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Implementation Plan for Developing a California Hydrogen Highway Network Blueprint

Summary

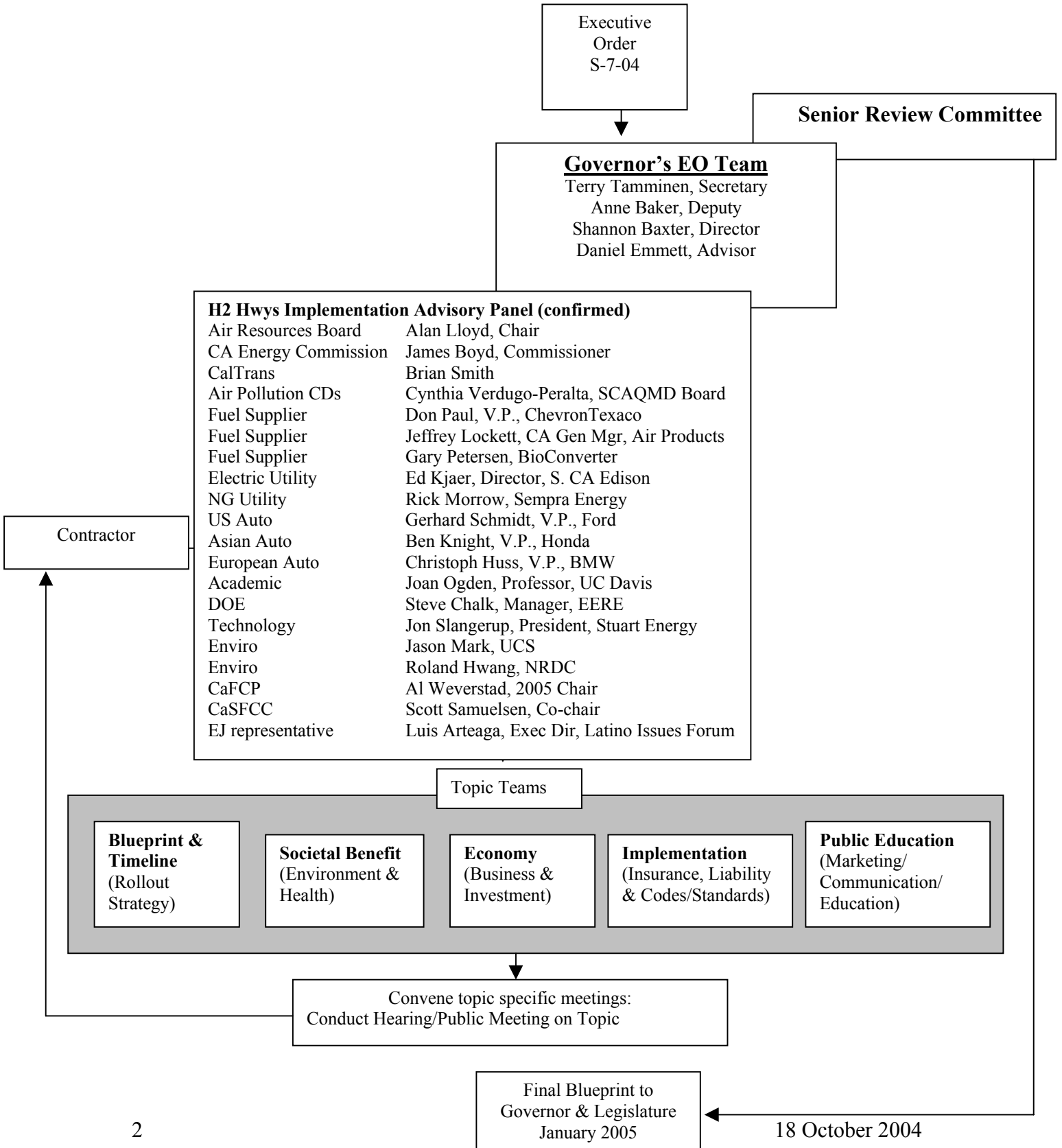
In Executive Order S-7-04, Governor Schwarzenegger described his vision of a network of hydrogen fueling stations along California's major highways by the end of this decade and calls for a Blueprint Plan that will map out the pathway. The Blueprint Plan is due to the Governor and the Legislature by January 1, 2005.

A public/private partnership will be needed to implement the vision. To establish a framework for implementing the hydrogen highway and to build support for the public/private partnership, Cal/EPA will invite high-level experts from industry, non-profits and government to participate in the Hydrogen Highway Implementation Advisory Panel (Panel), chaired by Secretary Tamminen. The Panel will advise Cal/EPA and assist in the development of a blueprint plan for the implementation of the California Hydrogen Highway Network (CA H2 Net) by the end of the decade. The blueprint will outline the steps needed to create a CA H2 Net to ensure that hydrogen is accessible to the majority of Californian's. The Panel may also recommend next steps in supporting a broader vision of a hydrogen-based economy. The Panel will meet for a maximum of six, one-day meetings.

