

International Collaborations

Hydrogen & Fuel Cell Summit
June 15-17, 2004
Miami, FL

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International Activities with SC&S Implications

- International Partnership for the Hydrogen Economy (IPHE)
- UN/ECE WP.29 GRPE Informal Group on Hydrogen/Fuel Cell Vehicles
- International Energy Agency (IEA)
- International Standards Organization Technical Committees
- The Greening of the Beijing Olympics



International Partnership
for the Hydrogen Economy

International Partnership for the Hydrogen Economy

- Goal: Efficiently organize, evaluate and coordinate multinational research, development and deployment programs that advance the transition to a global hydrogen economy
- Membership:
 - Australia
 - Brazil
 - Canada
 - China
 - EC
 - France
 - Germany
 - Iceland
 - India
 - Italy
 - Japan
 - South Korea
 - Norway
 - Russia
 - UK
 - USA



International Partnership
for the Hydrogen Economy

IPHE will...

- Bring together the world's best intellectual skills and talents to solve difficult problems
- **Coordinate interoperable technology standards**
- Develop policy and technical guidance while leveraging resources to advance hydrogen and fuel cell technology development and deployment
- Foster large-scale, long-term public-private cooperation to advance hydrogen and fuel cell technology and infrastructure development
- Address emerging technical, financial and policy issues and opportunities
- Mobilize high-level support for hydrogen research



International Partnership
for the Hydrogen Economy

IPHE Steering Committee Meeting

- Interesting statements and observations:
 - Japanese government “mandate” is to have regulations for hydrogen in place by March 2005
 - In Germany, the phasing out of nuclear power production (by 2020) will double the current contribution from renewables (10% will go to 20%), but will also increase fossil contribution from current 60% to a total of 80%
 - Brazil stated that they “cannot afford to keep studying.” Mostly focused on biodiesel and ethanol as motor fuels, and are considering NG and ethanol reforming for hydrogen production, as well as direct ethanol fuel cells
 - France questioned the motivation for some collaborations – only collaborate if we need to collaborate (would rather not)
 - China sees coal as the major source of hydrogen out past 2035, with hydrogen-from-coal at <50% in 2050

The Future of IPHE

- Facilitated discussion during the Steering Committee Meeting
- Delegates asked to discuss
 - The future of IPHE over the next decade
 - How IPHE might evolve over time in response to new conditions and possibilities
 - How IPHE might assist with their own transition to the Hydrogen Economy
 - Ways to ensure the efficiency and effectiveness of the IPHE (today and in the future)
 - Ideas for increasing the value and impact of IPHE

Opportunities and Challenges (focus on C&S)

- More (and higher-level) visibility for international C&S and regulatory activities, with an opportunity to harmonize the various national approaches
- Focus of “political will” of individual countries or regions to accelerate a historically-slow process
- Ability to share limited data
- Prevent duplication of efforts in an increasing number of C&S development and regulation-setting activities
- Create real objectives, not just another group and its associated set of meetings that must be followed

