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A Week without Truck Transport: Four Regions in Sweden

HE 2009-09-23

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Summary and comments

Trucks are a necessary link in the logistics chain. All products are at some point in time transported by truck. In one year, 406 million tons of goods are transported in Sweden. 353 million tons are moved by truck. 36 million tons are food products or other agricultural products. Of all trucked goods, a major part, 91%, are transported distances less than 30 miles.

What would happen if this transport did not take place? To get a concrete answer to this question, Swedish Association of Road Haulage Companies (SA) has studied what would happen if truck transport stopped without warning. The study has up to now been conducted in four regions, Falun/Borlänge, Borås, Växjö and in Umeå. A condition for this examination was that no advance warning of a stop was given. The stop was for one week. This was done to eliminate what usually happens in a crisis, the hoarding of necessities.

Already on the first day one could see, in the places being studied, that fresh produce in food shops was running out. The morning paper could not be delivered to all subscribers. Letters for local delivery could be distributed, but letters and packages could not be sent out of town. For example, postal orders placed in Borås could probably be packed, but just as long as there was space to store the packages.

Within industry the increasing demand for deliveries of component products within exacting time frames has forced closures. This applies as well to district heating, which is dependent upon a continual supply of biofuel (woodchips). A winter day can require 60-70 truck deliveries to keep heat production going.

Depending on how the days go by, the supply of household goods is reduced. Vital social functions such as medical care and food supplies are severely affected within one week.

That grocery stores suffer a lack of products is easy to understand. Everyone who shops in a grocery store sees that products sold out are being refilled with new deliveries. That medical treatment would be so strongly affected when trucking stops is something that most people would not expect. But a lack of clean linen, food for patients and the difficulty in getting rid of garbage and hazardous waste can delay operations, and in other ways make it difficult to treat patients.

Another thing we never think about is that water supplies are dependent upon the delivery of chemicals. Without them you cannot guarantee that water is fit to drink. Another problem is with waste water by-products. If the by-products of water treatment cannot be trucked away then they have to be pumped out into the closest lake. In the treatment plant of an average sized Swedish town, 3-4 trucks of waste product (sludge or slime) are removed daily.

We draw the conclusion from our examination that truck transport today is an integral part of all commerce, and that without it we would have trouble making society function. Truck transport is truly the circulatory system of our society.

Hans Engström
Project leader

Introduction

During 2006 over 300 million tons of goods were transported by road. Most of this transportation is of things that we need to be able to live our lives as we are used to. This transportation is necessary for many social functions.

This report examines what happens when all transportation with heavy trucks stops for a week. The goal is to show the importance that truck transportation has for the functioning of society. The probability that all truck transport will unexpectedly stop is small, but the scenario shows clearly the importance of work performed by trucks today. On a local level, more likely occurrences, such as strong floods, can have similar serious consequences.

The results in this report are based primarily on interviews with key people in local firms in four places in Sweden. Borlänge/Falun, Borås, Växjö and Umeå. These firms cover only a portion of the areas in society that are affected by truck transport. The interviews indicate furthermore that there are critical social functions that soon stop if trucks stop rolling. Based on the interviews, we have predicted a series of events that might occur if there is a stoppage of truck transport. The series of events described is based on an observation of the results from the four regions. In a separate section we will deal with some differences between the four regions.

Background

In Great Britain, professor Alan McKinnon at Heriot Watt University has completed a study of the consequences of a complete stop of all heavy truck transport in Great Britain. The report clearly shows how dependent society is on truck transport. In Sweden, unfortunately, a similar study of truck transport is lacking.

Paul G. Höglund, at Transforsk-Transearch has completed a preliminary study looking for research that could be used as the basis of a study similar to that done by McKinnon. But such research was not found in Sweden.

The former "Crisis Management Authority" conducted three exercises based on of the following hypothetical scenarios; an influenza epidemic, powerful snow storms and a terrorist attack. The authorities also completed several sector studies to show how different parts of society are affected with different scenarios. Several of the later studies show how society is dependent upon a well functioning transportation system.

The Crisis Management Authority's revised report in "If one falls - does everyone fall?" (2008) delivers suggestions with the intention to be prepared for a crisis. The report concludes that the transport sector, together with electricity and electronic communication, has the greatest consequences for society's other important functions if it is stopped or interrupted. Such functions include fuel supply, food delivery and health care.

