



Western States Petroleum Association

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Catherine H. Reheis-Boyd

President

January 25, 2012

Clerk of the Board  
Air Resources Board  
1001 I St

Sacramento, CA 95814

Via e-mail to <http://www.arb.ca.gov/lispub/comm/bclist.php>

**Re. Western States Petroleum Association's Comments on CARB Board Hearing Agenda Item # 12-1-2 – Public Hearing to Consider Amendments to the Clean Fuels Outlet Regulation**

Dear Clerk of the Board:

The Western States Petroleum Association (WSPA), is a non-profit trade association representing twenty-six companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California and five other western states.

WSPA has actively participated in the California Air Resources Board's (ARB's) Clean Fuels Outlet (CFO) regulatory amendment workshops and meetings over the past two years. During the July 13<sup>th</sup>, 2011 workshop, WSPA and WSPA members expressed strong policy, technical, economic, environmental and legal concerns with staff's outline of proposed revisions to the CFO regulation; most notably the fact that CARB is proposing to target "gasoline producers and importers" as the regulated party responsible for creating a hydrogen retail infrastructure.

WSPA also has been an active and productive participant in the Hydrogen Infrastructure Collaborative Workgroup ("workgroup") composed of, but not limited to, the California Fuel Cell Partnership, auto manufacturers, hydrogen fuel providers including equipment suppliers, environmental organizations, the California Energy Commission, South Coast Air Quality Management District, representatives of the University of California Davis and Irvine, the International Clean Cars & Transportation and ARB. Over the past few months, the workgroup has diligently worked together in understanding the technology, equipment, and most

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importantly funding challenges and costs necessary to make an effective business case for hydrogen (H<sub>2</sub>) infrastructure deployment.

At our recent workgroup meetings, WSPA was both encouraged that the workgroup was working toward developing a funding strategy based on utilizing/expanding existing state hydrogen programs such as the AB 118 program, and was supportive of this approach. Thus, we continue to question why ARB feels there is a need for continued pursuit of the CFO regulatory amendment rulemaking.

WSPA urges ARB to withdraw the CFO regulation and continue to support the collaborative efforts and goals of the workgroup. WSPA continues to oppose ARB's proposed CFO regulatory mandate and submits the attached comments and supporting documents to express our opposition as well as identify the deficiencies with staff's proposed regulatory amendment package.

A mandate as proposed in the regulation will provide none of the certainty in infrastructure development that the Board and automakers are seeking. Forcing infrastructure investments from non-interested parties will likely result in certain legal challenges.

For that reason, WSPA strongly urges the ARB Board to deny approval of the proposed Clean Fuel Outlet amendments, and instead pledge to work within the Hydrogen Collaborative framework to progress the installation of hydrogen infrastructure in the state – commensurate with the level of fuel cell vehicles sold in the state in the most cost-effective manner to meet consumer needs.

If you have any questions, please contact me at (916) 498-7752.

Sincerely,

A handwritten signature in blue ink, reading "Catherine A. Boyle". The signature is fluid and cursive, with the first name "Catherine" and last name "Boyle" clearly legible.

c.c. Nancy McFadden, Executive Secretary, Office of the Governor  
Cliff Rechshaffen, Senior Advisor, Office of the Governor  
Matt Rodriguez, Secretary, California Environmental Protection Agency  
Mary Nichols, Chairwoman, California Air Resources Board  
James Goldstone, Executive Officer, California Air Resources Board  
CARB Board

## **ARB ADVANCED CLEAN CARS PROGRAM**

### **2012 PROPOSED AMENDMENTS TO THE CLEAN FUELS OUTLET REGULATION**

#### **Western States Petroleum Association Comments on ARB January 26 Board Hearing Agenda Item #12-1-2 – Public Hearing to Consider the 2012 Amendments to the Clean Fuels Outlet Regulation**

##### **Comments on Legal Issues Raised by the Proposed CFO Amendments**

##### **Comments on Appendix F: Legal Authority**

##### **ARB Does Not Have Statutory Authority to Adopt the Proposed CFO Amendments**

A regulation must be “(1) within the scope of authority conferred and (2) . . . reasonably necessary to effectuate the purpose of the statute.” *Culligan Water Conditioning v. State Bd. Of Equalization*, 17 Cal.3d 86, 93 (1976). Administrative agencies have only the authority that is granted them by statute. *State Bd. Of Equalization v. Bd of Supervisors*, 105 Cal. App.3d 813, 818-820 (1980).

