

HEF Abstract Webinar Q&A:

Q: Could you please elaborate on what the judges will be looking for in the “Policy and Regulatory Analysis” portion of the contest? We are currently speaking with politicians and would like to have focused questions for them regarding this section so that they can provide us beneficial feedback.

A: The idea for the “Policy and Regulatory Analysis” revolves around the policy and regulatory barriers that may exist for power-to-gas technology in your area. For Example, in California P2G is currently not one of the technologies considered under the energy storage mandate that the California Public Utilities Commission (CPUC) established. One of the areas you could address in the analysis is to identify that as a barrier and propose a solution on how the barrier could be addressed, like educating the Commission. Alternatively, if you do have contact with your politicians/representatives, you could identify policy measures that address that barrier. Look at the regulatory side for barriers/ how they can be overcome and examine the legislative pathway as well.

Q: Can you elaborate a little more on the question about "where the electrons are coming from?"

A: Some of the abstracts were looking at a non-renewable pathway for P2G. The point of P2G is to make sure the electrons feeding the electrolyzer to generate the hydrogen are renewable. The project should not assume the electrolyzer is plugged directly into the grid and take advantage of cheap rate power. The P2G system designs need to be more elegant to make sure the electrolyzer is capturing power when there is an excess on the grid or a renewable generation on the grid. Alternatively, it can be directly coupled to a renewable generator, for example if it is a solar array. In your submission, there needs to be a framework about how you are going to achieve the renewable power requirements. There are methods you can try to access low cost, renewable or surplus power. Look at what the rates are for a specific sources of power, whether it be rates for curtailed, renewable electricity which could be used to increase the economic analysis for the system.

Q: Do we need to include conversion of hydrogen to electricity system if one of my hydrogen user is a power plant?

A: No, if you have somebody that takes the hydrogen directly from you then there is no requirement for to have a fuel cell as part of your design. In Germany, ITM Power has P2G plants that make hydrogen and inject it into the natural gas pipeline system. Those systems are not linked to fuel cells but linked to existing infrastructure. Part of the attraction to P2G is it leverages existing infrastructure, pipelines, natural gas turbines, or boilers which will not have to be bought and won't be part of the economics because they have already been built.

Q: Steve also mentioned that small-scale (1 or 2 vehicle) systems are not recommended, however the solar infrastructure available to us is too small to fuel a larger scale operation, will this affect the judging of our submission?

A: The overlying factor is to determine if the small scale is economical. When you're looking at small scale systems that require full refueling infrastructure, vehicle conversions, etc., the costs are high. The small scale would simply be a proof of concept and would not be a commercial system. The overall challenge is identifying large scale adoption of P2G which will not make the mainstream with small projects with one or two vehicles linked to a small solar array. The small solar arrays are typically linked

to a larger system, like a commercial building, university, hospital, etc. The most efficient way of using that power is to sync it into the building directly at 80% efficiency using electric battery route instead of producing hydrogen and achieving a 30% efficiency. Look at the economics of your system to determine if it worthwhile to pursue. Additionally, the small solar array could be one of the sources of your renewable electricity, but you will have to add other sources of renewable power to scale up your design.

If you have any questions before the final submission is due on January 31, 2018, please contact [Peter Thompson](#) or [Emanuel Wagner](#).