International Activities with SC&S Implications

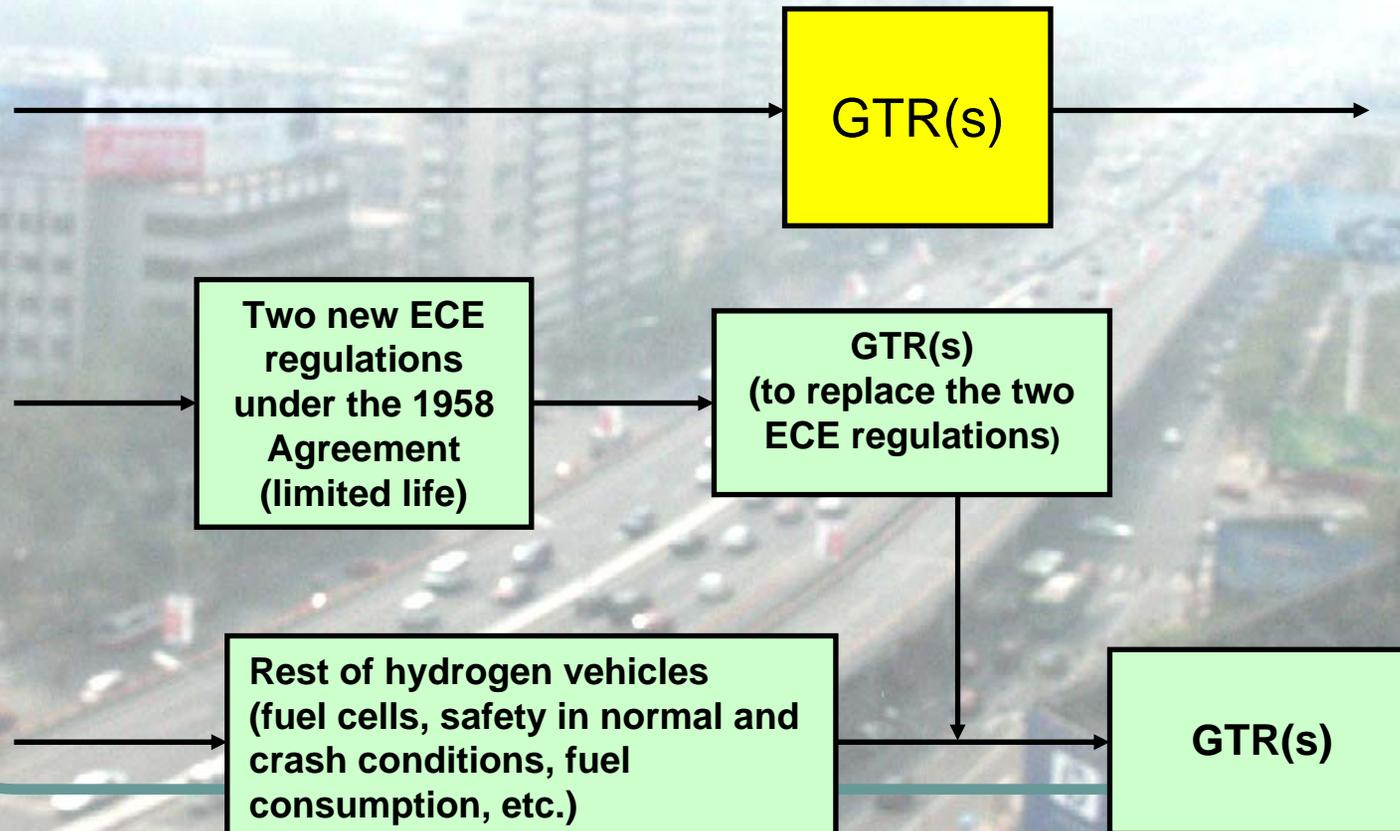
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GRPE - Roadmap to GTR

- World Forum for Harmonization of Vehicle Regulations (WP.29) – history of hydrogen GTR development
 - Draft regulations for on-board liquid and compressed hydrogen storage were presented by Germany as potential ECE regulations under the 1958 Agreement in March 2001
 - The Informal Group was formed (with Germany as chair) to prepare these ECE regulations
 - Concerns about continued 1958 tract for the draft regulations led to a call for the development of a roadmap

