

EPTA project

- Rogaland County Council
- Feasibility Study
- FS title: Integration and simplification of the fare and ticketing system in Rogaland
- English Summary
- Date: May 31, 2013. Modified August 6, 2013

1. Introduction

English title of Feasibility Study

Integration and simplification of the fare and ticketing system for public transport in Rogaland.

Background and content of study

As part of the EU/INTERREG-project European model for Public Transport Authority (EPTA), Rogaland County Council has conducted a feasibility study focusing on possibilities and barriers for better integration and simplification of the fare and ticketing system for public transport in Rogaland. Urbanet Analyse has assisted in conducting the feasibility study, which consists of five parts:

1. Mapping current travel patterns in Rogaland and expected growth the next 30 years
2. Description of current fare and ticketing system
3. Examples of integrated fare and ticketing systems in other regions
4. Integration in Rogaland – input from key stakeholders
5. Discussion of alternative strategies and recommendations

The feasibility study was conducted during the first half of 2013. The original, full report was written in Norwegian. This document serves as an extended English summary of the Norwegian report.

Methods and data sources

This report is based on the collection and review of relevant documents and reports, meetings and interviews with key stakeholders for public transport in Rogaland, and data from and calculations with the Regional Transport Model (RTM) for region West of Norway.

Urbanet Analyse conducted six personal interviews with representatives from the leadership in Rogaland County Council, Rogaland Kollektivtrafikk (also known as Kolumbus), which is responsible for the daily operation of the PT system in Rogaland, Norwegian State Railways, and Boreal Transport (biggest bus operator in Rogaland). The interviews did not follow a detailed interviewing guide, but took departure in a list of topics to be discussed (see Section 5). Minutes from each interview were written and these were controlled and commented by the respondents. In addition to the interviews, Urbanet Analyse arranged meetings with the above stakeholders to discuss the content and results of the feasibility study.

Key concepts

The most central concepts in this study are partly overlapping and not strictly defined. By *integration* we think primarily of joint ticket products across different modes of public transport and public transport authorities in Rogaland, i.e., bus/boat (Rogaland County Council), train (Norwegian State Railways – NSB) and state ferries (Norwegian Public Roads Administration – NPRA). Integration may also include other modes of cooperation across PT

authorities, such as, for example, tariffs, zoning system, routes, ticketing systems, sales channels and promotion.

A recurring theme in this report is «integration and simplification of the public transport system in Rogaland». *Simplification* refers to a broad set of factors and initiatives that can make it easier and more attractive to use public transport in Rogaland, including joint ticket products. Other examples of simplification include, for example, making the fare and zoning system more transparent, reduce and streamline the ticket portfolio, harmonize the definition of different customer groups, and develop new payment and ticketing solutions. Changes in routes, frequency and ease of passage for public transport may of course also make it easier and more attractive to use public transport. However, these are topics that are not considered in this study, see also the next section.

Limitations of study and further analyses

This feasibility study has been conducted within a limited framework. Several related and relevant topics have therefore not been addressed in detail in this study. The content and recommendations of this feasibility study must be viewed in light of these limitations.

Examples of topics that have not been addressed in detail include:

- Consumer demand for better integration and simplification of the public transport system in Rogaland, including the importance of this compared to other initiatives such as, for example, ease of passage for public transport
- Expected effects of integration and simplification of the public transport system, including, for example, demand for public transport, change in total ticket revenues, costs, investments, subsidies and potential efficiency gains, and the distribution of effects across different geographic regions and different consumer groups in Rogaland
- The importance of integration and simplification compared to other initiatives such as, for example, routes, frequency, ease of passage for public transport, pricing, land use planning, contract forms with PT operators, restrictions towards private car use, etc.
- These and perhaps also other topics should be addressed in more detail before decisions about integration and simplification of the public transport system in Rogaland are made.

2. Current travel patterns in Rogaland and expected growth

This chapter focuses on current travel patterns in Rogaland and expected growth in the population and travel over the next 30 years. The analysis of future population growth is based on population projections from Statistics Norway. The analysis of tourism flows, transport distribution and future transport growth in Rogaland has been based on data from the regional transport model (RTM) for region West of Norway. In the analysis we have split Rogaland into four regions, see table 2.1.

Tabell 0.1: Regions in Rogaland

Region/area	Municipalities
Jæren	Sandnes, Stavanger, Hå, Klepp, Time, Gjesdal, Sola og Randaberg
Dalane	Eigersund, Sokndal, Lund, Bjerkheim
Ryfylke	Forsand, Strand, Hjelmeland, Suldal, Sauda, Finnøy, Rennesøy, Kvitsøy
Haugalandet	Haugesund, Bokn, Tysvær, Karmøy, Utsira, Vindafjord

Population growth

With its 443 000 inhabitants Rogaland is currently the fourth most populated county in Norway. Rogaland has 26 municipalities, and the population is concentrated around the cities of Stavanger and Sandnes in the Jæren region and around the central parts of Haugalandet, see table 2.2.