However, none of the studies give a picture of how a lack of transportation, in particular truck transportation, in practice affects our daily life. For that reason Sweden's Transportation Business has contacted a number of firms and businesses in four regions to get a picture of the flow of truck transportation in their region.

Method

The collection of data starts with a pre-study by Tek.Lic. Paul G Höglund, at Transforsk-Transearch. In the pre-study, Höglund contacted researchers, businesses, institutions and authorities in order to determine what research had been done in Sweden about the importance of truck transport for society's functions.

When it was shown how little research had been done in this area, Scantech Development AB was given the job to develop a method to examine the importance of truck transport in different areas in Sweden. As part of this work, Scantech contacted a series of branch organisations and larger firms in an attempt to compile key figures about truck transportation. Scantech has also examined reports and other publications that had some relation to the questions being asked.

The work progressed in this way: The SA regional office (Mittåkarna) completed a study of missing or delayed truck deliveries in Borlänge/Falun (report of April 2008). SA regional office in Västra Götaland studied Borås' (report of June 2008), SA regional office Småland-Öland studied Växjö (report of August 2008) and SA regional office Norr studied the consequences in Umeå (report of February 2009).

Data collection has been done by telephone interviews with representatives from different activities. We thank everyone who willingly and generously gave us information.

The importance of truck transportation for society

Road transport is responsible for about 72% of all freight transportation in Sweden, by weight, and over 88% by value, according to statistics from Statistics Sweden (SCB). Truck transportation constitutes above all as a great deal of the local transportation work, both local transport between places, and as a part of the greater chain of transportation. Truck transport is in this way often a precondition for other means of transportation.

Truck transportation can replace most other forms of transportation but is not itself easily replaced by them. Rail and ship are by their nature confined in their flexibility, and for that reason truck transport has become a link in the chain of transportation used by others, for example to and from airfields, harbours and rail terminals.

The Crisis Management Authority stated in its working material "*Beroende och konsekvensanalys Transporter 2008*" that "if the local transport system does not function, then no other real system exists to handle transport, and to take care of logistics". They also concluded that "little transportation can take place just with rail, sea or air.

Many businesses in society today are dependent upon fast and flexible deliveries. Firms have tried to work with the smallest stocks possible to avoid tying up capital. Instead, they rely on running deliveries of raw material and parts, even up to several times a day. Even small disturbances can have a large effect on their business.

Logistics are today an important part of many business operations. Truck transportation has adapted to this and today offers qualified services beyond just transportation. Their knowledge of logistics, in combination with IT, results in truck transportation operators often being like a spider in a web when it comes to coordinating its customers transport needs. The absence of transport and deliveries therefore result in many problems beyond those that arise as a result of goods not being delivered or received.

The Four Regions

Falun/Borlänge

Falun/Borlänge is the name of the region comprised of the two communities of Falun and Borlänge in Dalarna. Together there are 102,000 inhabitants in the two communities. Travel to and from Falun and Borlänge from nearby communities is intensive.

In the Falun/Borlänge region you will find world leaders in high tech, and a rapidly expanding trade.

Borlänge has long been dominated by two large industries: Domnarvets Ironworks and Kvarnsvedens Paper mill. The work force was changed radically when several state organisations were relocated to Borlänge. (Traffic Safety, Department of Transportation and the Rail Authority). The arrival of firms like Future valley, and Technical valley, The Dalarna High School, the Cupola and several other firms has also contributed to a change in the work force.

Borlänge has, through its central location, developed into the country's center for trade and communication. Here you will find the intersection of national highways, railways and the country's largest switchyard. There is also the National Dala Airport.

The travel industry is strong in Dalarna. Overnight guests and visitors in Dalarna spent at least 4.3 million SKK in 2007, and employed 4,500 people.

In Falun/Borlänge there are about 200 trucking firms employing over 1,000 people. In conjunction with them is a series of other businesses, for example garages, tyre companies, body shops and shipping and terminal companies. Together, these companies in Falun/Borlänge employ about 2,300 people. Add to these the workers who drive for those companies that choose to supply their own transportation.

Borås

Borås has about 101,000 inhabitants. Borås community's homepage describes Borås as a center for design and commerce with a long tradition as a textile center.

