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**TESS Post-Doc Proposal**

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**Summary:** Study the economics and business model of a growing EV charging network under economies of scale and changes in demand, performance, and capital cost.

**Goal:** Contribute to a plan for the *Cité Scientifique* to decarbonize the transportation of approximately 5,000 daily commuters. The research in this portion would investigate a system of local solar/storage generation and EV chargers for electrified vehicles.

**Academic contribution:** While solar/storage for charging has been well-studied from a variety of angles, existing work is about fixed-design systems. This work is focused on how such a system would grow over time in the context of growing demand, economies of scale (for example, in the number of EV chargers installed at once), and changing capital costs (of solar and batteries, primarily). These questions about optimal growth are both practical and generally uninvestigated.

**Details:** The University of Lille has committed to decarbonizing its operations in the coming decade. This includes the carbon footprint of transportation to/from campus for students and personnel, which is the largest portion of the current emissions footprint of the *Cité Scientifique*. The CUMIN program is focused on this broader problem: decarbonizing the 5,000 daily automobile trips to/from campus. TESS, an element of CUMIN, is a techno-economic analysis of the transition from thermal to electric vehicles for campus transportation. We seek a Post-Doc researcher to help with this research, with a focus on the optimal deployment of infrastructure to meet a growing demand and an investigation into the business model for EV charging.

The project has both practical and academic elements. On the practical side, the results of TESS (when combined with other work under CUMIN) will be used create an implementation plan for the decarbonization of campus transportation. In the broader sense, lessons learned here can inform decarbonization of other campuses, cities, or private charging networks supported by local solar+storage. On the academic side, this research will contribute to understanding the economics of growth in this type of charging network. The research will address a variety of questions, with overlap and interaction between them: What is the economically optimal rollout of charging infrastructure (solar, storage, charging)? How should charging energy be allocated between vehicles? What is the “business model” for such a system and how should users be charged for the service (if at all)?

**Application and Timing:** Interested applicants should submit a Letter of Intent, a CV, and a relevant research article to Eric HITTINGER ([eric.hittinger@univ-lille.fr](mailto:eric.hittinger@univ-lille.fr)) and Alain BOUSCAYROL ([alain.bouscayrol@univ-lille.fr](mailto:alain.bouscayrol@univ-lille.fr)). We are seeking qualified applicants immediately. The position should be filled before the second half of 2020, but this could occur as soon as a candidate is selected