Tabell 0.2: Current population and expected population growth in Rogaland

	2012	2040	Vekst 2012-2040	Andel av vekst
Stavanger	127 500	155 500	28 000	17 %
Sandnes	68 000	99 500	31 500	19 %
Sola	24 000	39 000	15 000	9 %
Remainder of Jæren region	73 000	114 000	41 000	25 %
Dalane	23 500	31 500	8 000	5 %
Ryfylke	32 000	42 500	10 500	6 %
Haugalandet	95 500	125 500	30 000	18 %
Rogaland	443 000	607 000	164 000	100 %

Projections by Statistics Norway suggest that there will be strong population growth in Rogaland between 2012 and 2040 (37 percent), of which about 70 percent in the Jæren region, see table 2.2. Only one in eight larger metropolitan areas in Norway has stronger expected population growth than the Stavanger region.

Need more than doubling of public transport in Jæren region

One of the main goals in The National Transport Plan 2014–2023 is that all expected transportation growth in larger metropolitan areas in Norway, including Jæren, should be taken by public transport, bicycles and walking (Climate friendly scenario). That is, there should be no increase in the use of private cars despite strong expected population growth. Based on the pojections for population growth, and an average of 3.5 daily travels per person,

this means that between 2014 and 2043, the number daily travels with public transport in the Jæren region must increase by more than one hundred percent, from about 90 000 travels to more than 200 000 travels per day.¹ This means that the public transport share of all travels must increase from about 10 percent in 2014, to about 15 percent in 2043. In a trend scenario, where no extraordinary public transport investments are being made, the public transport share will decrease slightly between 2014 and 2043, at the expense of more use of private cars, see table 2.3.

Table 0.3: Number of travels and transport mode shares in Jæren; trend and climate scenarios

	2014	Trend 2043	Climate 2043
Transport mode shares			
Car	65 %	68 %	46 %
Public transport	10 %	9 %	15 %
Bicycle and walking	26 %	23 %	39 %
Number of travels per day			
Car	610 000	900 000	610 000
Public transport	90 000	120 000	200 000
Bicycle and walking	240 000	310 000	520 000
Total	940 000	1 330 000	1 330 000

Current travel patterns

Results from the RTM suggest that about 1.4 million trips, or about 3.2 trips per capita, are carried out daily in Rogaland. About 70 percent of these trips are carried out in the Jæren region, see figure 2.1.

¹ The average number of daily travels per person is based on national travel surveys and includes all movements outside your own home, regardless of length, duration and purpose. Walking and cycling are reckoned as independent modes of transportation.

