Amy McKnight Fazen
VP, Business Operations
XL Hybrids
47 Webster Ave
Somerville, Ma 02143
617-718-0329
afazen@xlhybrids.com

5.2.4 Technology Demonstration

…*The DOE collaborates with industry on demonstration projects to help catalyze large-scale adoption of promising energy technologies. In order to ensure these efforts have the largest possible impact, DOE is interested in ideas to improve the process for selecting when and under what circumstances to sponsor technology demonstrations with industry, as well as how to best disseminate the results so as to have the largest market impact.*

5) What are principles and best practices in performing large-scale demonstration projects?

We suggest a 3 phased demonstration program: pilot demo, larger scale demo, then a commercial scale rollout. The government should not start with a large, resource (ie, capital) intensive demonstration project, but rather with smaller pilot demos and projects that can test and vet the most the promising technologies. Once some results are shown, a project might move to a larger scale demonstration.

a) How close to commercial viability does a demonstration have to be? What are the optimal cost sharing arrangements? How might demonstrations be coordinated with DOE financing activities?

A 3 phase demo program would provide a framework to test technologies that sit between early "bench-scale" prototypes and technologies tested and ready for full commercial scale. This is the so called valley of death which kills many promising technologies before testing and refinement have taken place and before capital can be raised to further scale technology. Any DOE demo program should not shun technology that industry will not fund – on the contrary, the first phase should seek promising technology to test that has not yet received significant (<$10M) industry funding.

We suggest DOE accept proposals for pilot demos from any company that meets simple and transparent criteria: 1) internal prototypes or early projects have been validated by an independent, third party and show promise, even if the technology is at a small "lab scale"; 2) Company can share up to 50% of the cost of the pilot demo with some of the cost and/or facilities provided by the DOE; 3) Company can demonstrate interest from potential customers or partners – this could take the shape of letters of support, not necessarily commitment of capital or resources at the pilot stage. Some technologies may be totally unique and novel, but commercialization inherently means getting customers to show interest and ultimately purchase a technology if the results are validated (such as in a DOE demo program).

b) How can demonstration projects better benefit all stakeholders beyond the immediate participants? How are lessons-learned best captured and promoted, and how is intellectual property best handled?

A 3 phase demo program might require reporting of results and lessons learned to be disseminated (assuming its not confidential company info) as part of a stage-gate to move to the next, larger phase of demonstration / testing. A web portal could be created to disseminate information.

IP must be protected and any IP that results from improvements as a result of learning from the pilot/demo program must be assigned to the company participating. The government should have no claim over IP and any contrary program would be a huge barrier preventing companies from participating in demos.

c) How should DOE determine whether demonstrations adequately address technical and operation risks?

Experts from industry and national labs should come up with metrics and benchmarks for success in a demo program, for each phase. The benchmarks should be transparent and set ahead of any demos. Also, the benchmarks should be adjusted over time as technology improves and should create a minimum and maximum time limit for participants to demonstrate results. For example, if a technology shows promise, the results must be consistent over a long enough period of time to rule out randomness and to test for operational / technology failure.

d) What defines failure or success in the demonstration phase?

Success would be relative to the goals and benchmarks set ahead of the demo. The ultimate success of any demo program is to shepherd early, promising technology through a valley of death to full commercialization. In clean energy technology, full commercialization often requires years of scale testing before low-risk capital will be available to fund projects at full scale. If DOE starts a demo program and brings new technology from early prototype to scale testing with validated results, then the program would fulfill a huge gap in the marketplace.

8) We welcome comment on the selection of these technologies and sources, as well as suggestions of alternate technologies and sources, and updated technology, cost, and forecast data, particularly in rapidly-moving fields.

6.1.1.2 Internal Combustion Engine Performance

"…Increasing the efficiency of ICEs is one of the most promising and cost-effective approaches to improving the fuel economy of our nation's vehicle fleet in the near- to mid-term."

By also targeting technology/applications for vehicles already on the road, DOE can increase fuel economy even more in the near and mid-term than sole reliance on new technology sales.