During several decades in the 1900's Borås developed quickly thanks to the textile industry. The production side of industry is no longer found. Borås has instead become

a centre for textile design, development and commerce. Many well known textile and clothing chains have head offices in Borås, among others Hemtex, Gina Tricot, SVEA and 8848 Altitude.

Today Borås is a center for postal orders with firms such as Red Cats-Ellos, Cellbes, Haléns and H&M Rowells. Many millions of packages are shipped from Borås every year.

The postal order branch's ability to manage the stream of goods has given Borås a leading edge in logistics and distribution. Also workshops and electronics are a large part of Borås's industry. Here you'll find large companies like Ericsson, Volvo Bus and Parker Hannifin.

With respect to employment (2006), Borås municipality is the largest public employer with about 9,000 employees. The largest private employers are Ellos AB and Ericsson AB with about 1,000 employees each. The largest branch however is "Trade and Communications" with about 12,300 employees. Total employment in Borås is about 50,285 workers in 2006.

Borås municipality points to its strategic location as a reason that many businesses choose to locate there. Borås is a node for four major highways. Likewise it has rail connections in four directions. Just a half hour drive gets you to Landvetters International Airport.

Växjö

Växjö is centrally located in Småland with good train and plane connections. Växjö has about 80,000 inhabitants. Its webpage describes the municipality as an expanding city with a varied business community and growing university.

About 39,196 people were employed in Växjö's commerce in the year 2006. The five largest employers are Växjö municipality with 7,400 employees, followed by Landstinget Kronoberg with 4,000 employees and Växjö university with 1,000 employees. In addition there is Volvo Construction Equipment AB with 800 employees, and A-betong Precon AB with 450 employees.

The number of businesses in Växjö in 2007 was 7,647. Växjö university had 15,000 students in 2008.

In Växjö municipality there are 86 trucking firms with 371 trucks and about 500 employees. In conjunction with them is a series of other businesses, for example garages, tyre companies, body shops and shipping and terminal companies.

Umeå

Umeå is northern Sweden's most populated municipality, with good road, plane, and rail connections. Umeå has been a university town since 1965, and besides the university it has design, art and business schools, as well as Sweden's Agricultural University.

Umeå has 112,732 inhabitants. The municipality covers 2,317 km².

The business community includes firms working in biotech, medicine, information technology, environment and energy. There are 12,000 businesses in Umeå. The largest employer is the University Hospital with 5,500 employees, Umeå University with 4,057 employees, Volvo Truck with 2,500 employees, Komatsu Forest with 380 employees and Ålö AB with 250 employees.

The number of employed adds up to about 52,900, and the five most common trades are found in the areas of health and nursing (6,613 employees), trade (2,529 employees), university and high school teachers (2,324 employees), sales, purchasing (1,646 employees) and engineers and technicians (1,568 employees).

In Umeå and its surroundings there are about 200 trucking companies with about 750 trucks that together employ more than 1,000 people. In conjunction with them is a series of other businesses, for example garages, tyre companies, body shops and shipping and terminal companies.

A week without truck transport

Background

The scenario is that all transport with large trucks stops for a week. That this should happen should be seen as a thought experiment, rather than a real occurrence. The aim of this scenario is to show clearly the importance of truck transportation in today's society.

At midnight between Sunday and Monday all heavy trucks stop rolling. This affects all truck transportation that takes place in the night, for example postal deliveries and fresh food deliveries. If the interruption occurs before a big holiday, for example Easter when the demand for fresh food is higher than normal, then the consequences are even more dire.

The stoppage only affects large trucks (over 3.5 tonnes). This means that a certain distribution with smaller trucks and vans is possible. As there is not a large surplus capacity of trucks or personnel, this can only compensate for a small portion of the lost capacity.

No warning about a stoppage had been given. For that reason it was not possible for businesses or private people to prepare themselves, to stock up or change their daily routines.

The stoppage is temporary. The message goes out that it is a temporary stoppage, so that there is no reason to hoard goods. The purpose of the study is based on the assumption that goods are consumed at a normal pace. In a real crisis there would however be a great risk that consumers would hoard such goods as food stuffs and fuel, which would then run out even faster.