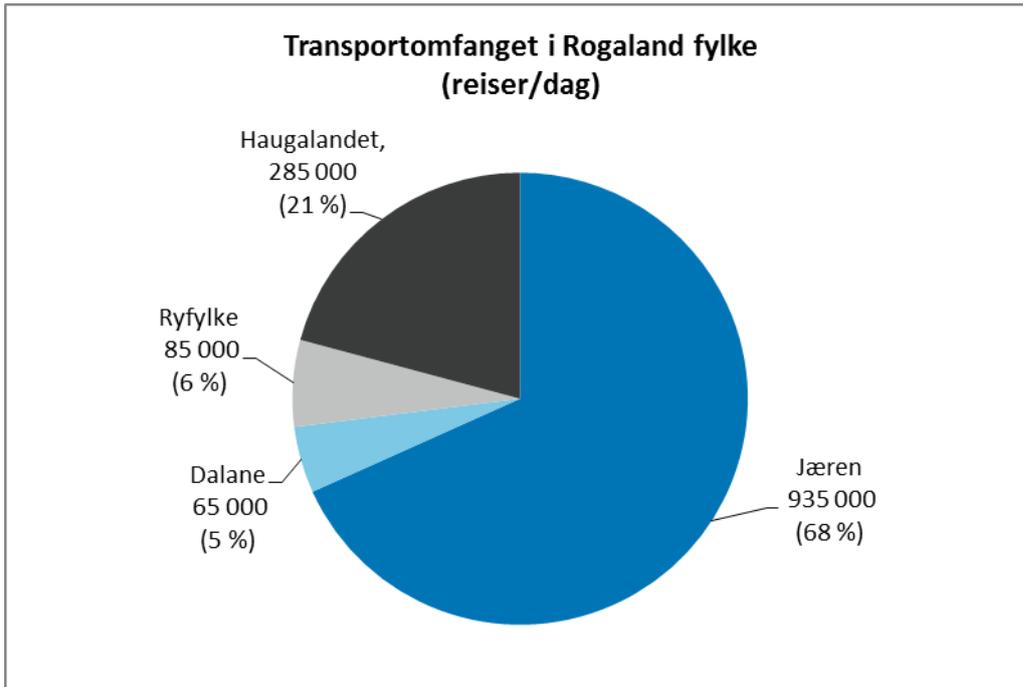


Figure 0.1: Number and share of daily trips in Rogaland County. Source: RTM

Most travel in Rogaland is by car – 66 percent of all trips. About 9 percent of all trips are by public transport (including school trips), while the remaining 25 percent of trips are by bicycle and walking. The public transport share is somewhat higher in the Jæren region (10-11 percent) than in other regions of Rogaland.

Tabell 0.4: Public transport in Rogaland, modes of transportation. Source: RTM

	Share of public transport		
	Bus	Train	Boat
Jæren	86 %	12 %	2 %
Dalane	85 %	13 %	2 %
Ryfylke	73 %	1 %	25 %
Haugalandet	96 %	0 %	3 %
Rogaland County	87 %	10 %	3 %

Approximately 80 percent of all public transport trips in Rogaland are carried out in the Jæren region. About 87 percent of all public transport trips in Rogaland are by bus, while the remaining 13 percent is split between train (about 10 percent) and boat/ferry (about 3 percent). The distribution of public transport trips across different modes of transportation varies across the different regions in Rogaland, see table 2.4. Data on to what extent public transport users in Rogaland shift between bus, train and boat on the same journey are largely missing, but we know that about 29 (2) percent of train users shift to/from bus (boat).

3. Current fare and ticketing system

Management and tariff authority

Rogaland County Council has the overall responsibility for organizing and managing public transport in Rogaland, including providing residents a generally good public transport system and offer mandatory services such as, for example, school transport. The County Council makes major decisions such as, for example, total grants and the total budget to public transport, and major changes in routes and ticket products. The company Rogaland Kollektivtrafikk (also known as Kolumbus) is responsible for the daily operation of the public transport system in Rogaland, including, for example, promotion and information, minor changes to routes, negotiating contracts with bus and boat operators, and develop new products and solutions that make it easier and more attractive to travel by public transport.

Rogaland County Council has tariff authority for most of public transport in Rogaland, but there are some exceptions. Rail services are provided by NSB, and here are fares, route production, etc. regulated by the “Traffic Agreement” between the Ministry of Transport and NSB. NPRA is responsible for the state highway ferries, where fares are regulated by the “State Regulative for Ferry Fares”. Finally, there are also airport shuttle services and cross-county express bus routes. These are generally operated on a commercial basis and are not discussed further in this report.

Overview of current ticket portfolio in Rogaland

Table 3.1 provides an overview of the current ticket portfolio for public transport in Rogaland. As we can see the ticket portfolio is diversified and tailored for different modes of transportation, tariff authorities, user groups and ticketing and payment solutions. Table 3.1 further shows that there are established joint ticket products across different modes of transportation and tariff authorities, but that this cooperation is fragmented and limited to period tickets.

Table 3.1: Ticket portfolio public transport in Rogaland as of April 16, 2013.¹

Ticket product	Description	Price (NOK) ²	Bus	Boat ³	Train	Kolumbus card ⁴
Single ticket bus	Zone-based fare. City zone; 15 kr, 1 Zone; 30 kr.	15-80,-	X			
Single ticket boat	Express boat; distance-based fare. Ferry; National Tariff for ferries.	30-311,-		X		
Single ticket train	Distance-based fare, sale through NSB.	From 36,-			X	
Travel Money	Kolumbus card. Provides up to 25 percent off monitor. single ticket purchased in cash.	From 15,-	X	X		U/P
Flexi Pass ^{5,6}	30 days bus within one zoning series (100, 200, 300 or 400).	630,-	X	(X)		U/P

Youth Pass	30 days 15 to 21 years. Valid on nearly all public transport in Rogaland.	300,-	X	X	X	P
Student Pass ⁶	30 days bus and train students 21-32 years, for selected zones.	From 375,-	X	(X)	X	P
Period Pass bus/train ⁶	30, 60, 90, 120, 150 or 180 days bus and train for selected zones.	From 650,-	X	(X)	X	P
Period Pass boat	30 days on a particular stretch by boat/ferry.	590-5171,-		X		P
Combo Pass bus/boat	30 days bus and boat in three selected areas. No discount children/ seniors.	1898-2088,-	X	X		P
Day and short term	1, 3, 7 or 14 days bus all zones. Children / seniors only 1 - day pass.	80-470,-	X			U/P/M
Island Hopping	2 days boat between Stavanger, Finnøy and Stjerna Royen (1 June-31. August).	210,-		X		U/P/M

¹ Sources: www.kolumbus.no and www.nsb.no (date: 16 April 2013).