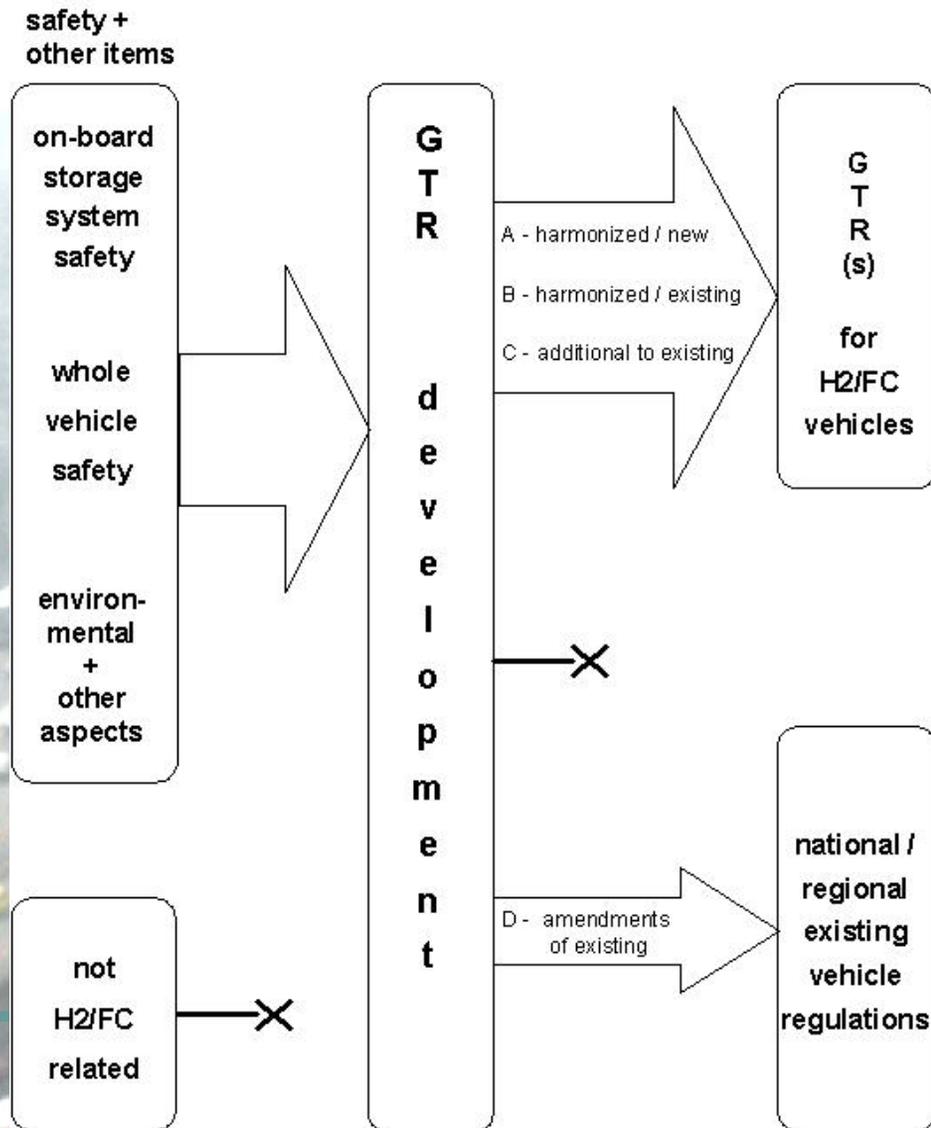
Roadmap to GTR(s)

- Informal Group met in DC to develop roadmap
- Two options were proposed



Principal Pathways to GTR(s)

The informal group agrees that the goal is to develop regulations, harmonized and performance-based to the greatest extent possible, taking into consideration benefits and cost-effectiveness of the new GTR(s)



Opportunities and Challenges

- Participation by a wide variety of industries from a number of countries or regions will aid in the development of effective and inclusive regulations
- High visibility of this effort within the UN/ECE WP.29 should enable the development process
- Technical expertise needed to ensure that performance-based regulations are developed
- As technologies develop and progress, it is possible that premature or poorly-crafted global regulations could preclude a “speedy” introduction of better solutions

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Proposed new IEA Annex on Hydrogen Safety

- Goal: to develop data and other information that will facilitate the accelerated adoption of hydrogen systems
- Objectives:
 - To cooperatively conduct a testing program to validate the results of numerous models that have been developed and to use the data for further refinement of those tools for use in real-life scenarios
 - To document and convey the results and data in ways that support the development and implementation of codes and standards
- Proposed Operating Agent: Bill Hoagland
- Interested countries: Spain, Switzerland, Denmark, EU, Sweden, Canada, US, Norway, France, Italy, Netherlands, Singapore
- Tentatively interested countries: UK, Japan, Finland, Iceland

Expectations for Safety Annex

- A cooperative program will provide safety information that will be available to all countries to assist in the commercial introduction of hydrogen systems by
 - providing information on which to base codes and standards development
 - facilitating the permitting of new installations by approving authorities
 - facilitating the availability of insurance coverage by providing information on which risk assessments can be completed

