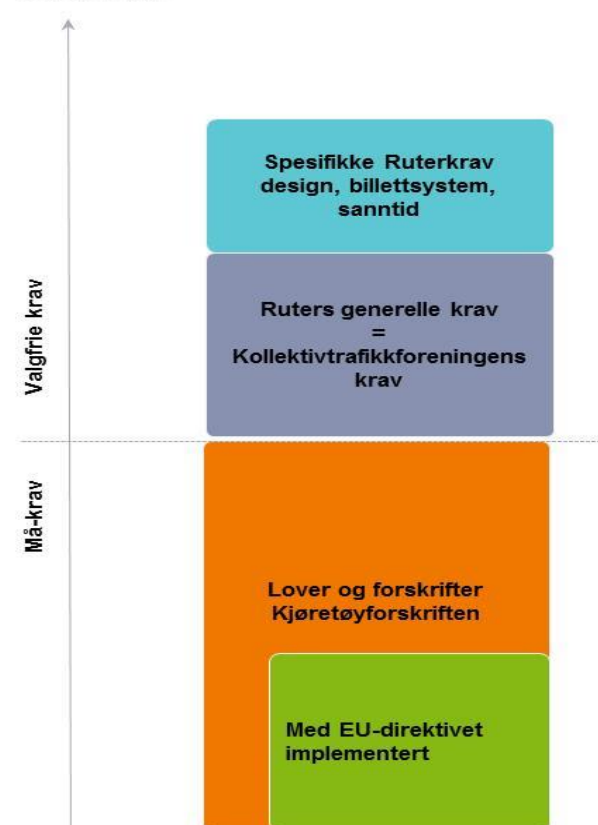
Before

Grad av handlingsrom for Ruter (kr)



After

Grad av handlingsrom for Ruter (kr)



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City bus operations

Ruter

Ruter#

City bus operations

- 8 contracts
- 88 million trips
- 50% of the buses are articulated.
- Normal operating hours
 - 05.00 AM to 01.00 AM
- Typical distance 400 km/day
- Two routes operate 24/7



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A green bus is shown from a side profile, with a large reflective panel on its side. The reflection shows a lush green field and a line of trees under a blue sky with white clouds. The bus has a green roof and a green body. The text "Regional bus operations" is overlaid in white on the reflective panel.

Regional bus operations

Ruter #

Regional bus operations

- 15 contracts
- 47 mill trips
- Variation in buses, no articulated buses
- Seat belts are required
- Normal operating hours:
 - 05.00 AM to 01.00 AM.
- Several rush hour routes only.
- Most buses could park at depot several hours per day
- Regulation time at end stops
- Mileage vary from 70 km/day to 500 km/day

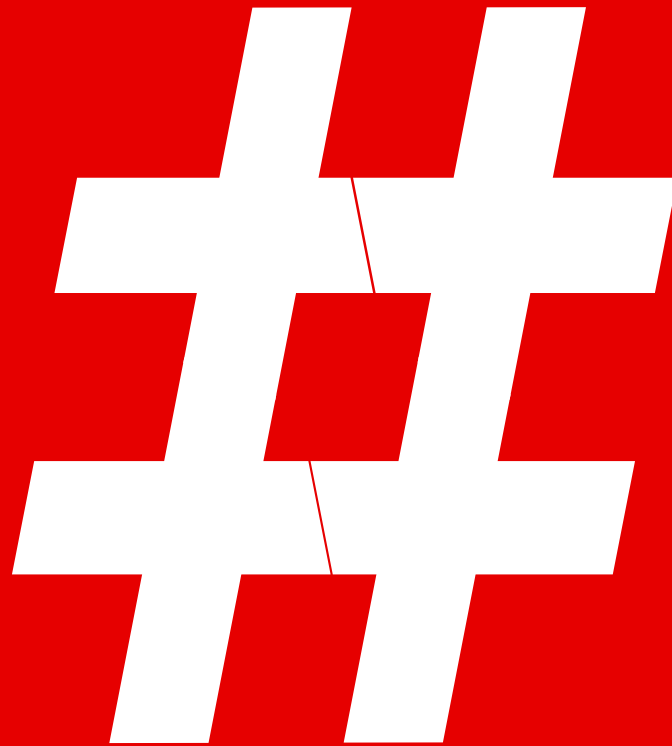


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Questions

Based on the region's public transport market and Ruter's requirements:

- Which battery electric buses on the market now and in the near future will be able to provide the services described?
- Is it realistic to introduce a significant number of battery electric buses to the region by 2020?
- Which areas of operation or services are best suited to these buses?
- What planning and operational adaptations do you anticipate will have to be made in order to put battery electric buses into service?



