



National Hydrogen Association

MEMORANDUM

February 22, 2009

TO: **NHA Members**

FR: **JERRY HINKLE, GEOFF BROMAGHIM**

RE: **REVIEW of the AMERICAN RECOVERY and REINVESTMENT ACT (ARRA) of 2009**

Background We have done a comprehensive review of P.L. 111-5, which was signed into law on February 17th. It is in two parts: Division A: Appropriations Provisions, and Division B: Tax, Unemployment, Health, State Fiscal Relief, and Other Provisions. Our purpose is to look for every opportunity where hydrogen and fuel cells could be used to satisfy the goals of each section of the Act. As you know, our team has taken a considerable interest in tax credits that would incentivize industry to build hydrogen refueling infrastructure, particularly for early market applications like materials handling, backup power and vehicle fleets.

Over 2007-9, we have helped to facilitate the introduction of five separate pieces of related legislation in both the Senate and House—H.R. 805, S. 2129, H.R. 5746, and H.R. 1 (the stimulus package) in both bodies. Division B of the Act now includes a hydrogen refueling infrastructure tax credit. Funding for a variety of energy programs is also included in the Act, which may provide a range of opportunities for hydrogen and fuel cell RD&D and market transition. Since the framers intended that there would be no appropriation earmarks in the Act, hydrogen and fuel cells is not specifically mentioned in Division A, but is under the tax credits in Division B. Considerable budget planning has yet to be done, as DoE and other agencies are granted wide discretionary authority to utilize the funding. Agencies have 30-60 days to submit spending plans to the Appropriations Subcommittees in the Senate and House, plus the Office of Management and Budget (OMB). Funds must be used within the Fiscal Years 2009 and 2010.

Many agencies are planning on augmenting existing contracts and earlier solicitations as quick reaction funding mechanisms. NHA members should watch for these opportunities, especially if you are already under contract with Federal or State agencies where stimulus funding may be targeted. DoE has just issued a new Request for Information (RFI) on early market applications for hydrogen and fuel cells that will help define some of their stimulus spending. We are drafting a response, due by March 31st. We are also contacting Secretary of Energy Steven Chu, the Hydrogen and Fuel Cell Caucuses in the Senate and the House, OMB and other agencies about ideas and opportunities.

The text of the Act can be found at: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:h1enr.txt.pdf. The JOINT EXPLANATORY STATEMENT OF THE COMMITTEE OF CONFERENCE for Report 111-16 is Part A: http://appropriations.house.gov/pdf/Recovery_JS_DivA.pdf
Part B: http://appropriations.house.gov/pdf/Recovery_JS_DivB.pdf.

A useful summary is at:

<http://appropriations.house.gov/pdf/PressSummary02-13-09.pdf>.

The Purposes of the Act (Sec. 3) are:

- (1) To preserve and create jobs and promote economic recovery.
 - (2) To assist those most impacted by the recession.
 - (3) To provide investments needed to increase economic efficiency by spurring technological advances in science and health.
 - (4) To invest in transportation, environmental protection and other infrastructure that will provide long-term economic benefits.
 - (5) To stabilize State and local government budgets, in order to minimize and avoid reductions in essential services and counterproductive state and local tax increases.
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DIVISION A—Appropriation Provisions

TITLE I—Dept. of Agriculture

Agriculture buildings and facilities and rental payments, \$24 M. Agriculture Research Service, buildings and facilities, \$176 M—primarily deferred maintenance, but maybe a chance to incorporate hydrogen and fuel cells (H2&FC) in new, energy efficient, zero emissions buildings. Secs. 781 -783 of the *Energy Policy Act of 2005* (EPAct 05—Federal and State procurement) for cooperative early purchase of H2&FC in conjunction with DoE could be a possibility for market transformation.

Rural Utilities Service direct loans and grants for rural water, waste water and waste disposal programs, \$1.38 B—are there uses here for landfill/biogas in distributed generation? For instance, FuelCell Energy has built 13 combined heat and power facilities using anaerobic digesters to produce electricity from wastewater treatment gas. The New York Power Authority has also employed biogas to operate microturbines and generate electricity. Report language discusses an added \$3.788 B in loans and grants for rural water and waste disposal.

Distance Learning, Telemedicine and Broadband Program, \$2.5 B—may relate to backup and distributed power.