In addition to the Panel there will be Topic Teams (Teams) that will provide information and recommendations to the Panel. These Teams will be made up of experts that are either affiliated with the Panel or engaged in one or more of the topics considered. Topics to be considered include roll out strategy; environment and health; business and investment; insurance, liability and codes & standards; and marketing, communication and education. Each Team will develop a plan to address a specific aspect of the CA H2 Net implementation. The plans will be vetted at a public meeting for review and discussion. The plans will be reassessed based on the developments at the meeting. The plans will then be presented to the Panel for discussion, modification and approval. A contractor in cooperation with Cal/EPA staff will provide support for the Teams.

The final report will be assembled by the contractor under the direction of Cal/EPA staff and submitted to the Senior Review Committee (SRC). The SRC will be made up of Cabinet Secretaries and California legislators. They will independently review the report and recommend modifications. The Governor's Executive Order Team will submit the plan to the Governor and Legislature by January 1, 2005.

OPERATIONAL DIAGRAM FOR IMPLEMENTING GOVERNOR'S EXECUTIVE ORDER FOR A HYDROGEN BLUEPRINT PLAN



DRAFT

California Hydrogen Highway Network Implementation Advisory Panel Responsibilities

1. Provide input, review and offer revisions to improve Topic Team reports
2. Participate in Panel Meetings
3. Provide input that is constructive to the well-being of the State of California and contributes to the goal of achieving the Governor's vision for hydrogen in the State in accordance with Executive Order S-7-04

Topic Team Responsibilities

1. Examine key issues, probe areas of contention, recommend and prioritize solutions, and acknowledge significant dissenting viewpoints
2. Develop and present a plan to address their given challenge at a public meeting for discussion
3. Elicit and address public testimony from stakeholders
4. Present the materials at the subsequent Panel forum

Topic Team Structure

Each Topic Team is expected to develop a proposal that addresses a subject area related to providing access to hydrogen for the majority of Californians by the year 2010. Teams will be facilitated by a manager and three co-chairs as approved by the Panel and Governor's EO Team. Co-chairs will be volunteers that will spend a significant portion of their time between the Topic Team Kick-off and the Panel meeting for their Team working on the Blueprint Plan. A contractor will provide technical support to assist the Teams in developing ideas to address the various challenges associated with each Topic. Cal/EPA requests that the Topic Teams be as inclusive as functionally possible.

Systems Integration Team

Cal/EPA will assist the Topic Teams by organizing bi-monthly conference calls between all of the managers, co-chairs, and EO Team in an attempt to stay on schedule and assure cross-fertilization of ideas between Topic Teams. This group will be called the Systems Integration Team and will be responsible for weaving together the different elements from each report into the final document that will be presented to the Panel.

Public Meetings

Public meetings will be conducted for each Topic Team. The date and location for each meeting will be established by June 1, 2004 and made available to the public on the website, www.hydrogenhighway.ca.gov. The meeting will be

DRAFT

presided over by the Governor's EO Team. The first portion of the meeting will consist of a presentation by the Team co-chairs, manager and the contractor as appropriate. The co-chairs, manager and contractor will then join the Governor's EO Team in receiving public testimony as necessary. Each meeting is scheduled to take place on a single day and will be webcast. Public testimony will be divided into two segments for topic specific comments and general comments on the California Hydrogen Blueprint Plan. The schedule for the meeting will be on the website as soon as it is available.

Implementation Advisory Panel Meetings

Cal/EPA will conduct Panel meetings for each Topic Team (approximately 2-3 weeks after the Team's public hearing) and for additional discussion and review of the Blueprint Plan. Cal/EPA will schedule the date and location for each meeting by June 1, 2004 and made available to the public on the website, www.hydrogenhighway.ca.gov. The meeting will be presided over by Secretary Terry Tamminen. The first portion of the meeting will consist of a presentation on the Topic Team report that has been developed by the Team and vetted at a Public Meeting. The remainder of the day will consist of discussion among the Panel members. Public testimony and additional presentations will be scheduled upon request of the Panel members or the EO Team. Each meeting is scheduled to take place on a single day and will have a public session that will be webcast.

Public Education – Marketing, Communication, and Education

One of the biggest obstacles with commercializing hydrogen is the public's unfamiliarity or, worse yet, fear of hydrogen. The DOE and many other groups are currently developing materials for education and outreach, ranging from elementary school curriculae to legislative outreach on a national level. It is Cal/EPA's hope that the Team will develop a plan along with a timeline to address the specific outreach and education needs that will make the California Hydrogen Highway Network a success by the end of the decade and beyond.

