

## Questions from Ruter – to be presented at the conference and requiring a written response

Ruter would like to obtain feedback from the conference participants which can be used as part of our future work. The questions below will be posed during the supplier conference. Suppliers are invited to send in a written response to one or several of the questions by 15 January 2015, by e-mail to [fossilfree2020@ruter.no](mailto:fossilfree2020@ruter.no). The information submitted will be kept confidential. Ideas submitted may be used by Ruter in connection with future procurements and presented in an anonymised form.

Respondents will be invited to a one-on-one follow-up meeting with Ruter. Please limit your response to a maximum of four A4 pages.

1. **Bus technology and operations:** Based on the region's public transport market and Ruter's requirements: Which battery electric buses on the market now and in the near future will be able to provide the services described? Is it realistic to introduce a significant number of battery electric buses to the region by 2020? Which areas of operation or services are best suited to these buses? What planning and operational adaptations do you anticipate will have to be made in order to put battery electric buses into service?
2. **Infrastructure:** What are the challenges linked to housing a large number of electric buses at one or several depots? Are some of the existing bus depots more suitable for electric buses than others? What are the greatest uncertainties linked to charging infrastructure and related services? What are the most relevant business models for charging infrastructure? Since there are no charging standards, how do we secure flexibility and long term use of the infrastructure investments?
3. **Costs:** What will be the short- and medium-term differences in costs between battery electric bus operations and more conventional alternatives? What do you anticipate will be the key cost drivers?
4. **Strategy for the phasing-in of electric buses:** What is the optimal approach towards the 2020 target, based on cost, quality and performance?
  - a. When should we start phasing in electrical busses? Now or closer to 2020?
  - b. How do we select the right technology? Should Ruter or the suppliers in the market decide on the technology?
  - c. Do we need large scale testing? Or rather smaller tests and move faster to standard commercial contracts?
  - d. Should we test electric buses on easy, adapted routes, or rather on demanding ones to stress the technology (high capacity, longer distance)?
5. **Procurement, contracts and business models:** What changes must Ruter make to its current model for procurement, ownership, operations, etc. in order to facilitate the introduction of a significant number of battery electric buses by 2020? Does Ruter need to specify the technological solution, or can this be left to the market? What are the most relevant business and ownership models for battery electric buses and associated infrastructure in this region? What level of risk can the suppliers and operators take, and what types of incentives are important for encouraging risk sharing?