Nothing in the Health and Safety Code provides ARB with statutory authority to mandate that petroleum refiners/importers (or anyone else) establish retail outlets for the distribution of “designated clean fuels,” including hydrogen. Indeed, ARB does not appear to even have the authority to mandate the use of a particular substance or form of energy (i.e., hydrogen or electricity) as a motor vehicle fuel. If ARB can require that fuel suppliers install or pay for hydrogen CFO stations throughout California, where is the limit of what ARB can mandate? With a stroke of the same regulatory brush, ARB could require the same fuel suppliers to provide retail facilities for sale of every kind of alternative fuel that might ever propel a vehicle of any kind. ARB could direct solar power generators to install equipment to generate renewable hydrogen to assure that the SB 1505 renewable hydrogen mandates are met. ARB could reach out to impose similar mandates on big-box retailers, cities and counties, utilities, and any “indirect source” that attracts vehicles (like amusement parks and sport complexes and universities). We do not believe the general “enabling clause” in Health and Safety Code section 43018<sup>1</sup> could ever reach this far, and that the proposed hydrogen mandates in the proposed CFO amendments cross the line of ARB’s authority under state law.

In the Initial Statement of Reasons for the 2012 Proposed Amendments to the Clean Fuels Outlet Regulation (“ISOR”), ARB concedes that “Health and Safety Code section 43018 is the primary source of ARB’s legal authority to adopt the proposed regulation.” ISOR, p. 66. ARB also references a July 31, 1990 memorandum from Senior Staff Counsel W. Thomas Jennings to

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<sup>1</sup> All statutory references are to sections of the Health and Safety Code unless indicated otherwise.

Peter Venturini (“1990 Memo”). That memorandum explains ARB’s view that section 43018, enacted as part of the California Clean Air Act of 1988, “provides the ARB with broad regulatory motor vehicle and fuel authority not otherwise granted in the Health and Safety Code.” 1990 Memo, p. 6.

As relevant here, section 43018 reads as follows:

43018. (a) The state board shall endeavor to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources in order to accomplish the attainment of the state standards at the earliest practicable date.

(b) Not later than January 1, 1992, the state board shall take whatever actions are necessary, cost-effective, and technologically feasible in order to achieve, not later than December 31, 2000, a reduction in the actual emissions of reactive organic gases of at least 55 percent, a reduction in emissions of oxides of nitrogen of at least 15 percent from motor vehicles. These reductions in emissions shall be calculated with respect to the 1987 baseline year. The state board also shall take action to achieve the maximum feasible reductions in particulates, carbon monoxide, and toxic air contaminants from vehicular sources.

(c) In carrying out this section, the state board shall adopt standards and regulations which will result in the most cost-effective combination of control measures on all classes of motor vehicles and motor vehicle fuel, including, but not limited to, all of the following:

- (1) Reductions in motor vehicle exhaust and evaporative emissions.
- (2) Reductions in emissions from in-use emissions from motor vehicles through improvements in emission system durability and performance.
- (3) Requiring the purchase of low-emission vehicles by state fleet operators.
- (4) Specification of vehicular fuel composition.

According to ARB, section 43018 “does not limit the Board’s authority to adopting ‘specifications’ of fuels. Rather, it authorizes the Board to adopt whatever control measures pertaining to fuels that are technologically feasible, cost-effective, and necessary to attain the state ambient air quality standards by the earliest practicable date.” ISOR, p. 66. ARB further argues that section 43018 “expanded the Board’s previous authority to regulate and control the sale of motor vehicle fuels.” 1990 Memo, p. 5.

ARB’s interpretation overstates the scope of authority granted by section 43018. Nothing in section 43018 grants ARB authority to mandate the use of a particular fuel (i.e., hydrogen or electricity) in motor vehicles. Even “specification of vehicular fuel composition” under section 43018(c)(3) provides no more authority than does section 43013(a): “‘specification of vehicular fuel composition’ in section 43018(c)(4) correlates to ‘motor vehicle fuel specifications’” under section 43013. 1990 Memo, p. 7. That authority allows ARB to establish standards and specify characteristics for vehicle fuels, but not to mandate what fuel is used.