² Prices quoted are for adult (except youth and student pass). Many ticket products have discounted fares for children and seniors, and added fares for night routes.

³ Boat includes boat transport administered by Kolumbus and state highway ferries where NPRA is responsible for operation and management.

⁴ Symbols Kolumbus Card: U = Impersonal, P = Personal, M = Mini Card (paper).

⁵ From 1 June 2013 Flexi Pass can be used on all buses in Rogaland (at unchanged price).

⁶ Flexi Pass, Student Pass and Period Pass bus / train can also be used on the boat to Byøyene, Usken and Hommersåkholmen.

Buses, boats and trains operate with respectively zonal, stretch-based and distance-based fare system, while ferry fares are based on the “State Regulative for Ferry Fares”. This creates challenges in terms of coordination and integration between these modes of transportation and associated tariff authorities. Furthermore, the zonal system for buses in Rogaland is relatively complex, with relatively many zones (about 136 zones), a separate zoning system for short trips within city centers, confusing zonal maps, and where some, but not all boat routes (close to Stavanger) are part of the zonal system for bus.

The electronic travel card in Rogaland is called “Kolumbuskortet”. It comes in three editions - personalized with name and date of birth (50 kr), impersonal (50 kr) and Mini-Card (single card in paper, 5 kr). One Kolumbus card can contain both Travel Money - to purchase single tickets - and period tickets, such as Flexi Pass. A few period tickets require personal Kolumbus cards, while others do not (see Table 3.1).

The review in this section shows that there is considerable potential for further integration and simplification of the public transport system in Rogaland. At the same time, the analysis in the previous section shows that there is also a need to exploit this potential because of the need to increase the use of public transport in Rogaland by more than one hundred percent over the next 30 years.

4. Integrated fare and ticketing systems in other regions

In this section we discuss experiences with integrated fare and ticketing systems in other regions. The first part focuses on an ongoing project in Norway that looks at opportunities for integration at the national level. The second part focuses on integration and simplification in the biggest region in Norway, the capital city Oslo and the surrounding county Akershus. The final part looks into experiences with “pay-as-you-go” ticketing systems in Denmark and London.

National project on integrated fare and ticketing system in Norway

In 2011, the Norwegian Ministry of Transport and Communications initiated a project to look at possibilities and constraints for having a nationally integrated fare and ticketing system in Norway, i.e., a common system across different counties, tariff authorities and modes of transportation. At this point (May 2013) only a pilot study has been conducted. The pilot study, which amongst others is based on interviews with most key actors in the public transport sector in Norway, provides recommendations for what to focus on in the main phase of the project. The most important findings in the pilot study are as follows:

There are considerable differences in fare and ticketing systems across different counties, tariff authorities and modes of transportation in Norway, and most key actors see it as important to keep their own tariff authority in order to attract customers, adapt to local conditions, etc.

Despite many differences, there are also several examples of cooperation and integration in the public transport sector in Norway. For example, some counties have bilateral agreements in using a common electronic travel card. In several counties, including Rogaland, there is agreement between the County Council and NSB on common ticket products for bus and train services

While it seems difficult to attain a system with common tariff principles across different tariff authorities in Norway, most key actors see it as possible to implement a system where electronic travel cards can be used throughout Norway and across different modes of transportation. The infrastructure for such a system is to a large extent already established (e.g., most counties use the same interoperable system/software), however, the potential of this infrastructure has not yet been utilized

Another recommendation from the pilot study is that before making important decisions on national solutions for integrated ticketing systems, the need for and design of such systems should be mapped among different customer groups through the use of consumer surveys

New price and zonal structure in Oslo and Akershus county (NYPS)

In October 2011, the new price and zonal structure in Oslo and Akershus (NYPS) was introduced. Oslo (the capital city) and Akershus (surrounding county) used to represent two different tariff authorities for public transport. In 2007, the company Ruter was established to achieve better integration of the public transport across Oslo and Akershus. Ruter plans, coordinates, orders and markets public transport in Oslo and Akershus.