Opportunities and Challenges

- Collaborative effort will provide safety information to all participating countries to assist in the commercial introduction of hydrogen systems
- Information about hydrogen's safety in actual applications is lacking, as is experience with consumer-related applications.
- Sharing of data and common experiences is cost-effective and efficient
- Current hydrogen system and component design requirements are excessive and restrictive. New installations face difficulties with approvals, insurance, and public acceptance
- Concerns over public acceptance and product liability cannot be resolved unless fully developed codes and standards exist
- IEA activities do not always include industry experiences and are sometimes perceived as not adding value

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Bob talking now



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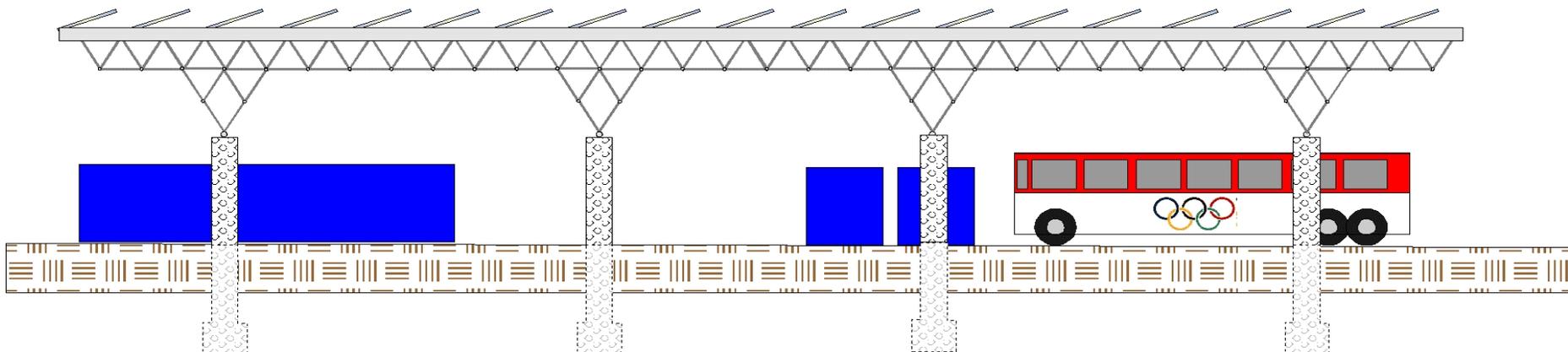
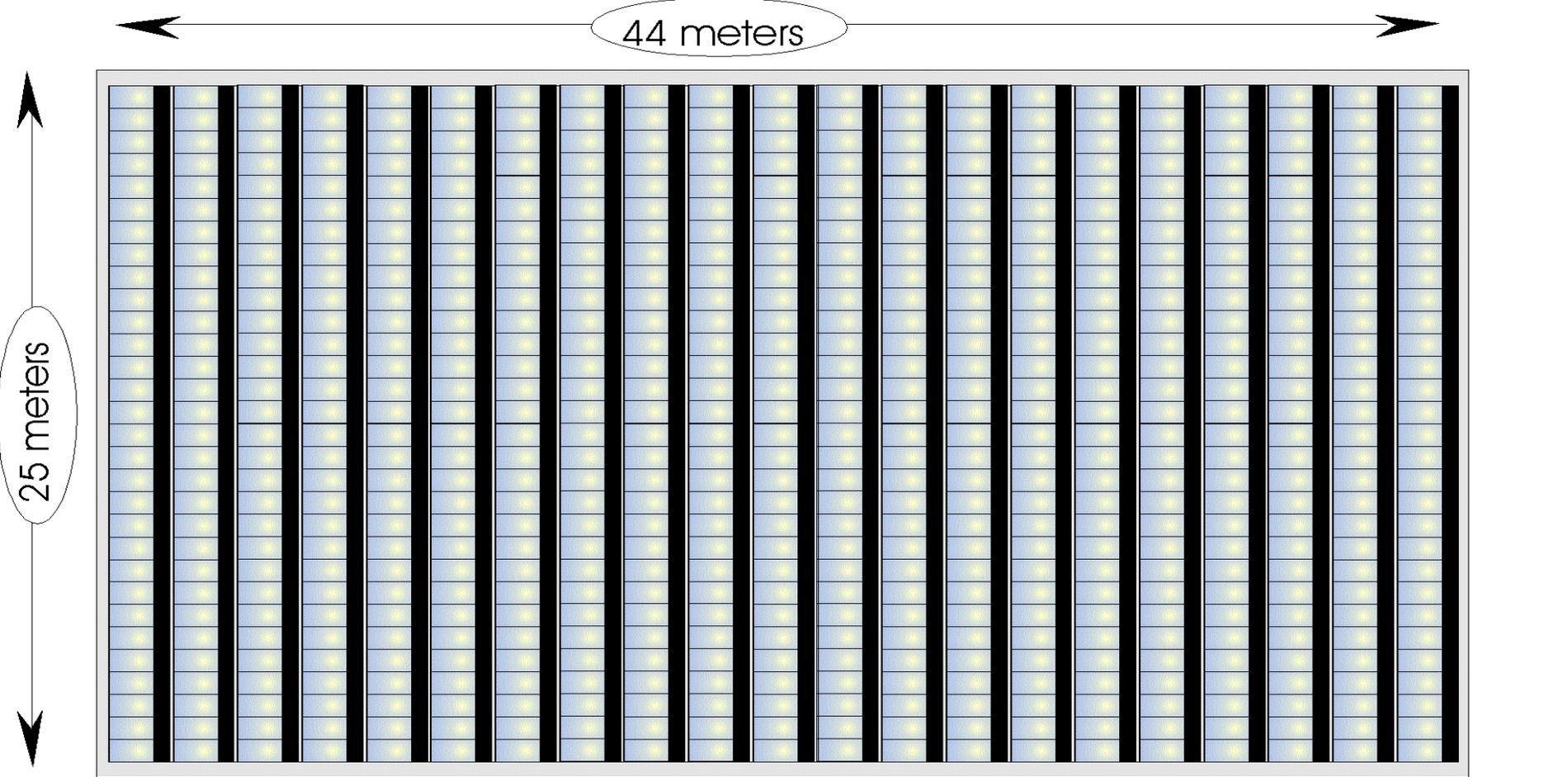
Greening of the 2008 Summer Games in Beijing