ARB asserts in the 1990 Memo that the legislature’s use of the phrase “including, but not limited to” in section 43018(c) expanded ARB’s authority beyond the measures specified. However, even if the list of measures in section 43018(c) is non-exclusive, measures adopted pursuant to

that authority must be consistent with the statutory scheme. See *Copley Press, Inc. v. Superior Court*, 39 Cal. 4th 1272, 1288-89 (2006); *California Sch. Boards Assn. v. State Bd. of Educ.*, 191 Cal. App. 4th 530, 572 (2010) (holding that regulations adopted by the School Board must be consistent with authority under statutory scheme, despite express authority to “adopt, regulations implementing this subdivision, including but not limited to defining the terms ‘average daily classroom attendance,’ ‘conditions reasonably equivalent,’ ‘in-district students,’ ‘facilities costs....”). As discussed above, neither the text of section 43018 nor the regulatory scheme suggests that ARB has authority to mandate the use of a particular fuel. None of the measures listed in section 43018(c) comes close to mandating the use of a particular fuel, so such a requirement cannot be considered to be within the scope of ARB’s authority under section 43018.

ARB claims that the legislative history of section 43018 supports its interpretation, because at various points in the legislative process the list of measures in what eventually became section 43018(c) included “requiring the use of clean burning fuels,” and “requiring the manufacture of vehicles capable of using cleaner-burning fuels.” “It therefore follows that each of the specifically itemized categories listed in the intermediate versions of the bill fell within the broader range of control measures the Board was authorized to adopt.” 1990 Memo, pp. 7, 8. In fact, the legislature’s later deletion of that language from the final enacted legislation establishes the opposite – that such measures are not included within the authority granted to ARB under Section 43018. The scope of an agency’s authority may not be enlarged by the “insertion of language that the Legislature has overtly left out.” *Traverso v. People ex rel. Dept. of Transportation*, 46 Cal.App.4th 1197 (1996); see also *Cooper v. Swoap*, 11 Cal. 3d 856, 863-64 (1974) (holding that an agency did not have authority to adopt a regulation using the same language as a proposed amendment to the enabling statute that had been rejected by the Legislature).

“The evolution of a proposed statute after its original introduction in the Senate or Assembly can offer considerable enlightenment as to legislative intent.... Generally the Legislature’s rejection of a specific provision which appeared in the original version of an act supports the conclusion that the act should not be construed to include the omitted provision.” *People v. Goodloe* (1995) 37 Cal.App.4th 485. Here, the Legislature amended the earlier-proposed versions of section 43018(c) to eliminate all references to “clean burning fuels” and “clean fuel vehicles.” Because the Legislature expressly deleted any grant of authority to implement measures relating to “clean burning fuels” and “clean fuel vehicles,” ARB may not infer the inclusion of such authority in the statute. See *Traverso*, 46 Cal.App.4th at 1207; see also *People v. Hunt*, 74 Cal. App. 4th 939, 947-48 (1999) (holding that “the Legislature’s rejection of a specific provision which appeared in the original version of an act supports the conclusion that the act should not be construed to include the omitted provision”).

Even assuming that ARB had authority to mandate the use of particular substances or energy sources as motor vehicle fuels, it does not have authority to require that any particular person or entity construct and operate facilities to sell a particular fuel. The language used in sections 43013 and 43018 consistently refers to “motor vehicle emission standards,” “motor vehicle fuel specifications,” “the most cost-effective combination of control measures on all classes of motor vehicles and motor vehicle fuel” and similar language. Nowhere is there even a mention of fuel

providers or retail outlets, much less a grant of authority to require that existing fuel providers establish retail outlets to sell a completely different fuel, and the terms used in the statute cannot be read that expansively. Contrary to ARB's assertion in the ISOR, the 1990 memo doesn't address this issue. Notwithstanding its title, the 1990 Memo addresses ARB authority to adopt clean fuels regulations only generally, not with respect to a requirement to establish retail outlets. *Western Oil and Gas Ass'n v. Orange County APCD*, 14 Cal. 3d 411 (1975), discussed in the 1990 Memo, also does not address the issue of ARB's authority to require establishment of retail outlets for specific fuels, and it does not provide any such authority.