Title II—Commerce, Justice, Science and Related Agencies

Dep't of Commerce National Telecommunications and Information Administration, Broadband Technology Opportunities Program, \$4.7 B, of which \$4.35 B is for Division B, with \$450 M for competitive grants for expanding public computer access and innovative broadband applications. Would Federal purchase of backup and auxiliary power from fuel cells qualify—as in Secs. 781 -3 of EPAct, in cooperation with DoE's market transformation program?

National Institute of Standards and Technology, scientific and technical research and services,

\$220 M. Also included is \$360 M for construction and maintenance of research science buildings and laboratories. For several years, NIST has pursued a hydrogen program, particularly in testing H2 storage materials, and codes and standards for H2 distribution. They have done work on fuel blends as well, and have underway a new H2 test facility.

National Oceanic and Atmospheric Admin. operations, research, and facilities, \$230 M. Also, procurement, acquisition and construction, \$600 M. Another candidate for early purchase of clean backup power for Weather Service communication towers, as part of the DoE authorities for market transformation in Secs. 781 -3 of EAct 05. DoE is already discussing this application with NOAA.

Science: National Science Foundation Research and related activities, \$2.5 B. Possibly H2 research, academic facilities construction and modernization.

TITLE III—Dep’t. of Defense

Facility infrastructure Investments, Defense; sustainment, restoration and modernization at physical plant—post, camps and stations, \$4.24 B. May be more chances to utilize the above Secs. 781 -3 for early Federal purchase of H2 and fuel cell equipment—especially commercial refueling stations, materials handling, backup power, and distributed generation to improve GHG footprint and energy efficiency. Invests in energy efficiency and repair and modernize. The National Guards are also included—there is certainly interest in California, West Virginia and other states in refueling stations, backup power, etc.

Near Term Energy Efficiency, Technology Demonstrations and Research, \$300 M, all Services. RDT&E for alternative energy, including fuel cells, wind, solar, biofuels and bioenergy. Maybe an excellent opportunity for many kinds of applications, as above, but more oriented towards demonstrations.

TITLE IV—Energy and Water Development

Department of Energy: Energy Efficiency and Renewable Energy (EERE), \$16.8 B. \$2.5 B for applied research, development, demonstration and deployment, with \$800 M for biomass, \$400 M for geothermal, and \$50 M for IT—leaving about \$1.25 B for the rest of EERE’s programs (remember that DoE’s entire budget request for FY 2009 was “only” \$1.255 B—leading to the question of how to quickly develop their administrative capability to invest 13 times their usual budget). Near term applications like materials handling, auxiliary and backup power, energy storage for the electrical grid and combined H2 heat and power all seem to have some buoyancy. There should be an opportunity here to obtain more funding for H-Prize, perhaps related to a prototype application for systems integration, and a new components prize for non-noble materials in PEM catalysis. Within EERE, there are productive links to Clean Cities, Vehicle Technologies, Smart Grid and Industrial Technologies. We are recommending to the Secretary that he more fully use his authorities under EAct05 and EISA 07, as outlined in our stimulus letters of 12/31/08 and 2/1/09, and a forthcoming letter from the Senate and House Hydrogen and Fuel Cell Caucuses.

They plan to use existing or near term awards from Funding Opportunity Announcements (FOAs) as the stimulus funding mechanisms, so look closely at existing project extensions, or new awards made to second tier qualified proposals that did not get funded originally. FOAs on Clean Cities, Market Transformation (Secs. 781 -3) and the new Request for Information (RFI—

comments due on March 31st, NHA will be submitting a letter) should be reviewed, as EERE plans to augment funding in these. We will have more on this later—we expect to be particularly active in advocating enhanced funding for these efforts.

We believe, also, that funding should be included for Subtitle B of P.L. 110-140, the *Energy Independence and Security Act of 2007*—Improved Vehicle Technology. Secs. 131-136 include a wide range of transportation electrification applications, including fuel cells, hybrids, etc., in materials handling, airports, truck stops, ports, auxiliary power, and ancillary infrastructure. Includes cost-shared competitive grants with state and local governments, a Domestic Manufacturing Conversion Grant Program, Loan Guarantees for Fuel-Efficient Automobile Parts Manufacturers, and an Advanced Technology Vehicles Manufacturing Incentive Program. Up to \$450 M was authorized through 2012, but this existing DoE authority has been largely unfunded. The ARRA 09 could help remedy that. Other sections of EISA are also candidates, including Sec. 641 of EISA 07, in its Applied Research Program: “(1)(H) hydrogen as an energy storage medium.”