Monday, Day 1

- Milk and fresh bread runs out
- Hospitals run out of clean linen
- The removal of trash becomes a problem for health care
- There is a shortage of certain medicines in pharmacies
- The morning paper is not delivered to many people
- Letters and packages cannot be sent out
- Many goods in company stocks are used up
- District heating stops
- Industrial production slows
- Work on infrastructure stops
- Senior care has problems making food

Already after a couple of hours without truck transport milk will be unavailable at food stores. As milk is usually collected every other day on the farms, there is a risk that milk producers already on the first day will have to dump the milk that had been stored over the weekend.

All deliveries of fresh bread from large bakeries will stop. A large part of the bread production in Sweden takes place in large bakeries, and the bread is then distributed by truck to terminals throughout the county.

Within a day hospitals experience a lack of clean linen. Every day there is a delivery of clean clothes. Delayed deliveries of linen and clothing affects a large part of the health care system and means that planned operations must be delayed.

Hospitals soon have problems with garbage and waste removal, which is especially sensitive considering hazardous hospital waste.

Pharmacies get deliveries everyday. Already on the first day some medicines are out of stock. Critical medicine has to be rerouted to smaller trucks or other means of transportation to insure that medicine gets to hospitals and others.

Many newspaper readers have to get by without their daily paper on Monday. Those who live close to a printer might be able to get their paper thanks to distribution with smaller trucks, but in the outlying areas of the region it is not possible to deliver the paper to local dealers. Newspapers that use printers located outside of their region cannot be distributed.

Only letters that are already at the post office can be distributed. New letters or packages cannot be sent away.

The Swedish Alcohol Retail Monopoly, that on average gets three deliveries daily, is soon out of many items.

District heating is directly affected by the truck stoppage. The consequences can be a shortage of heat and electricity. Public institutions, apartments, as well as private

residences are affected. One winter day can require 60-70 truck loads of biofuel (woodchips) for district heating.

For electrical distribution a stoppage of trucking can mean that repairs cannot be undertaken.

Within industry there are interruptions in production. The delivery of parts and distribution of products to customers stops. Production continues until the parts supply is used up, or until storage room for finished products is filled up. For some industries production is stopped already on the first day.

Construction slows down as the delivery of needed material stops and removal of waste products cannot be accomplished. With the absence of trucks with suction machinery there is the risk of not being able to deal with sewer stoppages, which can result in the flooding of cellars.

In senior centres the absence of food at institutions that get centrally cooked food delivered by truck is a problem. The staff will have to buy food locally.

Tuesday, Day 2

- The pharmacy closes
- Fresh produce disappears from food stores
- Some service stations run out of fuel
- There is a risk of public transportation stopping
- Restaurants run out of supplies
- Restaurants and others have problems with sanitation

Pharmacies depend upon daily deliveries of products. Certain medicines will soon be out of stock. For people who depend upon medicine that is not stocked in large quantities the missing deliveries can have serious consequences. There is the risk that one cannot live up to the promise of being able to get customers their medicine within 24 hours.

On day two there is a lack of fresh produce in the food stores. Large food stores get 10-15 deliveries by truck daily. Some products will no longer be found in the stores.

Most service stations get 2-3 fuel deliveries weekly, and already after a few days with no deliveries they will be running out of fuel.

In the public transportation system the stoppage of delivery of spare parts can result in interruptions in traffic.

At restaurants there will be changes in the menu. There will be less fresh food in the selections. It will be necessary to use whatever is in the freezer. At hotels the guests will have less to choose from at the dinner table. The restaurant's garbage containers get filled up and garbage cans have to be placed in the street.

Businesses with daily garbage pickup soon have problems. They are quickly overflowing with garbage and it has to be put out in the street. Recycling centres might have to be closed if they cannot have garbage picked up.

Wednesday, Day 3

- Waste water sludge becomes a problem
- Milk can no longer be picked up at the farms
- Dairy products are gone from stores
- The lack of fuel is now obvious
- Large interruptions in public transportation
- Hotel guests can no longer count on clean sheets
- School food is now leftovers or dry food
- Teachers encourage children to bring their own lunch

Sludge and slime storage tanks at treatment plants are now full. Sludge is now stored on asphalt slabs, with the risk of bad odor, or it's pumped out with insufficient treatment.

After the pickup of milk has stopped milk farmers now have to dispose of any milk in stock.

Milk at dairies can be used for cheese or powdered milk. Fresh milk that cannot be used for anything else has to be dumped down the drain because the expiration date has expired. Environmental problems can occur when milk is dumped down the drain.