The Legislature's enactment of SB 1505 (Lowenthal) in 2006 (Stats. 2006, Ch. 877) further undercuts ARB's position. Section 43869(a), enacted by SB 1505, expressly authorizes ARB to "adopt hydrogen fuel regulations" to accomplish specified objectives in a manner consistent with criteria established by the Legislature. SB 1505 illustrates the maxim that the Legislature knows how to say what it means, and that the plain meaning of the statutory language controls. *Murphy v. Kenneth Cole Productions, Inc.*, 40 Cal. 4th 1094, 1103 (2007) ("[W]e presume the Legislature meant what it said and the plain meaning of the statute governs"). This extensive and detailed legislation regarding hydrogen as a vehicle fuel (enacted after section 43018) does not authorize ARB to mandate the establishment of retail facilities for the sale of hydrogen fuels. Accordingly, ARB cannot read such an authorization into section 43018.

Finally, a substantial element of ARB's rationale for adopting the proposed CFO amendments (as part of the Advanced Clean Cars package) is reducing greenhouse gas emissions. For example, "Beyond 2025, the driving force for lower emissions will primarily be climate change." ISOR, p. i. Nothing in sections 43013 and 43018, or indeed in any of the Health and Safety Code provisions cited in the Proposed Regulation Order as authority for the CFO amendments, grants ARB any authority whatsoever with regard to greenhouse gas emissions or climate change. For example, section 43018(a) states: "The state board shall endeavor to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources in order to accomplish the attainment of the state standards at the earliest practicable date." The "state standards" do not include climate or greenhouse gas emissions. 17 Cal. Code Regs. § 70200. Since ARB has cited no authority for the GHG-related aspects of the proposed CFO amendments, any anticipated GHG impacts and emission reductions cannot be considered in connection with this measure.

#### The Proposed CFO Amendments are not Cost-Effective, and ARB has not Prepared the Required Cost-Effectiveness Analysis

ARB has characterized the proposed CFO amendments as a motor vehicle fuel standard. Prior to adoption, ARB must determine that motor vehicle fuel standards are, among other things, "necessary and cost effective." Sections 43013(a), 43018(c). Cost effectiveness is typically presented in terms of the cost per ton of emissions reduced. *See, e.g.*, Table VII-B-5, "Estimates of Cost Effectiveness for Advanced Clean Cars Reductions of Criteria Pollutants and Greenhouse Gases (2009 Dollars)," Initial Statement Of Reasons For Proposed Rulemaking, Public Hearing To Consider The "LEV III" Amendments To The California Greenhouse Gas And Criteria Pollutant Exhaust And Evaporative Emission Standards And Test Procedures And To The On-Board Diagnostic System Requirements For Passenger Cars, Light-Duty Trucks, And

Medium-Duty Vehicles, And To The Evaporative Emission Requirements For Heavy-Duty Vehicles (“LEV III ISOR”), p. 196. None of the rulemaking documents for the CFO amendments include such an analysis, nor do they identify any emission reductions attributable to the proposed CFO amendments. In the absence of any identified emission reductions attributable to the proposed CFO amendments, the cost-effectiveness of the proposal is infinite and the proposed amendments cannot be considered to be cost-effective.

Consistent with the lack of analysis in the current rulemaking package, in its Final Statement of Reasons for the 1999 amendments to the CFO, ARB stated that the CFO program has no emissions benefits or identified cost-effectiveness:

While the commenter is correct to note that there are no specific emission benefits associated with the regulations, the regulations are an important part of the California LEV Program. When the LEV Program was first adopted in 1990, the Clean Fuels Regulations were also adopted to ensure that clean alternative fuels used to certify LEVs would be publicly available. In order for automakers to confidently produce clean fuel LEVs, a degree of certainty must be present that there will be fuel available for those vehicles. Therefore, while the regulations themselves do not provide any specific emission benefits, they assist automakers in implementing the LEV Program.

The commenter is correct to note that the regulations by themselves have no associated cost-effectiveness. However, during the adoption of the LEV/Clean Fuels Regulations in 1990, the estimated overall cost-effectiveness of the LEV Program included the costs associated with the clean fuels portion of that rulemaking. Therefore, the cost-effectiveness of the LEV Program has already considered the costs associated with the clean fuels provisions. In addition, staff believes that the amendments provide an overall cost-savings to affected parties compared to the original regulations.

Final Statement of Reasons for Rulemaking Including Summary of Comments and Agency Responses; Hearing to Consider Amendments to the Clean Fuels Regulations Regarding Clean Fuel Outlets, pp. 4, 5.