- EERE is participating in a multi-agency effort to provide clean technologies for the 2008 Summer Olympics
- Hydrogen and fuel cells have been given a high priority by China, although with some reservations
- Team members participated in a week of meetings in Beijing last month
 - Olympics Team meeting (Saturday)
 - China Hydrogen Vision Workshop (Sunday)
 - Tsinghua University tour (Tuesday)
 - IPHE Steering Committee Meeting (Wednesday)
 - Visit to Hydrogen Park (Thursday)

US Activities related to Hydrogen and Fuel Cells at the 2008 Olympics

- Hydrogen Park
 - Five Hythane buses in revenue service (Cummins-Westport to upgrade, calibrate and certify)
 - Two test buses (one in China and one in the US)
 - Glider based on Chinese CNG bus
 - Renewable hydrogen production and dispensing system (US-produced and pre-assembled)
 - Stationary fuel cell for powering the Park
- Fuel Cell Bus
 - Chinese glider platform
 - Joint integration of US-supplied fuel cell
- Small stand-alone power system*
 - 3-5kW fuel cell for educational kiosks or telecommunications system

* Proposal under development by US for consideration by the Olympic Committee



Opportunities and Challenges (focus on C&S)

- Proactive work on safety and regulatory issues in a constructive manner should streamline installation and operation of demos
- Large economic potential for participants involved in clean technologies
- US approach to Model Building Codes has economic and performance benefits
- Developing country with unfamiliar and very different social and political drivers
- Communication is challenging (time zone, language, etc)
- Treatment of intellectual property ownership and protection issues is not clear

What's up with the photo used for the background ?

About 1/2 mile from hotel

This is early Wednesday morning



This is also what it looked like by noon on Wednesday



View from Beijing Hilton (18th floor)

It rained most of the day Tuesday