The primary objective of NYPS was to make it easier for customers to use the public transport system in Oslo and Akershus. The most important changes as a result of NYPS were as follows:

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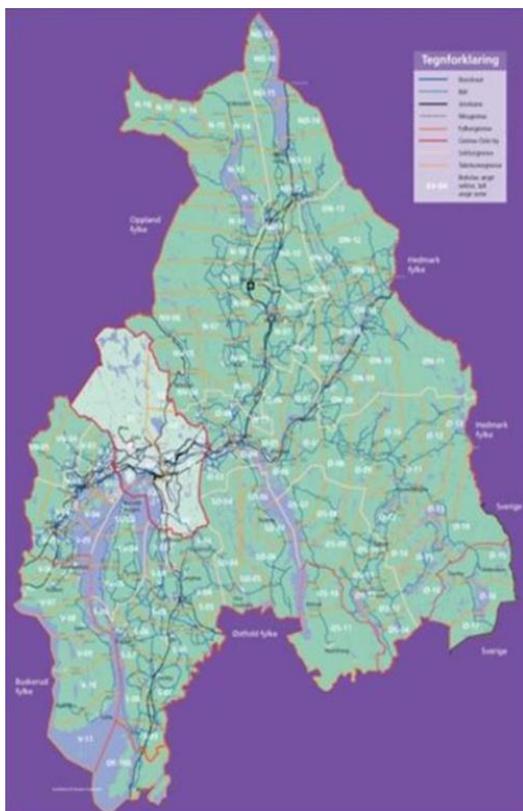
The number of zones in the zonal system was reduced from 77 to 8 (see Figure 4.1)

The Oslo zone was expanded to include a small part of Akershus county to make the complete metro system (T-bane) be part of Zone 1

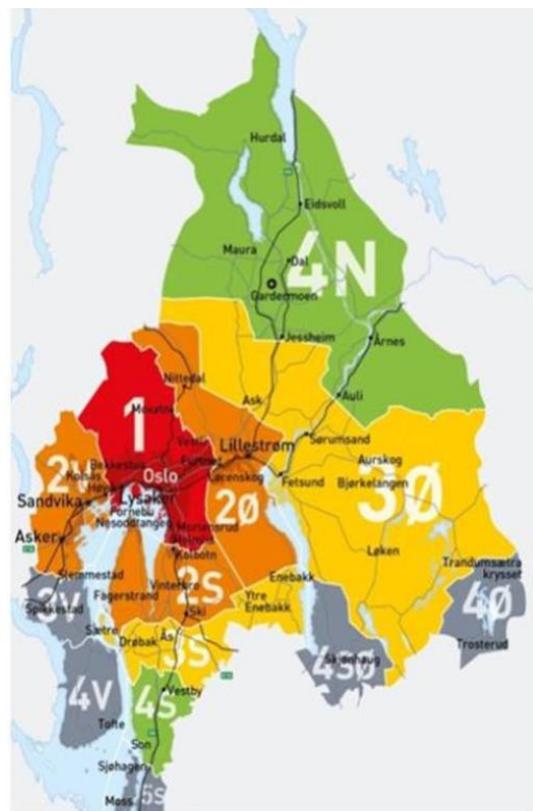
The number of different ticket types was significantly reduced and the fare per zone became the same in both Oslo and Akershus

Almost all ticket sales became electronic

In general, long trips became cheaper and shorter trips slightly more expensive. The new fare system led to a net revenue loss with a corresponding increase in the funding for public transport



Gammelt



Nytt

Figure 4.1: Old and new zone structure in Oslo and Akershus (Source: Ruter)

NYPS has thus far been subject to two external evaluations. These evaluations have focused on effects of NYPS on demand for public transport, and effects of NYPS on ease of use of public transport and customer satisfaction in general. With regards to effects of NYPS on PT demand, the evaluations find that it is generally difficult to isolate such effects, and that it is probably still too early to conclude on these matters; the evaluations do find effects of tariff changes on demand; in areas where fares became cheaper after NYPS, ticket sales increased. The evaluations find that most customers are positive to NYPS, with an exception for some few customer groups for which PT fares increased as a result of NYPS. With regards to ease of use of public transport, NYPS seems to have had an effect mainly on new customers.

Ticket systems in Denmark and London

The report discusses “pay-as-you-go” ticketing systems using Denmark and London as examples. “Pay-as-you-go” is a system in which an electronic travel card must be validated when boarding a bus, metro, etc., including on possible transitions, and when ending a trip.

Denmark has recently implemented such a system at the national level with a common travel card called Rejsekort. Rejsekort A/S is owned by the various PT operators in Denmark. As of April 2013, Rejsekort can be used on all trains throughout Denmark and generally on bus and metro travel in all areas except Fyn and Central Jylland. The long-term goal is that Rejsekort can be used on virtually all train, bus and metro travel throughout Denmark.