Since ARB has previously admitted that the CFO rule has no emissions benefits and no associated cost-effectiveness and has not provided any information to the contrary in the current CFO amendment rulemaking materials, the ARB Board cannot find that the proposed CFO amendments are necessary or cost-effective.

#### The Proposed CFO Mandate Would Result in an Unconstitutional Taking of Private Property.

The proposed amendments include a CFO mandate that requires major refiners/importers to establish CFOs without just compensation. That would result in an unconstitutional taking of private property. The Legislature has not, and could not, mandate such a taking without providing compensation. Neither can the ARB.

The ARB can only take private property with express authority from the Legislature. The Legislature has never authorized the ARB to exercise the state's power of eminent domain, and it has not done so to allow ARB to take private property to establish CFOs.

Requiring major refiners/importers to establish CFOs, particularly where no mechanism has been included to assure an adequate return on the required investment, constitutes a taking of property without just compensation and violates the Fifth Amendment to the U.S. Constitution. *See Penn Central Transp. Co. v. New York City*, 438 U.S. 104, 124 (1978) (interference with investment-backed expectations); *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419 (1982) (permanent physical occupation of property).

Plainly, the proposed amendments interfere with the investment-backed expectations of refiners. Over the course of many years, refiners have invested substantial capital to enable themselves to produce the gasoline needed by vehicles in California. While refiners might expect state agencies to impose reasonable regulations on their refinery operations, no one could reasonably expect that a state agency would require refiners to establish retail outlets for hydrogen, a fuel that competes with gasoline. For the ARB to require refiners to establish outlets for a product that directly competes with the refiners' own gasoline is an unconstitutional interference with investment-backed expectations and would result in an unconstitutional taking of property.

#### The Proposed CFO Mandate Violates the Commerce Clause

The proposed amendments contemplate that most CFOs would be established at existing service stations. That has a discriminatory effect against importers of gasoline from outside California--those importers are unlikely to have contractual relationships with existing service stations and will be at a disadvantage in attempting to establish CFOs at existing service stations.

The Commerce Clause of the U.S. Constitution "directly limits the power of the States to discriminate against interstate commerce." *New Energy Co. of Indiana v. Limbach*, 486 U.S. 269, 273 (1988). "A finding that state legislation constitutes 'economic protectionism' may be made on the basis of either discriminatory purpose . . . , or discriminatory effect." *Bacchus Imports, Ltd. v. Dias*, 468 U.S. 263, 270 (1984). The discrimination barred by the Commerce Clause "takes various forms." *Hunt v. Washington State Apple Advertising Commission*, 432 U.S. 333, 350 (1977). A statute may be unconstitutional "[d]espite the statute's facial neutrality." *Hunt*, 432 U.S. at 351. For example, a statute may have "a leveling effect which insidiously operates to the advantage of local . . . producers." *Hunt*, 432 U.S. at 351.

Applying these Commerce Clause principles, the U.S. District Court for the Eastern District of California recently enjoined the enforcement of California's Low Carbon Fuel Standard ("LCFS"), holding that it impermissibly discriminated against out-of-state sources. *Rocky Mountain Farmers Union v. Goldstein*, E.D.Cal., Dec. 29, 2011. In one portion of his decision, District Judge O'Neill of the Eastern District of California found "that the LCFS discriminates against out-of-state and foreign crude oil while giving an economic advantage to in-state crude oil." Order on NPRA Plaintiffs Summary Adjudication Motion, p. 2. Judge O'Neill noted that the "practical effect of the LCFS" is to favor California crude oil and discriminate against out-of-



state and foreign crude sources. *Id.*, p. 19. That violates the Commerce Clause “even though the distinctions drawn appears to be neutral.” *Id.*

Similarly here, the proposed amendments would give an economic advantage to in-state refiners that have contractual relationships with existing service stations—the practical effect is to favor California refiners and discriminate against importers. That violates the Commerce Clause even if the proposed amendments appear to be neutral.

Proposition 26 and the Due Process Clause Limit the ARB's Authority to Impose any Levy, Charge or Exaction

Proposition 26 amended Article 13A, Section 3 of the California Constitution expands the definition of "tax" and requires a two-thirds supermajority vote in each house of the Legislature for "any change in state statute which results in any taxpayer paying a higher tax." Proposition 26 defines a "tax" as "any levy, charge, or exaction of any kind imposed by the State." Excepted from the definition is a fine, penalty, or other monetary charge imposed by the judicial branch of government or the State, as a result of a violation of law.