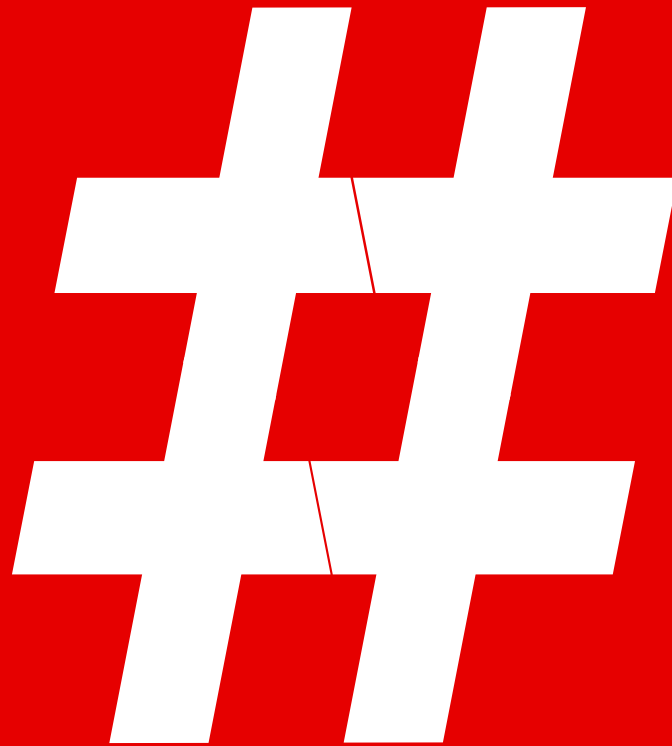
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«Elevator Pitch»

- Presentation of the conference participants

Jenny Skagestad, ZERO

Ruter#



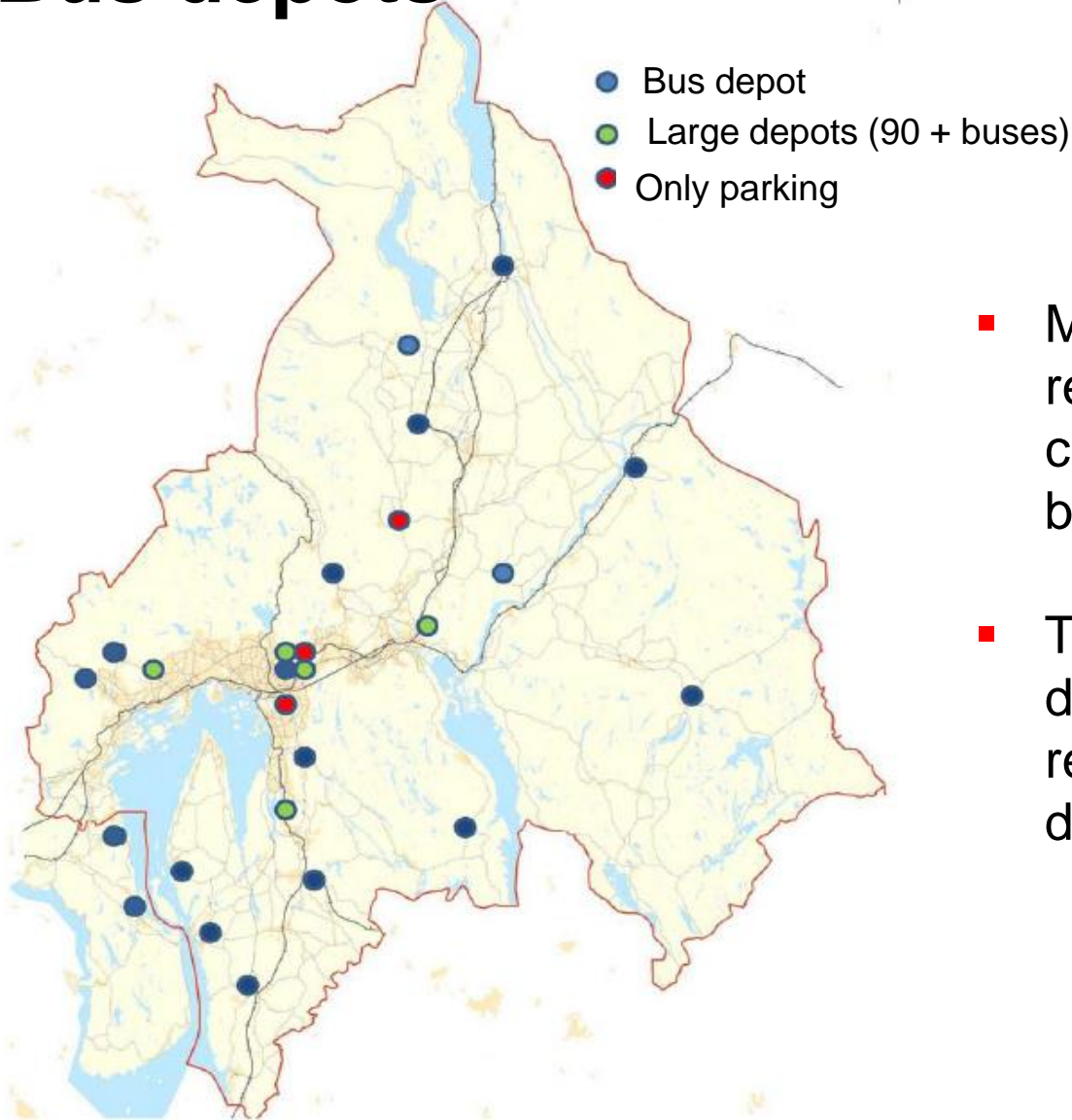
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Bus Depots and Infrastructure

