

# 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



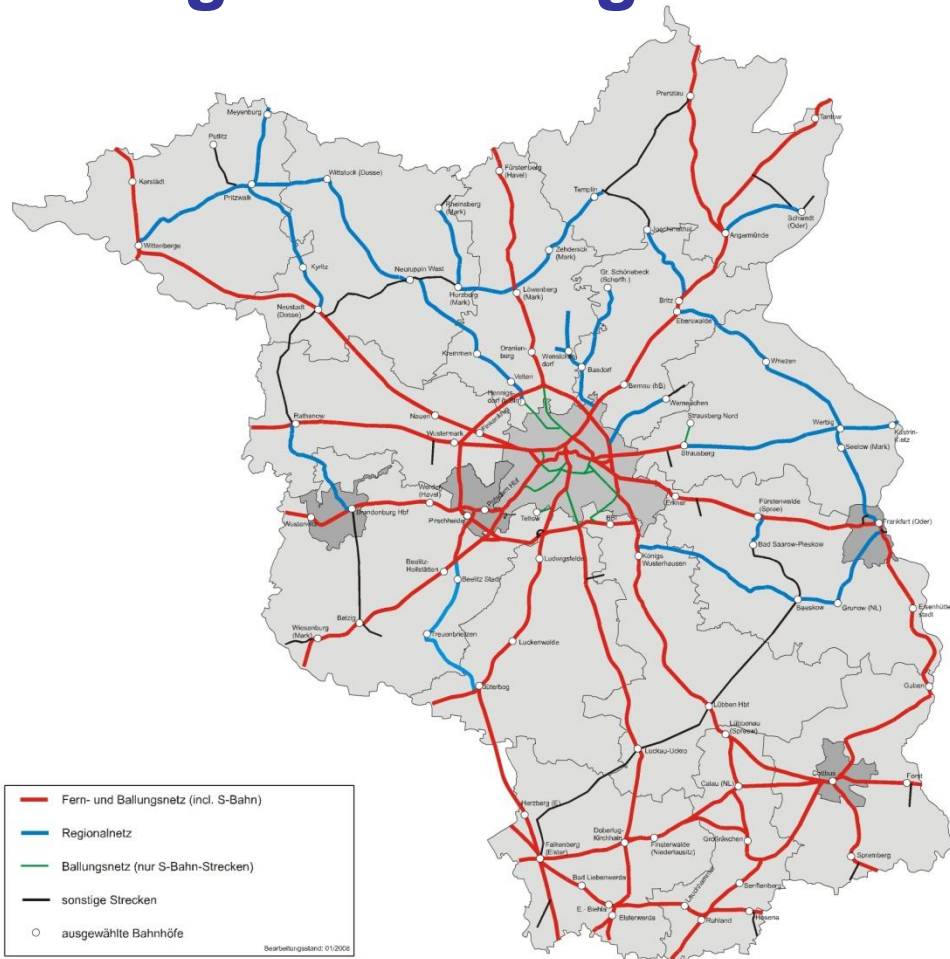
area: 29.478 km<sup>2</sup>

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**

Abbildung 8: Schieneninfrastruktur – Fern- und Ballungsraumnetz/ Regionalnetz; Quelle: IPG mbH 2008

## 1. Test Site: Basics of Berlin

38 km

45 km

area: 889 km<sup>2</sup>

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

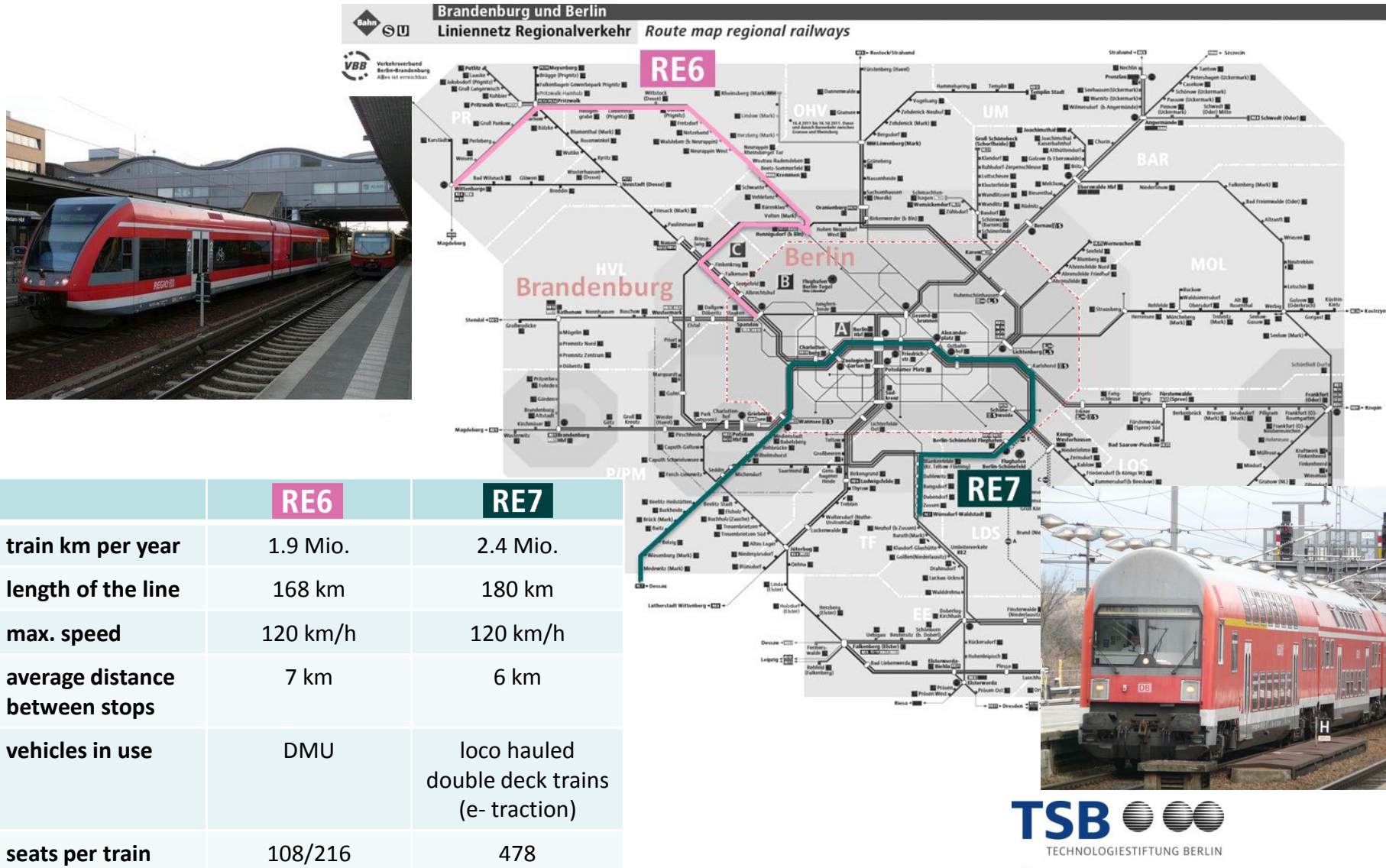
## 5. Leading questions: “What do we want to test?”

- 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 CO<sub>2</sub> 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



## 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<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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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