Aspects to consider/include:

- Who are the appropriate audiences: Legislators, decision-makers, local governments, permitting and fire officials, emergency responders, public agencies, the media, the general public, educators, children, others...
- How and when to target individual audiences
- Curriculum development and incorporation
- How to utilize work of other groups – DOE, HydrogenWorks, etc
- How do we frame the messages: safety, the need for hydrogen, the benefits of hydrogen, harms of petroleum
- Who will conduct the education and who will pay for it
- Do we need a Flex Your Power like marketing campaign for hydrogen and if so, when?
- Is legislation necessary

DRAFT

- What is the potential detriment if we do not target some groups
- Is there a good reason to “brand” hydrogen

Societal Benefit – Environment and Public Health

Several of the key drivers of the transition to a hydrogen economy are related to major environmental, public health and other societal concerns – namely poor air quality, global warming, and energy and national security. The effect of millions of vehicles on the roads is air that is dirty and unhealthy to breathe and is a major contributor to global warming. In addition, threats to water in the form of oil spills and leaking under ground storage tanks are also a significant environmental problem associated with petroleum fuels. Dependence on petroleum fuels leaves the State vulnerable to price volatility and to geopolitical conflicts. It is Cal/EPA’s hope that this Team will address environmental, health and other social concerns related to the production and use of hydrogen as a fuel. As per the Executive Order, recommendations should consider/include the following:

- Policy strategies to ensure hydrogen generation results in the lowest possible emissions of greenhouse gases and other air pollutants.
- Promoting environmental benefits of hydrogen (including global climate change) through public policy and other appropriate methods
- Recommendations for appropriate incentives to encourage the purchase of hydrogen powered vehicles and to encourage the development of renewable sources of energy for hydrogen production
- From an environmental standpoint, consider pros/cons of various hydrogen production methods?
- Recommend timeline and targets for incentives/regulations/policies
- Assess the fiscal impacts to the State budget

Economy – Finance, Business and Investment

A key challenge facing the expansion of a California Hydrogen Highway Network, is how to pay for it and how to incentivize it. The California stage needs to be set for hydrogen commercialization so that investment by the private sector can take place. Estimates of the pricetag of an installed hydrogen infrastructure in the State range from under \$100 million into the billions of dollars. The Governor has called for a public/private partnership to share in the risks and the benefits of developing this early hydrogen infrastructure in the State. It is Cal/EPA’s hope that this Team will develop a proposal that includes cost estimates, a timeline, and priorities to address how to finance the California Hydrogen Highway Network and how to accelerate the commercialization of hydrogen. As per the Executive Order, aspects to consider/include when making recommendations:

- Accelerating the use of hydrogen, including but not limited to public incentives and financing mechanisms such as general obligation bonds, or revenue bonds with repayment mechanisms, loan guarantees
- Joint power agreements, procurement agreements, competitive master contracts, and partnerships with public and private entities

DRAFT

- Economic development zones for hydrogen and clean transportation industries
- A review of immediate financing opportunities via the California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA), and other existing bonding authority
- CalPERS and CalSTRS Alternative Investment Management Program
- Economic development opportunities resulting from increased utilization of hydrogen for stationary and mobile applications
- Cost/benefit analysis of cost of petroleum fuel/infrastructure (including externalities to the State) and the projected cost of hydrogen fuel/infrastructure
- Modification to the requirements on existing state resources that could facilitate the implementation of hydrogen stations
- The benefits associated with reducing the risk of underutilization of hydrogen stations through the use of energy stations and co-located CNG equipment
- The fiscal impacts to the State budget, including an assessment of jobs creation

Implementation—Insurance, Liability, Codes and Standards

The State needs a thoughtful policy to balance the need for hydrogen fuel, public safety and reasonable regulations. Every discussion on the challenges associated with the implementation of hydrogen prominently highlights the need for appropriate codes and standards. The State cannot develop codes and standards but we can take actions that will make placement of stations more standardized with a well understood set of criteria. The use of appropriate codes and standards will also need to be considered in the context of insurance and liability if the hydrogen market is to grow market legs and become self-sufficient, independent of public subsidy. It is Cal/EPA's hope that this Team will develop a plan, along with cost estimates, a timeline, and priorities to address how to formulate a regulatory policy for the Hydrogen Highway Network and how to accelerate the commercialization of hydrogen in California. Aspects to consider/include when making recommendations:

- Needed safety standards, building codes, and emergency response procedures for hydrogen fueling installations and the operation of hydrogen-powered vehicles by 2010
- Appropriate training for permit agencies, building inspectors and emergency responders by 2010
- The present status of hydrogen in the building codes adopted by California
- The present status of codes and standards development for hydrogen in transportation by NFPA, ICC and others
- Current best practices for permitting a hydrogen station
- Development of a regulatory standard and installation template that can be applied to the rest of the U.S. at the very least