Halvor Jutulstad
Head of Infrastructure Planning
Ruter

Bus depots



- Many bus depots in the region, some with capacity for over 90 buses
- The depots have different owners. Ruter rents many of the depots.

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How to introduce new fuels at the bus depots

- At the depots all buses are connected to electrical power, used for heating the engine.
- Normally the bus operator is responsible for establishing new infrastructure (eg biogas filling station)
- When the contract ends, Ruter acquires the filling station for free.



Experience with new fuels at depots

- Ruter has built a hydrogen production and fueling station at Rosenholm
- Owned, operated and maintained by Ruter (not the bus operator)



Infrastructure at the bus stops

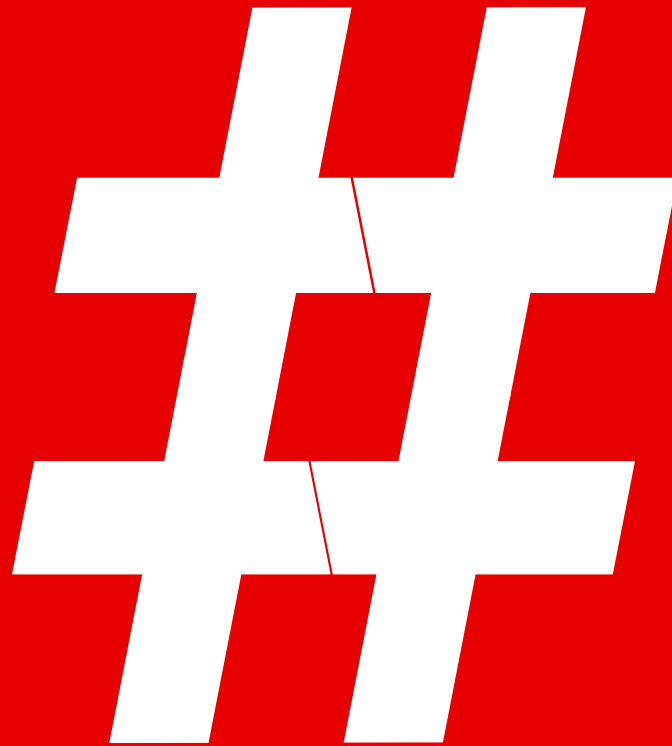
- Some bus stops are situated at metro and tram stations.
- The metro and tram in Oslo use DC 750V
- In the region it is approx 4000 bus stops.
- Many stops have no electricity, but many have light (220V)



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Questions

- What are the challenges linked to housing a large number of electric buses at one or several depots?
- Are some of the existing bus depots more suitable for electric buses than others?
- What are the greatest uncertainties linked to charging infrastructure and related services?
- What are the most relevant business models for charging electric buses?
- Since there are no charging standards. How to secure flexibility and long term use when investing in infrastructure?