Energy Efficiency and Conservation Block Grants, \$3.2 B, of which \$400 M are to be competitively awarded. These could be tied to the above Secs. 131-136 of EISA.

Alternative Fueled Vehicles Pilot Grant Program, \$300 M. Opportunities here for bus and delivery fleets, etc., under Secs. 131-136 of EISA?

Electricity Delivery and Energy Reliability, \$4.5 B. EISA 07 includes language for storage, and hydrogen would fit—as recent wind-H₂ projects with Basin Electric Power Cooperative and Xcel Energy/NREL have demonstrated. EERE needs to make sure to coordinate with the DoE electricity program.

Fossil Energy, \$3.4 B. Stealth language for “industrial carbon capture and energy efficiency improvement projects”, and “fossil energy research and development programs” could be used for FutureGen, hydrogen from coal and solid oxide fuel cells. The original configuration of FutureGen before the Bush Administration cancelled it, was a flexible IGCC facility that coproduced electricity and hydrogen, using a variety of coals and with full carbon capture and storage. There are many advocates for restoring FutureGen—hopefully hydrogen production will return. Limited hydrogen combustion research has also been funded by FE.

Science, \$1.6 B. About \$50 M + in basic hydrogen production research has been funded in FY 08. It is hoped that this renewable hydrogen from solar energy and biomass can be enhanced with stim funding.

Advanced Research Projects Agency-Energy, \$400 M for ARPA-type science-to-products fast track RDT&E, under Sec. 5012 of the *America COMPETES Act of 2006*. Could be used for a hydrogen and fuel cell application—for example, a commercially feasible method for advanced solar H₂ production and remote distributed generation?

Title 17 of EPA Act 05—Innovative Technology Loan Guarantee Program, \$6 B to pay the cost of guaranteed loans for renewable and transmission technologies. This remedies one of the significant barriers to DoE awarding loan guarantees—after 2 ½ years, they have yet to award one—the applicant must include with their application fee the government’s cost of the risk of the loan guarantee—effectively negating the value of the loan guarantee program itself, except for perhaps a minimal buy down in the interest rate of the private debt financing the project. Sec. 1703 includes under eligible categories “(3) Hydrogen fuel cell technology for residential, industrial or transportation applications”....

This also includes \$ 10 M in administrative costs for the Advanced Technology Vehicles Loan program, which was authorized by the Sec. 136 of EISA 07 (direct loans to manufacturers).

Western Area Power Administration, Bonneville Power Authority \$10 M for construction and rehabilitation for WAPA, and \$3.25 B in new borrowing authority for each of WAPA and BPA. New renewable energy projects would be funded. Perhaps some interest in wind-hydrogen and associated storage?

TITLE V—Financial Services and General Government

General Services Administration, Federal buildings fund, \$5.5 B. High-performance Green Federal buildings. Perhaps an opportunity for stationary fuel cells and refueling infrastructure, in cooperation with DoE and its market transformation program thru Secs. 781 -3 of EAct 05.

Energy-Efficient motor vehicle fleet procurement,\$300 M. Market stimulation for advanced, efficient and lower carbon Federal vehicles. A strong opportunity for DoE to use the Federal procurement provisions of Secs. 781 -3 of EAct 05, as described above.

TITLE VI—Department of Homeland Security

Immigration and Customs Enforcement, Transportation Security Administration, Coast Guard: several opportunities for backup and auxiliary power, using Secs. 781 -3 of EAct 05 in cooperation with DoE.

TITLE VIII—Departments of Labor, Health and Human Services, and Education, and Related Agencies

Dep't. of Labor \$500 M for worker training in high growth and emerging industry sectors: energy efficiency and renewable energy. Hydrogen and fuel cells could fit in here. Also similar Office of Job Corps funding.

Dep't. of Health and Human Services \$1.3 B for the National Center for Research Resources (NCCR) for competitive awards for the construction and renovation of extramural research facilities. \$300 M for shared instrumentation and other capital research equipment, demonstrating energy-saving and beneficial environmental effects. DoE and Secs. 781 -3 of EAct 05 could be factors for stationary and backup power.

TITLE X—Military Construction and Veterans Affairs

All Services,\$3.1 B. Another opportunity for DoE and Secs. 781 -3 EAct 05.