Rejsekort is based on a “Pay-as-you-go”-system (see above). Based on these validations, the electronic ticketing system automatically calculates the fare for the customer, including with possible discounts such as volume discounts and hour-based discount (outside rush hour). It also forms the basis for the settlement of ticket income between the different PT operators, which are relatively free to determine their own fare and zoning systems. Customers can choose from three types Rejsekort – Personal, Flex and Anonymous. These cards have different characteristics and meet different needs, such as automatic filling of travel money, combining individual trips with period tickets, cards that can be used by multiple customers, etc.

The goal in the long-term is that two million customers shall posit a Rejsekort, and that 500-600 million trips shall be carried out annually with these cards. As of March 17 2013, 311 379 Rejsekort have been issued, and 15.7 million trips have been carried out using these cards. Thus, the system with Rejsekort is still at an early stage in Denmark. But according to preliminary market analysis, Rejsekort has generally been well-received by customers. Some customers claim that they already travel more or intend to travel more with PT as a result of Rejsekort, but so far there has been no thorough analysis of whether this is the case in practice. The biggest challenge so far seems to be that some customers find it difficult to get an overview of how fares and discounts are calculated when using Rejsekort.

The Oyster card in London was first introduced in 2003 and can today be used on all public transport in London. The Oyster card seems to be user-friendly and generally provides significant discounts compared with other forms of payment, and this is reflected in the PT market; today seven million Oyster cards are used regularly, and more than 80 percent of all bus and metro travel in London is now paid using the Oyster Card.

The Oyster card in London has some similarities with Rejsekort in Denmark; it can be managed online, you may sign up for automatic re-filling of travel money, and you can combine single tickets and period tickets in the same card. Oyster card must be validated at the start and end of some modes of transportation, such as the Tube and trains, while on other modes of transport, such as bus, tram and boat, you only need to validate the card at the start of the journey.

The Oyster card system is organized such that using this card is never more expensive than using other forms of payment; for example, a maximum daily fare is calculated regardless of how many single travels you register on your Oyster card, such that using the Oyster card is cheaper than buying a paper-based daily ticket. In 2013, the electronic ticketing system in London will be further simplified by allowing for the Oyster card to be integrated into credit cards with validation using Near Field Communication (NFC) technology. Mobile apps for single journeys and period products - which are introduced in the Oslo and Akershus – do not seem to have been introduced in London as of April 2013.

5. Integration in Rogaland – input from key stakeholders

This chapter is based largely on information and input from key stakeholders for public transport in Rogaland. Urbanet Analysis has interviewed representatives from the general management in Rogaland County Council, Kolumbus, NSB and Boreal Transport (bus operator).

More and better integration of public transport wanted and needed

A general impression from the interviews is that the key actors are positive about integration of public transport systems in Rogaland, and that there is a desire for more and better integration than is established today. Several of the respondents pointed out that further integration between bus, train and boat is one of several basic requirements to make it easier and thus more attractive to use public transport in Rogaland. Simplification, including further integration, is a prerequisite for being able to meet one of the main goals in The National Transport Plan 2014–2023; that all expected transportation growth in larger metropolitan areas in Norway, including Jæren, should be taken by public transport, bicycles and walking.

Rogaland County Council believes that it is natural to formulate a long-term goal of reaching full integration of tickets and ticketing systems between bus, boat and train and associated tariff authorities, and that this should be seen in the context of also simplifying the ticket portfolio and zonal system in Rogaland.

More integration versus other initiatives to increase use of public transport

Although most respondents point out that further integration is a key measure to make public transport more attractive in Rogaland, several mentioned that other initiatives are probably more important. This is especially initiatives related to frequency, regularity and ease of passage for public transport. For example, today buses in the Jæren region mostly follow the same routes, and are thus in the same traffic jams, as private cars, rather than drive in separate bus lanes, and this naturally creates challenges with regard to complying with timetables.

Integration between bus and train services

As seen in Table 3.1 there is cooperation and integration between Kolumbus (bus) and NSB (train) on 30 day period passes (youth, students, adults). The underlying Ticket Agreement for this cooperation is valid for one year at a time. Two guiding principles are central to the Ticket Agreement: (i) Kolumbus and NSB keep the ticket revenues from their sales of the three different period passes, and (ii) for passes sold by NSB, Kolumbus must compensate NSB for the difference between their fares, as determined by the County Council, and NSB fares, which are determined through the “Traffic Agreement” between NSB and the Ministry of Transport.

