Toll ring around Oslo:
How car owners help paying for improved mobility, and better environment too

Kristian Wærsted
Chief Engineer
Norwegian Public Roads Administration (NPRA)
Road tolling in Norway

- 4.4 million inhabitants
- 2.3 million cars
- 91,545 km public roads
- 70 years of road tolling experience to finance expensive infrastructure (mountains / fjords)
- More than 100 road toll projects built
- Toll collection normally lasts for 15 years
- 48 toll schemes in operation
- Urban toll systems in the last 20 years
- Point payment only (open systems)
- Toll revenues contribute approx. one third of the investments in national roads

A map shows major cities: Oslo (1990), Bergen (1986), and Trondheim (1991).
## Urban toll rings in Norway – May 2005

<table>
<thead>
<tr>
<th>City</th>
<th>Plazas</th>
<th>Start Year</th>
<th>End Year</th>
<th>Pop. in ar.</th>
<th>In op.*</th>
<th>AADT (**)</th>
<th>EFC %</th>
<th>Tags</th>
<th>NOK /Pbe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bergen 1</td>
<td>8</td>
<td>1986</td>
<td>2004</td>
<td>300’</td>
<td>16/5</td>
<td>60’</td>
<td>-</td>
<td>-</td>
<td>5-10</td>
</tr>
<tr>
<td>Oslo</td>
<td>19</td>
<td>1990</td>
<td>2007</td>
<td>900’</td>
<td>24/7</td>
<td>250’</td>
<td>82</td>
<td>450’</td>
<td>10-20</td>
</tr>
<tr>
<td>Trondheim</td>
<td>12</td>
<td>1991</td>
<td>2005</td>
<td>250’</td>
<td>11/5</td>
<td>100’</td>
<td>95</td>
<td>150’</td>
<td>10</td>
</tr>
<tr>
<td>(2003)</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
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<td>15</td>
</tr>
<tr>
<td>(2003)</td>
<td>23</td>
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<tr>
<td>Kristiansand</td>
<td>5</td>
<td>1997</td>
<td>2007</td>
<td>100’</td>
<td>24/7</td>
<td>55’</td>
<td>84</td>
<td>30’</td>
<td>10</td>
</tr>
<tr>
<td>N. Jæren (Stavanger)</td>
<td>21</td>
<td>2001</td>
<td>2011</td>
<td>230’</td>
<td>12/5</td>
<td>150’</td>
<td>91</td>
<td>110’</td>
<td>5/10</td>
</tr>
<tr>
<td>Namsos</td>
<td>3</td>
<td>2003</td>
<td>2017</td>
<td>15’</td>
<td>12/5</td>
<td>7’</td>
<td>89</td>
<td>10’</td>
<td>13</td>
</tr>
<tr>
<td>Tønsberg</td>
<td>6</td>
<td>2004</td>
<td>2019</td>
<td>50’</td>
<td>24/7</td>
<td>50’</td>
<td>86</td>
<td>35’</td>
<td>15</td>
</tr>
<tr>
<td>Bergen 2</td>
<td>8</td>
<td>2004</td>
<td>2014</td>
<td>300’</td>
<td>24/6</td>
<td>100’</td>
<td>87</td>
<td>105’</td>
<td>15</td>
</tr>
</tbody>
</table>

* Figures in thousands
** Hours a day and days a week
*** During hours of operation
The background for the Oslo Package planned in the eighties was:

- Unsatisfactory traffic flow with significant delays for all traffic
- Oslo had a special need to build a new main road through the city center (with a tunnel in front of the City Hall)
- Public grants for transportation in the Oslo region had for some time been relatively low
- The local politicians had given up hope for more grants from the State, and had begun to discuss alternative ways to finance the new tunnel in front of the City Hall
- The car traffic also caused environmental problems
The “Oslo Package 1”

- Motivation: To build 50 pre-defined projects in ten years instead of 35 with state funds only
- Joint venture between Oslo (60%) and the neighbour county of Akershus (40%)
- Users contribute with 55% of funding
- The toll ring (white lines) covers all roads in three corridors
- 50% of Oslos population live outside the toll ring
- AADT in the payment direction is approx. 250 000
- Approx. 1 bill. NOK per year income, approx. 10% operation cost
For economical and political reasons the best place for a toll ring was about halfway between the city border and the city centre.

