The ECORails Guidelines in use
Examples from the pilot application
Berlin-Brandenburg

Technology Innovation Agency
Berlin (TSB)
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1. Test Site:
Basics of the Federal State of Brandenburg

area: 29.478 km²
inhabitants: 2,56 million (2005)
car ownership: 497 cars/1.000 inhab.
railway infrastructure: 2.500 km
1. Test Site: Federal State of Brandenburg - Figures of Regional Passenger Train Services

Network: 2.214 km (2007)
Main lines: 1.456 km (66 %)
Regional lines: 680 km (31 %)
S-Bahn network: 78 km (3 %)
334 stations (2007)
Traffic performance: 35 Mio. train-km/a

Regional Railway Concept 2008 – 2012
Federal State of Brandenburg
1. Test Site: Basics of Berlin

- Area: 889 km²
- Inhabitants: 3.4 million
- 43% car-free households
- Car ownership: 317 cars/1,000 inhab.

- 147 bus lines - 1662 km
- 22 tram lines - 189 km
- 9 metro lines - 144 km
- 32 MRT lines* - 458 km

* S-, RB-, RE- lines
2. Typical Dimensions for Awarding of Regional Rail Passenger Transport Services

Virtual test case for future awarding facing the competitive situation:

- Connections issued for awarding: Regional Express (RE) 74, 75, 76
- Traffic performance:
  - Total: 12,500,000 train-km/year
  - In Berlin: 2,800,000 train-km/year
  - In Brandenburg: 9,700,000 train-km/year
- Share Diesel traction: line RE 76, 1,500,000 train-km/year
- Maximum speed: 160 km/h, Diesel 120 km/h
- Contract period: 12 years
- Start for operation: December 2014
- Number of vehicles:
  - Electric traction: Doubledeck EMU or locomotive-hauled doubledeck trains – ca. 190 coaches
  - Diesel traction: Two-car DMUs or the respective number of coaches (one-level)
3. Site Stakeholder Group

Public Transport Administrations
• Federal states of Berlin and Brandenburg
• Verkehrsverbund Berlin-Brandenburg (VBB) on behalf of both federal states

Train operating companies
• DB Regio North East (Regional-Express and Regional-Bahn lines)
• S-Bahn Berlin (S-Bahn lines)
• Niederbarnimer Eisenbahn (Regional-Bahn lines)

Rail Supply Industry
• Bombardier
• Siemens
• Stadler

Other institutions
• Association of German Public Transport Providers (VDV)
• Federal Environmental Agency (UBA)
• DB Environmental Center
4. Pilot Application Objectives Berlin I

- Consideration of the relevant risks for PTAs and TOCs, resulting from developments during the contract period, as there are
  - framework conditions rooting in public rail transport demand
  - energy prices
  - legal environmental requirements (e.g. ambient noise regulation) and juridical decisions

- Provision of information
  - For consumption and emission reduction potentials as well as cost estimations
  - LCC approaches
  - Further
4. Pilot Application Objectives Berlin II

- Reality check of the Guidelines test version by the Site Stakeholder Group acting as a „Sounding Board“

- Understanding about the interests of the different stakeholders (PTA, TOC, Rail Supply Industry)

- Test of the Guidelines in particular for the phases preparation and elaboration regarding
  - Comprehensiveness and correctness of contents
  - Perceivability
  - Completeness
5. Leading questions: “What do we want to test?”

• Are the awarding criteria well described and easy to handle?
• Can it be clearly decided which criteria are relevant for the application in question?
• Are the criteria easy to handle (i.e. to be integrated in the tendering documents, the contract etc.)?
• Can the offers appropriately be evaluated in respect to the relevant criteria?
• Can the performance of the TOC sufficiently be monitored?
• Are the TOC (or the rail supply industry) able to fulfill the criteria, at least to a certain extent? Can the bidders easily and clearly handle the criteria?
• Is the cost situation analysed to a sufficient extent?
6. Steps of Testing

- Simulation of energy consumption and CO₂ emissions of vehicles which are currently in operation and which will be in operation in the near future
- Deep discussion of the Guidelines with the members of the Site Working Group and development of energy efficiency and environmental criteria
- Discussion and plausibility check of the developed energy efficiency and environmental criteria with the members of the Site Stakeholder Group
- Evaluation of the Guidelines’ test version by the Site Stakeholder Group with the help of questionnaires
7. Baseline for Simulation of Energy Consumption

<table>
<thead>
<tr>
<th></th>
<th>RE6</th>
<th>RE7</th>
</tr>
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<tr>
<td>train km per year</td>
<td>1.9 Mio.</td>
<td>2.4 Mio.</td>
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<td>length of the line</td>
<td>168 km</td>
<td>180 km</td>
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<tr>
<td>max. speed</td>
<td>120 km/h</td>
<td>120 km/h</td>
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<tr>
<td>average distance</td>
<td>7 km</td>
<td>6 km</td>
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<tr>
<td>between stops</td>
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<td></td>
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<tr>
<td>vehicles in use</td>
<td>DMU</td>
<td>loco hauled double deck</td>
</tr>
<tr>
<td>seats per train</td>
<td>108/216</td>
<td>478</td>
</tr>
</tbody>
</table>
7. Baseline: Indicators

1. Basics
   • kWh per seat-km and passenger-km
   • Network stretches
   • Train km
   • Locomotive classes used for which amount of train km (or gross tonne km)
   • DMU classes used for which amount of train km
   • If available: information about the real energy consumption on these lines

2. Data about the vehicle classes

3. Data about CO$_2$ emissions
   (sources and energy mix of the electricity in the catenary)
8. Results of Simulating and Testing

Comparison with current awarding

• Significant difference between the future operated Talent 2 train sets and class 182 (Taurus) double train sets in terms of energy efficiency and CO₂ emissions.

• It should be stated that only the better train configuration will be offered by the TOCs if the energy efficiency and environmental criteria become higher weighted in future awarding procedures (→ 5 % target is probably to be reached)

Comparison with currently used rolling stock

• Comparison of the currently operated class 143 double deck train set with the future operated class 182 double deck train set shows possible energy savings for
  – traction only of about 21 %
  – traction and comfort functions of about 14 % (→ 10 % target will be reached)

System wide energy saving and CO₂ reduction potential by 2020

• Estimations of the stakeholders not homogenous
• Simulation results show that 15 % target will probably be reached.
9. Agreed EE/ENV Criteria (Text Modules)

- **Indexing of energy costs**
  on a realistic level, based on new rolling stock with low consumption

- **Maximum level of energy consumption**
  (verification by test run according to a specific service profile)

- **Option to offer lower energy consumption**
  and thus getting higher scores

- **Concept for parked train mode**
  (qualitative assessment)

- **Driver‘s training for energy efficient driving**
  (qualitative assessment: minimum requirements for training modules)
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