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**Ruter's contracts and public
procurement: Are changes
needed to facilitate
for electric buses?**

**Hellik Hoff
Contracts Manager
Ruter**

Background information

- Ruter As (Ltd.) is a public owned company established in order to arrange the public procurement of the Public Service Obligation (PSO).
- All competitive tendering is governed by the Norwegian Public Procurement Act (NPPA), based on
 - EEA Agreement Art. 65
 - EU Directives of the Public Procurement.
- Ruter follows the NPPA to ensure transparency, non-discrimination, predictability and competitive public procurements.



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- Employees of a bus service transportation company are protected by The Norwegian Professional Transportation Act
 - Have the option to be transferred to the company winning the tender and taking over the service transportation contract.
- Facilities/bus depots are rented from private real estate owners and Bussanlegg AS (Ltd)
 - Bussanlegg AS: Subsidiary of the Sporveien Oslo AS (Ltd.) 100 % owned by the City of Oslo
- The Norwegian market of bus service transportation:
 - Consolidated and professionalized over the last few years
 - Needs further development to ensure stability, quality, sustainability
- Ruters competitive tendering today: normally 4 - 6 large bidders, all Scandinavian based companies



Ruter's contract scheme for buss, minibus, taxi and boat services

- Ruter is responsible for:
 - Planning and implementation of the competitive tendering of bus and boat
 - Marketing
 - Revenue risk
 - Arranging competitive tendering of the public bus transportation, and boat within the Oslo fjord area
 - Special contracts for transportation of disabled customers by smaller busses and/or taxis
- The Service Companies are responsible for:
 - A stabile and predictable service transportation



Ruters contract scheme is changing

- Ruter's competitive tendering and the terms and condition of our contracts are gradually changing:
 - From: Detailed specification where the bidder have few opportunity to present alternative solutions.
 - To : The use of functional requirements giving the bidders opportunities to present alternative solutions

Tender process – bus services (1):

- Ruter´s competitive tendering website: <http://www.kollektivanbud.no/>
- Dialogue conferences for potential bidders before tender process
- Pre-qualification competition of bidders prior to invitation to Tender
- Decision of pre-qualified bidders
- Announcement of and an invitation to bidders
- Tender conference and inspection of bidders
- Questions received and answers given on the website
- Tenders/bids received at the announced fixed date/hour

Announcements are always made on Ruter's website, TED and Doffin

Tender process – bus services (2):

- Evaluation
- Negotiations, usually 2 – 4 steps
- Final evaluation and decision
- Announcement of the winner and justification
- Signing of contract, after expiration of the complaint period (2 weeks)
- Debriefing-meetings with all bidder
- Monitoring the chosen bidder in the period leading up to contract handover and implementation
- Start-up of new bus service contract period (about 10 – 12 months after signing of the contract)

Ruter's award criteria

	Weight of each award criteria			
Contract name	<i>Vestre Aker</i>	<i>Oslo nord-øst</i>	<i>Follo og Østensjø</i>	<i>Vestby</i>
Price	50 %	55 %	50 %	50 %
Performance of the services	10 %	20 %	10 %	10 %
The buses – quality, functionality	15 %	10 %	15 %	15 %
Description of the planned efficiency of performance according to Ruter's timetable	15 %	10 %	20 %	20 %
Bus depot	10 %	5 %	5 %	5 %

Minimum requirements vs. award criteria

- Ruter may by using minimum requirements demand a certain level of the quality of the bus services offered or the bus standard
 - e.g. Euro 6
- A minimum requirement can be the use of only electric energy
 - This reduces the need of environmental award criteria
- Other possible elements in the environmental award criteria:
 - Certified power
 - Use of non polluting liquid/chemicals for bus washing machines
 - Recycling of water used