All respondents were positive about cooperation between Kolumbus and NSB as it seen as important part of providing an attractive public transport system in Rogaland. However, there are several challenges associated with the cooperation, such as, for example:

- Kolumbus and NSB keep the ticket revenues from their sales of the three different period passes, instead of splitting revenues based on actual travel statistics with bus and train with the different passes
- This system provides incentives for selling a highest possible share of the relevant ticket products, with associated risk of potentially irrational sales and payment channels
- Insufficient travel statistics can make it difficult to reach an agreement about the size of tariff compensation from Kolumbus to NSB
- Insufficient travel statistics and the absence of validation machines for Kolumbus cards at trains and train stations makes it difficult to achieve further integration between bus and train on, for example, single ticket journeys
- Kolumbus has limited budget authority. The Agreement with NSB, including agreement on the size of the tariff compensation must be approved politically by the County Council. This causes delays in reaching agreement – for example, the Ticket Agreement between Kolumbus and NSB for 2012 was not signed and settled at the end of April 2013

Integration between bus, ferry and express boat

As seen in Table 3.1 there is currently some integration between bus, ferry and express boats in Rogaland. However, the integration is relatively fragmented, where some, but not all boat routes (close to Stavanger) are part of the zonal system for bus, and the Combo Pass issued for specific combinations of boat routes and zoning series for bus.

With the exception of state highway ferries Rogaland County Council has tariff authority for both buses, express boats and ferries in Rogaland. Thus, the basis for further integration between bus and boat is good. The infrastructure is also well suited as all buses and most ferries and express ferries have validation machines for Kolumbus cards.

According to one of the respondents, more integration between bus, ferry and express boats in Rogaland have been considered previously. However, some boat routes are very long and therefore difficult to integrate into the zonal system for bus.

One of the respondents believed that coordination between bus and boat is less important than coordination between bus and train. First, in Rogaland the number of trips including transitions are far greater for the combination bus/train than the combination bus/boat in Rogaland. Second, the private car is a much more relevant competitor for travelers on the combination bus/train than travelers on the combination bus/boat; for travelers on the combination bus/boat, the private car is not a very relevant alternative mode of transportation, irrespective of degree of cooperation between bus and boat ticket products.

At the same time, the respondent from Rogaland County Council emphasized that the ambition should be to reach full integration between bus, train and boat services in Rogaland (see above).

Simplification of the zonal system

The County Council has decided that Kolumbus should review and possibly change the zonal system for bus in 2013. It is natural to coordinate the evaluation of the zonal system with this feasibility study on integration and simplification of the public transport system in Rogaland.

Several respondents were critical to the solution with a separate zonal system in city centers in Rogaland, where you can buy cheap single tickets (15 kr). One of the respondents said that this scheme is difficult to understand for both customers and bus drivers. It is particularly challenging to know where the boundaries of the city center zones are, as these are often crossing zones within the ordinary zonal system.

6. Discussion of alternative strategies and recommendations

Ambition: full integration of fare and ticketing system in Rogaland

The long-term goal of Rogaland County Council is to reach full integration of the fare and ticketing systems for public transport in Rogaland. This is a natural goal and a good starting point. The ambition of full integration as well as simplification of the fare and ticketing system can, for example, be stated as follows:

"In the future there shall be full integration between bus, boat and train services in Rogaland, and the ticket portfolio, zonal system and payment solutions shall become much simpler and more transparent than they are today".

There are several good arguments to formulate such a demanding and ambitious goal. Most importantly; full integration and general simplification does not guarantee that more people

will use public transport in Rogaland, but the opposite is likely to cause a reduction in the public transport share in the long run. Expectations for simple, user friendly solutions is increasing rapidly in society as a result of, amongst others, technological advances, and here the public transport system in Rogaland is already lagging significantly behind. Also, private cars are becoming increasingly more comfortable and household real incomes are steadily increasing, especially in the Jæren region. Thus, in Rogaland public transport is becoming less and less attractive relative to using private cars, and this trend will not be reversed unless significant initiatives are taken to make it easier and more attractive to use public transport in Rogaland. This includes, amongst others, better integration and simplification of the fare and ticketing system for public transport in Rogaland.