Special products, for example yoghurt, butter milk, crème fraîche, and cottage cheese are soon off the shelves in stores and restaurants.

The lack of diesel fuel and gasoline is now very serious, and fuel is now out at many service stations. Those businesses which had switched over to smaller trucks or vans also experience difficulty in making their rounds.

Public transportation buses are still rolling, but as the lack of fuel takes hold there are interruptions and routes are cancelled. The interruptions can also hit air traffic as the supply of jet fuel runs out during the day.

Hotels no longer have clean sheets.

Fresh produce for making lunch for school children is no longer available, and school lunches are either skipped or made from dry food. It is now best for children to bring their own lunch.

Restaurants' supplies of produce are now limited and many items are taken off the menu.

Thursday, Day 4

- Lack of food stuff
- All fuel is gone from service stations
- Bus service is stopped
- Air traffic is stopped
- Garbage is piling up in the streets

There is now a serious lack of food in stores. All fresh produce is gone, but there are still conserves and dry food for sale. The shops have the additional problem that customers can no longer get to the stores to the same extent as earlier.

At service stations fuel is now basically gone. A small amount of octane 98 might be left. At convenience stores there is just macaroni and cheese left over. The lack of fuel now has consequences for private cars. Getting to work is more difficult, and that has an affect on productvity on the job. The use of private cars is greatly diminished.

The lack of fuel forces public transportation to stop. The buses stand still, as does air traffic.

Garbage removal is soon becoming a sanitary problem. Outside restaurants and apartments the garbage is piling up in the streets and alleys.

Printing newspapers has stopped as the supply of newsprint has run out.

In the hospitals the lack of clean clothes and linen is serious. Only the most important units can get clean clothing by using smaller cars.

Friday, Day 5

- Drinking water becomes unavailable
- Hotels close
- Restaurants close
- School lunches no longer available
- Industrial production stops
- Many trucks are parked

Water supplies are affected. The delay of weekly deliveries of chemicals has meant that water treatment plants can no longer guarantee that water is fit to drink.

Food delivery is now critical. In schools and senior care centres, as well as in hospitals, food is in short supply. Restaurants close.

Hotels close due to a lack of both customers and supplies.

Industrial production has stopped due to a lack of room to stock finished products, if not a lack of raw material and parts has not already made it impossible to continue production.

The Swedish Alcohol Retail Monopoly's assortments have thinned out during the week and are now basically gone. As the pickup of cardboard (twice weekly) has now stopped there is a good supply of empty boxes.

Differences

The consequences described above will vary between the regions studied. Of course there will be differences between businesses and industries depending on planning and warehousing capacities. Generally speaking, today's stock margins are too small to allow for "abnormal situations". Most firms have trimmed down, and do not have any surplus capacity to use in extreme situations.

Because transportation normally functions so well, stock is often concentrated in just a few central locations in the country, and in warehouses in outer lying regions in the food supply chain. The concept of "just in time" can be found in most businesses, not just in industry, as seen in the example of food stuff supply, but also in the newsprint industry.

The consequences of a halt in truck transport will also be different depending upon the time of the year. In the winter time heating can be seriously affected, and much faster than in the summer.

Another function that can suffer various consequences depending on the time of the year, and the region, is road maintenance. Winter road maintenance is to a great degree dependent on trucks. All regions in Sweden can be affected by heavy snowfall, some more than others. If a region is hit by a heavy snow storm the road system will soon be blocked. The delay of just a few trucks can be a problem. If all trucks are stopped there will be no way to remove the accumulation of snow by other means.

In the regions examined the daily newspaper production is affected rapidly. The exception is Umeå where newspaper production can continue as long as newsprint can be supplied. The presses are located in the community and have rail connections. There are, however, few presses in the country that have rail connections. The fact is, many regions and communities have no rail connections at all.

In Umeå, the supply of heat and hot water is first affected in the smaller heating plants in Holmsund, Hörnefors and Bjurholm. At the larger plants there are stocks that can manage to keep production going for a week, despite the lack of fuel deliveries. Even in Växjö there are stocks of fuel that can last a week. In our studies we have shown the problems that can arise in district heating. What happens in the case of single family or duplex houses that have electrical heating, or other sources of heat, is another interesting question.

Conclusion

Trucks play a unique role in the transportation system that we have today. Whether it's local transportation, or a part of the long distance transport chain, trucks are often a requirement for the function of the logistical system as a whole.

