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Hydrogen energy storage can play a key role just like it does in Europe

ITM Power is a leading hydrogen energy systems company who is actively deploying Power-to-gas energy storage systems around the world.

ITM was shocked to hear the comments at the workshop siting hydrogen technology as being unsafe and un-economical - the attached document addresses these issues.

Additional submitted attachment is included below.

May 25, 2017

Comments of ITM Power in response to the California Energy Commission's (CEC) 2017 Integrated Energy Policy Report (IEPR) Joint Agency Workshop on the Increasing Need for Flexibility in the Electricity System held on May 12, 2017.

ITM thanks the California Energy Commission, the Public Utilities Commission and the Independent System Operator and the staff of each organization for the opportunity to provide comments on the May 12, 2017 Joint Agency Workshop on the "Increasing Need for Flexibility in the Electricity System regarding the 2017 IEPR".

ITM Power is a world leading developer of hydrogen energy storage technologies and set up a California based subsidiary in 2011 to focus on the growing market for renewable energy and clean fuel. ITM firmly believes that the use of Power to Gas (P2G) technology and Hydrogen Energy Storage (HES) is critical for the long term stability of electricity grids with high renewable penetrations and high electric vehicle deployments.

ITM is actively deploying HES systems in Europe and the market has shown that the technology is robust, efficient and cost effective. P2G is the ONLY technology that has the capability to decarbonize the electricity, gas, heat and transportation systems simultaneously. California has a plan to aggressively accelerate the number of hydrogen fuel cell electric vehicles. Without HES technology those vehicles will not be able to run on truly zero emission fuel as the levels of renewable hydrogen production from bio based sources are insufficient to support large number of vehicles.

ITM Power was shocked to hear the misinformation delivered at the workshop regarding the fact that P2G and HES technology was unsafe and too costly.

This is simply incorrect information.

Studies from around the world such as the '[Commercialization of energy storage in Europe](#)' have analyzed the different technologies required to provide a robust energy system when levels of renewable penetration get greater than 50%. The study confirms that P2G is an essential technology for high power and long term storage, in fact P2G was shown to be the most costs effective technology for eliminating the curtailment of surplus renewables. There have been no major safety incidents despite millions of hydrogen vehicle refueling events and years of hydrogen energy storage and pipeline injection projects in Europe.

The cost of energy storage depends in the size (MW) and duration (MWh) of the storage. HES is the cheapest possible technology for long term and large volume energy storage when it can

access the existing storage medium of the natural gas pipeline system. TWhrs of electrical energy storage exist today in the gas grid with no investment required by ratepayers for storing the energy.

HES can offer several simultaneous grid balancing services including voltage, frequency demand response and ramp assisting as well as eliminating curtailment or negative pricing of electricity. ITM requests that the commission reexamine the benefits of hydrogen and allow the technology to be procured by IOUs to provide energy storage, only once the technology is deployed can the real value be shown.

ITM also respectfully requests that a HES and P2G specific workshop or webinar be set up to allow the industry to show the benefit of the technology and answer questions and concerns from people who do not understand these benefits, The bilateral energy conference with Germany would be a perfect setting for this event.

ITM Power is very concerned about the current mindset towards HES and P2G. We would like to grow our business in California creating jobs and benefiting the energy market as a whole however these barriers are causing significant problems to our business forcing us to focus on other areas such as Europe.

Kind regards,



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