TITLE XII—Transportation and Housing and Urban Development and Related Agencies

Dep't. of Transportation Supplemental Discretionary Grants for a National Surface Transportation System, \$ 1.5 B. Buses?

Federal Aviation Administration, \$200 M. Fuel cells for power systems? \$ \$1.1 B for airport infrastructure, DoE and Secs. 781 -3 of EAct 05? DoE and Sec. 131 of EISA 07?

High Speed and Intercity Rail, National Railroad Passenger Corporation, \$ 9.3 B. More cooperative opportunities with DOE, hydrogen locomotives, hydrail?

Federal Transit Administration, \$6.9 B. Includes \$100 M for discretionary grants to public transit agencies for capital investments to reduce energy consumption and greenhouse gas emissions. Hydrogen and fuel cell buses, hydrolleys?

DIVISION B—Tax, Unemployment, Health, State Fiscal Relief, and Other Provisions

TITLE I—Tax Provisions

Subtitle B—Energy Incentives *(Please consider this summary as advisory—be certain to have your tax attorney review the specific sections of the Act that may benefit your firm or organization. There is no section index in the Act, and the summary below serves as an annotated index for the Conference Report, unless otherwise noted.)*

Part I—Renewable Energy Provisions (may affect renewable hydrogen production, depending upon feedstock and ownership, and other provisions)

Sec. 1101. Extension of Credit for Electricity Produced from Certain Renewable Sources—see pp 103-109 of the Div. B link above—defines current law, explains prevailing IRS guidance, details new law; very helpful

Sec. 1102. Election of Investment Credit in Lieu of Production Credit—pp 110-111

Sec. 1103. Repeal of Certain Limitations on Credit for Renewable Energy Property—pp 111-114

Sec. 1104. Coordination with Renewable Energy Grants—pp 114-115

Sec. 1111. Increased Limitation on Issuance of New Clean Renewable Energy Bonds—pp 116-118

Sec. 1112. Increased Limitation on Issuance of Qualified Energy Conservation Bonds (Green Community programs, added \$2.4 B in new bonds)—pp 118-121

Sec. 1504. Modification to High-Speed Intercity Rail Facility Bonds—pp 122-123

Sec. 1122. Modification of Credit for Residential Energy Efficient Property (**fuel cells** limited to \$500/.5 kW capacity (no change); in case of joint occupancy, \$1667/.5 kW; eliminates some other credit caps)—pp 126-127

Sec. 1123. Temporary Increase in Credit for Alternative Fuel Refueling Property (“(B) in the case of any such property which relates to **hydrogen**, subsection (b)(1) shall be applied by substituting ‘\$200,000’ for ‘\$30,000’ ”—applies to projects beginning after 12/31/08, and expires 1/1/11. This was the first choice of NHA’s stimulus initiative, and appeared in both the Senate and House bills, plus three other pieces of legislation. Moves the cap from \$30,000 to \$200,000)—pp128-129.

Sec. 1131. Modification of Credit for Carbon Dioxide Sequestration (applies to an injectant for tertiary recovery of oil, extends \$20/t of CO2 equivalent, could be useful for

capture and storage of GHG at hydrogen production facilities; also requires EPA to promulgate regulations for geologic storage of CO₂)—pp 135-136

Sec. 1141-1144. Plug-In Electric Drive Motor Vehicles (if you may some day choose to build a PHEV with a fuel cell instead of an ICE, this may be useful...)—pp 136-139

Subtitle D—Manufacturing Recovery Provisions

Sec. 1301. Temporary Expansion of Availability of Industrial Development Bonds to Facilities Manufacturing Intangible Property

Sec. 1302. Credit for Investment in Advanced Energy Facilities—production of electricity from qualified sources, including the following property: ***fuel cells*** and ***energy storage systems for electric vehicles, electric grids to support the transmission of intermittent sources of renewable energy, refine or blend renewable fuels, PHEVs, EVs,*** and ***other advanced energy property designed to reduce greenhouse gases,*** renewable sources; increases credits by \$300 M to \$2.3 B, etc.—pp 140-142

Sec. 1603. Grants for Specified Energy Property in Lieu of Tax credits (covers ***fuel cells***, microturbines, combined heat and power, renewable electricity property, and others—substitutes grants from Treasury in lieu of tax credits)—pp 153-158 of the Act, rather than the Conference Report.

Sec. 1604. Increase in Public Debt Limit—up to “\$12,104,000,000,000”, to enable the stimulus to increase the deficit.