DRAFT

- Creating an atmosphere that is friendly to business by setting clear standards that must be met without several layers of bureaucracy to address
- The necessary education and its implementation for local permit officials and emergency responders
- Necessary modifications to the California Code of Regulations to accommodate the use of hydrogen and hydrogen vehicles
- Steps the State may need to take to ensure a reasonable burden to industry and the State regarding insurance and liability
- The fiscal impacts to the State budget

Blueprint and Timeline—Rollout Strategy

The rollout strategy is at the heart of the Governor's 2010 vision. The technology will need to be evaluated for market readiness and availability. The rollout strategy will not only depend on the technology but also the California environment. Different communities have different resources and varying levels of interest and incentive to become involved in the Governor's initiative. An evaluation of how the California Hydrogen Highway Network will evolve over time will be necessary based on a plausible philosophy and working knowledge of the technologies and communities. It is Cal/EPA's hope that this Team will develop a proposal that includes cost estimates, a timeline, and priorities to address how to develop and grow the California Hydrogen Highway Network and how to accelerate the commercialization of hydrogen in California. Aspects to consider/include when making recommendations:

- Technology readiness assessment
- Critical reevaluation of key assumptions regarding timing and cost of hydrogen technologies
- The impact of the Governor's Hydrogen Highway Network initiative on accelerating the introduction of hydrogen technologies
- Estimate cost requirements
- Target methods of cost reduction
- Identify a strategy to best provide access to hydrogen for all Californians
- Propose specific communities for hydrogen station location
- Propose specific, smart uses to commercialize hydrogen and gain public acceptance
- Policy recommendations that will accelerate the Governor's vision and their impacts to the State
- Identify the best way for California's state vehicle fleet to include an increasing number of clean, hydrogen-powered vehicles when possible to be purchased during the normal course of fleet replacement
- The fiscal impacts to the State budget

DRAFT

California Hydrogen Blueprint Plan Schedule (tentative)				
	Meeting	Date	Time	Location
APRIL	Governor signs Executive Order S-7-04	April 20, 2004		Davis, CA
MAY	Panel Kick-off	May 20, 2004	1:00 p.m. – 5:00 p.m.	Cal/EPA HQ Sacramento
JUNE	Topic Teams Kick-off	June 4, 2004	9:00 a.m. – 5:00 p.m.	Cal/EPA HQ Sacramento Central Valley Hearing Room
AUGUST	Public Meeting Topic: Public Education	August 12, 2004	9:00 a.m. – 4:00 p.m. and 6:00 p.m. – 8:00 p.m.	SCAQMD Diamond Bar Auditorium
	Public Meeting Topic: Societal Benefit	August 13, 2004	9:00 a.m. – 5:00 p.m.	SCAQMD Diamond Bar Auditorium
	Public Meeting Topic: Implementation	August 31, 2004	9:00 a.m. – 4:00 p.m. and 6:00 p.m. – 8:00 p.m.	Cal/EPA HQ Sacramento Central Valley Auditorium
SEPTEMBER	Implementation Advisory Panel Meeting	September 1, 2004	2:30 p.m. – 5:00 p.m.	Cal/EPA HQ Sacramento Central Valley Hearing Room
	Public Meeting Topic: Economy	September 14, 2004	9:00 a.m. – 5:00 p.m.	SCAQMD Diamond Bar Auditorium
	Implementation Advisory Panel Meeting	September 15, 2004 RESCHEDULED to early November	RESCHEDULED	RESCHEDULED
OCTOBER	Public Meeting Topic: Rollout Strategy	October 7, 2004	9:00 a.m. – 5:00 p.m.	Cal/EPA HQ Sacramento Central Valley Hearing Room
	Implementation Advisory Panel Meeting	October 6, 2004	4:00 p.m. – 5:00 p.m.	Cal/EPA HQ Sacramento Central Valley Hearing Room
	Implementation Advisory Panel Meeting	October 27, 2004 CANCELED	CANCELED	CANCELED

DRAFT

California Hydrogen Blueprint Plan Schedule, cont'd (tentative)				
	Meeting	Date	Time	Location
NOVEMBER	Implementation Advisory Panel Meeting	TBD	TBD	Cal/EPA HQ Sacramento
DECEMBER	Implementation Advisory Panel Meeting: Final report review	December 8, 2004	TBD	Cal/EPA HQ Sacramento
	Governor's EO Team: Final report review	December 10, 2004		
	Senior Review Committee: Final report review	December 14, 2004		
JANUARY	Report filed with Governor's Office and Legislature	January 1, 2005		