Need for coherent strategy to meet future transport growth

The above goal for integration and simplification of the public transport system in Rogaland is ambitious, and it is challenging to know how and at what time such a goal can and should be reached. A natural first step before initiating processes and single initiatives may be to discuss and decide on an overall, coherent strategy. Urbanet Analyse sees it as natural that Rogaland County Council and possibly other key actors decide on such a strategy themselves, but key questions for choice of strategy may include:

1. Should coordination and simplification be a clear priority area, or is it more important to channel scarce resources for public transport to other initiatives, such as higher frequency and ease of passage for buses?
2. Is there a need to establish a formal and comprehensive project for integration and simplification of the public transport system in Rogaland, or should this evolve naturally and through single initiatives (e.g., evaluate zonal system without at the same time evaluating integration and simplification of ticket portfolio)?
3. Should integration and simplification be included as part of a larger strategy for making public transport more attractive in the Jæren region, for example, through the application of state funding as described in the National Transport Plan 2014-2023? If yea, should the County Council then consider the possibility of taking over the tariff authority and responsibility for local rail services, as outlined as a possible solution in the National Transport Plan 2014-2023?
4. Is there a need to make clear priorities for certain areas and agreements, such as the Jæren region and the agreement between Kolumbus and NSB, at the expense of other regions and agreements in Rogaland?
5. How should the responsibility for integration and simplification be shared between Rogaland County Council and Kolumbus, and when and to what extent should other key players such as NSB, operators and customers be involved? Can and should the tariff authority be delegated from the policy level to the management level for public transport?

6. Shall integration and simplification be revenue neutral or generate more revenues? Alternatively, how will increased investments or reduced revenues be funded?

Single initiatives

The above points on having an ambition and a strategy for the public transport system in Rogaland are overall, general recommendations. The original report in Norwegian also discusses more specific, single initiatives that should be considered by Rogaland County Council. These include:

- Need for better travel statistics as foundation for more integration and simplification: The travel statistics for use of public transport in Rogaland, including number of travels with bus, boat and train, and particularly transitions between these modes of transportation, is insufficient. Such data should be collected, in the long term as part of the ticketing system, and in the short run through 1-2 yearly travel surveys. The Agreement between Kolumbus and NSB, including distribution of revenues, should be based in such data on actual travels instead of each partner's ticket sales. Better travel statistics also makes it easier to further integrate and simplify the ticket portfolio for public transport in Rogaland, evaluate the use of public transport, etc.
- Assess full integration between bus, train and boat as one alternative when evaluating zonal system in 2013: As indicated above, Rogaland County Council has decided that Kolumbus shall review and possibly change the zonal system for buses in 2013. Kolumbus should consider full integration between bus, train and boat services, along with simplification of the zonal system and ticket portfolio, as one of several alternative solutions. The NYPS model in Oslo and Akershus (see above) could serve as a basis for such an ambitious solution. The assessment needs to consider consequences for costs and investments, demand, ticket revenues and distribution of effects across different regions and customer groups, amongst others.
- Consider abolishing the system with separate zonal system and tickets for city centers: This system is confusing for both customers and bus drivers and not much used.
- Map consumer demand for better integration and simplification of the public transport system in Rogaland
- Consider having integration between Kolumbus (bus) and NSB (train) also on single tickets, and not only on period tickets
- Consider whether personal Kolumbus cards are really needed
- Maps for zonal system in Rogaland are partly overlapping and confusing, and should be made more transparent
- Consider increasing the discount for using Kolumbus card on single tickets to reduce cash sales on buses

- Consider integrating night bus routes as part of the ordinary fare and ticketing system instead of having price premiums on these routes

Good Practice indicators

Below is a list of Good Practice indicators for better integration of fare and ticketing systems in the PT sector. The indicators are based on the results of the feasibility study in Rogaland, which also draws on examples of integration from other regions.

- As a result of rapid technological advances and increased expectations with respect to user-friendly solutions, better integration of fare and ticketing systems is a necessary, but not sufficient condition for maintaining and hopefully increasing PT shares in regions such as Rogaland
- Integration of fare and ticketing systems should not be seen in isolation, but be integrated as part of a comprehensive and coherent strategy to make PT services more attractive for the customers
- As part of such a strategy one needs to decide whether integration of fare and ticketing systems should be a clear priority area, or whether it is more important to channel scarce resources for PT services towards other initiatives, such as higher frequency and ease of passage for buses
- One also needs to decide who should have overall responsibility for a strategy that involves better integration of fare and ticketing systems, and also decide when and to what extent involve other key stakeholders such as PT operators
- Experiences from Rogaland and other regions suggest that it is easier to integrate (electronic) ticketing systems than to integrate the fare structures of different tariff authorities (e.g., local bus and regional train fares)
- It is, however, possible to implement systems in which the fare structure appears integrated to the customer, through integrated PT products, but where ticket revenues are divided between different tariff authorities and PT operators through back systems, either based on data from validation of electronic travel cards (e.g., London) or comprehensive manual counts of PT use (e.g., Oslo)