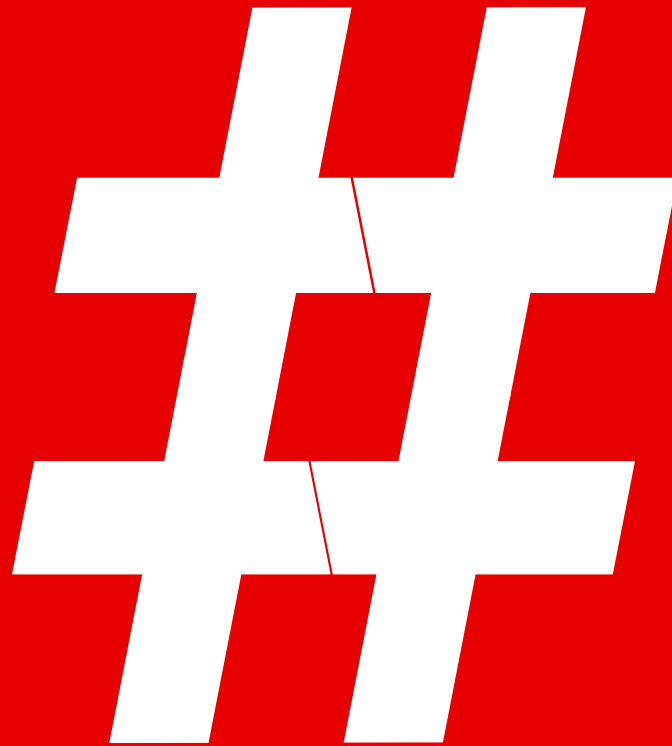
Incentives for the bus services companies

- Necessary with co-operation between bus service suppliers and Ruter to secure high customers satisfaction and low production costs
- Incentives today:
 - Bonus and malus (penalties) as part of the contract value has increased gradually and accounts now for 2,5 – 8,0 % of the annual value of the contract
- Incentives in the future – must it also be based on the number of paying passengers ?



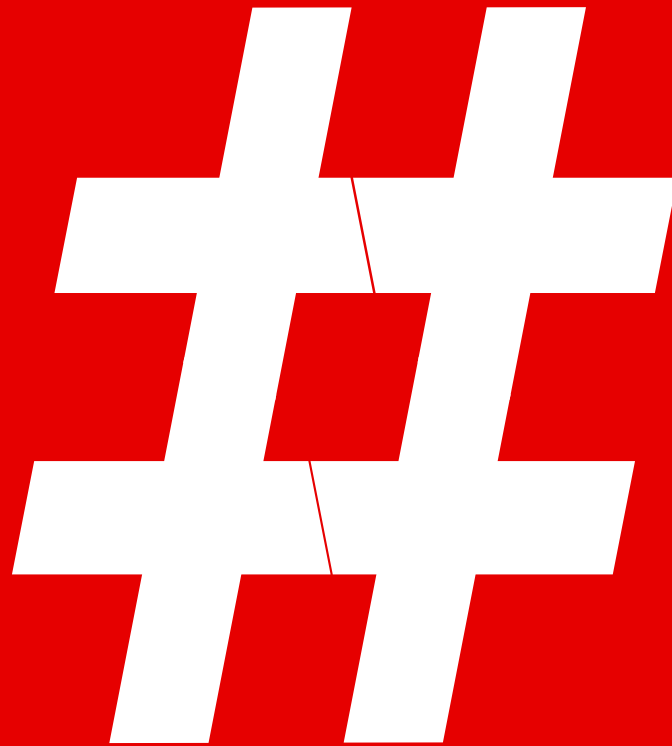
What changes are needed to facilitate for battery electric buses?

- Possible changes to the competitive tendering procedures:
 - Use of minimum requirements?
 - Does Ruter have to specify technological solution, or can this be left up to the market?
 - Reduce the weight of the price criteria?
 - Changes of the weight of environmental award criteria?
 - How to attract more international bidders?
- What are the most relevant business and ownership models for battery electric buses and associated infrastructure in our region?
 - Must Ruter take a larger responsibility for infrastructure?
- What level of risk can the suppliers and operators take, and what types of incentives are important for encouraging risk sharing?



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Questions & Answers



Ruler #

Guided tour of the public transport system

Starting at 15.00 hrs

Ruter #