Johnson Matthey Fuel Cells

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CALIFORNIA AIR RESOURCES BOARD
1001 I Street
Sacramento, CA 95814

January 24, 2012

Subject: Zero Emission Vehicle and Clean Fuels Outlet Regulations

Dear Chairman Nichols and Board Members,

Johnson Matthey Fuel Cells (JMFC) welcomes the proposed amendments to the ZEV and CFO Regulations as part of the Advanced Clean Car Regulatory Package, for the 2012 Adoption of the Amendments to the California Zero Emission Vehicle Regulation.

We believe that the ZEV and CFO regulations are instrumental not just for fuel cell vehicle commercialization and alignment with ultra clean fuel /H2 availability, but also for fuel cells in a range of applications, all toward achieving the 2050 target of 80% GHG reduction on 1990 levels.

JMFC is part of the Johnson Matthey Group, a global leader in environmental technologies. Johnson Matthey has many years of experience with fuel cell technologies, having supplied fuel cell catalysts and other components since the NASA space programs in the 1960s. The company continues to invest in fuel cell components R&D and fabrication, and established the world's first dedicated Membrane Electrode Assembly (MEA) manufacturing facility in 2002. Johnson Matthey has advanced capabilities for MEA recycling, platinum recovery and substantial experience in the automotive industry. JMFC maintains a leading position as a developer, manufacturer and supplier of fuel cell components (MEAs, catalysts and various catalyzed components for fuel cells as well as for hydrogen generation) to fuel cell developers and hydrogen generation industry worldwide.

We believe that the performance and durability of fuel cells has evolved to the point where fuel cell cars are a viable application. We believe that the Department of Energy's fuel cell cost targets are correct, and the technologies that we are developing continue to address performance improvement as well as cost reduction.[1]

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[1] *Mass Production Cost Estimation for Direct PEM H2 Systems for Automotive Applications* http://www1.eere.energy.gov/hydrogenandfuelcells/pdfs/dti_80kwW_fc_system_cost_analysis_report_2010.pdf

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Johnson Matthey is a major player in the platinum industry and produces the annual 'Platinum' review [2] which is the industry reference for supply and demand. It is our belief that existing and new primary production, combined with the high recycle rates that are typical for platinum recovery and reuse (90%+) will ensure that platinum is available to support the most optimistic demand scenarios described for fuel cell cars. Overall ore reserves and resources in South Africa were reviewed by the leading industry expert who calculated that there are 550 million oz of Pt in the top 2km^3, equivalent to more than 100 years (at current extraction rates). Furthermore, high recycling rates combined with reduced metal loadings will limit the increase in demand for primary ore as fuel cell vehicle sales grow.

JMFC strongly welcomes CARB's leadership in setting standards and working with industries for this important rulemaking and we look forward to offer any technical support required to continue to strengthen these programs. Please do not hesitate to contact us if we can be of any assistance.

Sincerely,

Dr. Jonathan C. Frost
Director, Johnson Matthey Fuel Cells
Tel: +44 (0)179 375 5605

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[2] http://www.platinum.matthey.com/

[3] http://www.platinummetalsreview.com/article/54/4/205-215/ R. G. Cawthorn, "*The Platinum Group Elements Deposits of the Bushveld Complex in South Africa,*" Platinum Metals Review, Volume 54 (4), Oct **2010**, pp 205-215.