Only four minor roads had to be closed in order to make the ring "watertight"
Oslo toll plaza no. 5 on a western arterial

- The subscription lane ("abonnement") has a high capacity, approx. 1600 veh/hour
- Approx. 300 veh/hour capacity in coin machine and attended ("manuell") lanes
- No expansion of total road area was necessary
Toll plaza no. 11 on E6 north is the largest in Oslo. It has 3+1 AutoPASS lanes.
Toll plaza no. 14 on E6 south

You will arrive here when approaching Oslo from Stockholm or Copenhagen
Toll fees in the Oslo Toll Ring

- Heavy vehicles have an allowed total weight higher than 3500 kg
- Pre-paid trip subscribers get up to 43% discount
- Monthly, semi-annual or annual subscriptions of unlimited use give even higher discounts
- Public transport, MC, EL-cars, ambulances, and handicapped persons do not pay
Oslo Toll Ring Experiences

- **Overall reduction** in traffic: 3-5%
- **Growth in public transport**: 6-9%
- Situation back to “normal” after only a few months
- Off peak drivers most sensitive to pricing
- No capacity problems in the plazas
- Higher workload and more comprehensive computer systems in the back office system than expected
- Users do not always behave as expected
Community importance of urban road tunnels

- **Reduced delay** due to removal of bottlenecks
- **Road space** above ground can be made available for other uses
- **Removed barrier effects** from the surface street network
- **Reduced noise** from above ground traffic
- **Less pollution** (high chimneys, filtering)
- **Improved traffic safety**
Opinion polls unveil a negative attitude to the toll ring in Oslo

The increase in negative attitude in 2001 is due to:

1. introduction of “Oslo Package no.2”: NOK 2,- extra per passing allocated for public transport only

2. a fear that the toll ring will not be removed in 2007 which was the original decision

The toll ring opened 1. Febr. 1990
How was it possible to implement a toll scheme in Oslo that 70% were against?

- Bergen initiated a successful toll ring in 1986
- Road traffic conditions were choking
- The major political parties agreed
- The toll is to finance road infrastructure
- Limited collection period, only 15 years
- Additional extra funding from the State is part of the plan
- Low fees
- Those opposed to car driving appreciate that the motorists have to pay
- 20% of toll income is earmarked public transport
- User friendly fee structure (?) (multi-trip subscriptions with discount and season tickets)
The City Hall Street **before** opening The Castle Tunnel
The City Hall Street after opening The Castle Tunnel
The City Hall Square **before** opening The Castle Tunnel

Photo: Mari Kollandsrud, Riksantikvaren
The City Hall **Square after** opening
The Castle Tunnel

- The AADT was reduced from 90 000 to 0 vehicles
- New tram line opened
- A new plaza for walking, festivals and exhibitions

Photo: Mari Kollandsrud, Riksantikvaren

Norwegian Public Roads Administration
The traffic goes here (down to -45 m)

This traffic control centre for Oslo employs advanced systems for managing vehicle movement in the Oslo Tunnel and large parts of the main highway system around the capital.
What does the future hold?

The Oslo Toll Ring was supposed to expire in 2007 – will it:

1. be removed?
2. be prolonged (like the toll ring in Bergen)?
3. get a time differentiated fee system to manage traffic during peak hours (congestion charging)?
4. be replaced by an other type of congestion charging scheme?
The new Bjørvika Tunnel will make room for a new district of Oslo between the new opera house (A) (under construction) and the medieval part of Oslo (B).

Shall the State or the City pay for it?

): The road users are once more the solution

The Castle Tunnel is ending here today
“Congestion Charging light” favouring public transport

Fees (pbe):

- NOK 3,- (1 unit) in both directions
- NOK 6,- (2 units) in both directions
- Double fees in peak periods
- Free periods late evening and night
- Double fees for heavy vehicles.

City borders
The toll ring
A bidirectional multicordon road pricing system in Oslo will demand “fully automatic free flow” toll plazas similar to those in Tønsberg and Bergen.
Fully automatic toll plazas in Bergen
AutoPASS

- A technical specification for electronic tags (EFC) owned by NPRA
- Independent of industry and open to all from 1999
- In full compliance with CEN and ETSI standards for DSRC
- **Interoperable from 2004** and presently used in 24 out of 48 toll projects!
- One million tags in use!
The AutoPASS lanes lies to the right in a manned freeway toll plaza

New traffic signs and symbols
Do we need road pricing in Norway?

- There are congestion in Norwegian cities, but only in Oslo, Bergen and maybe Trondheim
- Congestion is confined to two hours in the morning and evening rush hours
- The level of congestion is small in an international context. Average delay on main corridors into Oslo in the morning is 20 minutes with 35 minutes for the worst, western corridor
- Professionally desirable and politically unpopular
- The crucial question is whether congestion is big enough to get political accept for road pricing.
- Presently the cure seems worse than the pain!
Arguments for and against road pricing

**For road pricing**
- Will reduce congestion and improve the environment
- Remaining traffic will gain in travel time savings
- Income may also be used to improve public transport

**Against road pricing**
- Equity problems
- Motorists pay high taxes already
- Privacy issues
- Downtown businesses will suffer
- Cost of implementation and operation
A political dilemma....

- Solely my own opinion !!!
- Conservatives trusts market mechanisms – except for traffic regulation - and opposes road pricing !
- Socialists distrusts market mechanism – except for traffic regulation – and approves road pricing, but dare not vote for it ?
- Nobody dare to focus on road pricing before an election
- In Norway we have elections every second year !!
Thank you for your attention!

For more information:
Please contact
Mr. Kristian Wærsted
Norwegian Public Roads Administration
E-mail: kristian.warsted@vegvesen.no
Phone: +47 22 07 37 35
Mobile: +47 915 195 89
Fax: +47 22 07 33 08