The Crisis Management Authority reached the conclusion, in its report "Social Preparedness Capacity 2006/2007" that it takes a week before the consequences of an interruption in the transport system become a social crisis.

In our examination we can see that an interruption in truck transport, after just a few hours, has consequences for several social functions. Within one day important parts of society are affected, such as health care, food distribution and many large work places.

We can conclude that an interruption or stoppage of truck transport has consequences in nearly every part of society. It affects most businesses that we have contact with on a daily basis. Many businesses today have small or almost non-existent stocks or supplies and are completely dependent on getting deliveries in time. Even businesses with large stocks of raw material are still dependent on a continuous supply of critical components or parts.

If even one part of the transport chain fails, it spreads quickly to other businesses. Even small interruptions in truck transportation can have serious consequences.

To get a more in-depth picture of the importance of truck transportation will require more research in this area. This is especially true with respect to the discussions about future transportation systems. A precondition for understanding the role of truck transport in the future is that we understand the important role that it plays today.

Sources

Reports and publications

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- En vecka utan lastbilar i Borås, Sveriges Åkeriföretag, Juni 2008
- En vecka utan lastbilar i Växjö, Sveriges Åkeriföretag, Augusti 2008
- En vecka utan lastbilar i Umeå, Sveriges Åkeriföretag, Februari 2009
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Websites

www.scb.se Statistiska Centralbyrån

www.sika.se Statens institut för kommunikationsanalys

www.msbmyndigheten.se Myndigheten för samhällsskydd och beredskap

Businesses contacted

The following businesses were contacted for the study.

Borås:

Borås energi och miljö (Både angående sophantering och Värme - kraftproduktion)
(concerning waste disposal and heating)

Borås tidning (newspaper printing)

Maxi ICA Stormarknad

Arla - Från gård till mejeri (from farm to dairy)

Arla - Från mejeri till butik (from dairy to store)

Systembolaget i Knalleland (Swedish Alcohol Retail Monopoly)

Borås Elnät

Avloppsreningsverk Gässlösa (sewer)

Sjöbo vattenverk (water)

Ekohallen (Knalleland)

Åhléns AB (city)

Kappahl AB (city)

Asklandaskolan

Fristadsskolan

Södra Älvsborgs sjukhus (SÄS)

Parker Hannifin AB

Kwintet Fristads AB

Uponor AB

Sveba Dahlén AB

Eco - Boråstapeter

Hedareds sand och betong (sand & concrete)

KWH pipe Sverige AB

Jensen Sweden AB

Vida/Borgstena Timber AB

Dalsjöforsslakteri (butcher, did not answer)

Eskils tryckeri (printer)

Redcats Nordic AB (Ellos)

H & M Rowells AB

Haléns AB

Borås Djurpark (zoo)
Apoteket Kronan (pharmacy)
Posten
Statoil Hedvigsborg (no answer for security reasons)
Preem Hulta

Falun/Borlänge:

Apoteket AB (pharmacy)
Dalarnas tidningar (newspaper)
ICA Maxi, Kupolen, Falun
Lantmännen färskbröd (bakery)
Landstinget Dalarna
Miljökontoret Falu kommun (office of environment)
Milko Grådö (dairy)
OKQ8
Stora Enso Kvarnsveden
SSAB Tunnplåt, Borlänge
Posten meddelanden
Skanska

Umeå:

Apoteket (pharmacy)
Ica Maxi
Norrmejerier (dairy)
Statoil
Swebus
Umeva: Vatten och avlopp (water & sewer)
Umeå Energi AB
Volvo Truck Corporation, Logistics, Transport development
Västerbotten Kuriren (courier)
Västerbottens läns landsting: Transport & Service

Växjö:

A-Betong (concrete)

Apoteket lasarettet Måsen (pharmacy)

Balco

Cervera

Elite Stadshotellet

Hennes & Mauritz

ICA Dalbo

Landstinget Kronoberg

Ljungfälleskolan

Länstrafiken, Veolia

Posten

Smålandsposten

Statoil Hejaregatan

Systembolaget (Swedish Alcohol Retail Monopoly)

VEAB

VME i Braås

Växjö flygplats (airport)

Växjö kommun, renhållning, anläggning

Växjö kommun, vatten o avlopp (water & sewer)

Äldreboendet Bågen