Here, the ARB's proposed amendments provide that violations of the CFO mandate would subject a refiner/importer to penalties under sections 43027 and 43028 of the Health and Safety Code. Other than providing that each day of violation at a specific outlet shall be deemed a separate violation, no other explanation is given in the proposed amendments. Without further information showing that the penalties in the proposed amendment are truly fines imposed by the state, the limits that Proposition 26 imposes may apply.

The CFO mandate itself is contrary to Proposition 26. The stated purpose of Proposition 26 was to restrict the adoption of levies, charges, or exactions "simply imposed to raise revenue for a new program"--such levies, charges or exactions "should be subject to the limitations applicable to the imposition of taxes," even if they are "couched as 'regulatory.'" *See* Proposition 26, Section 1(e) (Findings and Declarations of Purpose). The proposed amendments effectively impose an in-kind exaction on refiners and importers, requiring them to establish CFO outlets. By imposing that mandate, the ARB is establishing a new program of hydrogen fuel outlets--accomplished by requiring in-kind exactions. While circuitous, the CFO mandate is nonetheless subject to the requirement of a two-thirds vote of the Legislature. *See Dolan v. City of Tigard*, 512 U.S. 374, 386, 114 S. Ct. 2309, 2317, 129 L. Ed. 2d 304 (1994) (holding that forced dedication of easement was a non-monetary exaction).

Moreover, the Due Process Clauses of the U.S. Constitution and the California Constitution limit the authority of the ARB and other agencies to impose penalties. *Hale v. Morgan*, 22 Cal.3d 388, 398-399 (1978). The California Supreme Court has held that oppressive or unreasonable penalty schemes may be invalidated as violating due process. *Id.* “Uniformly,” the California Supreme Court has “looked with disfavor on ever-mounting penalties and ha[s] narrowly construed statutes which either require or permit them.” *Id.* at 401.

Yet, here, the ARB’s proposed amendments specifically provide that each day that a refiner/importer violates the CFO regulation at a clean fuel outlet is a separate violation subject

to a penalty under sections 43027 and 43028 of the Health and Safety Code. And, the ARB staff report notes that under those sections a willful violation could result in a penalty of \$250,000 per station per day, and a negligent violation could result in a penalty of \$50,000 per station per day. That is precisely the type of “ever-mounting penalties” that the California Supreme Court has disapproved in *Hale v. Morgan*.

#### ARB Failed to Properly Comply with CEQA.

As ARB recognizes, the California Environmental Quality Act (CEQA)<sup>2</sup> requires a study of environmental impacts before adopting regulations such as the proposed amendments to the Clean Fuels Outlet (CFO) regulation. It is well-settled that, even when an agency adopts a rule to protect or improve the environment, any adverse side-effects must be evaluated under CEQA.<sup>3</sup> ARB has adopted its own procedures for CEQA compliance under its certified regulatory program, but still must satisfy the fundamentals of the statute. Thus, ARB must identify potentially significant impacts, consider mitigation measures and a reasonable range of alternatives to avoid or reduce such impacts, and consider and respond to comments from the public and other agencies. Finally, ARB must adopt mitigation measures or alternatives unless they are infeasible and overriding benefits justify adopting the regulation despite its significant and unavoidable impacts.<sup>4</sup>

To comply with CEQA, ARB’s Initial Statement of Reasons (ISOR) for the CFO amendments includes Appendix B, a draft Environmental Analysis (EA) prepared as the functional equivalent of an Environmental Impact Report. The air quality evaluation in the EA is supported by ISOR Appendix D, an Emission Impact Analysis (EIA). However, the EA and EIA are seriously flawed and cannot be relied on to satisfy ARB’s CEQA obligations.<sup>5</sup>

**Failure to Fully Disclose Programmatic Impacts.** Throughout the EA, ARB finds that local authorities will conduct future project-level CEQA review when approving and issuing permits for individual hydrogen fueling station projects. Through project-level review, the local agencies will be responsible for implementing ARB’s recommended mitigation measures and others that they may identify and incorporate in permit conditions. While expecting that local authorities will do so, ARB cannot be certain that mitigation which is beyond its control will be implemented successfully. Accordingly, the EA finds such impacts to be potentially “significant and unavoidable”, though justified by the benefits of the CFO rule. Although in general this “programmatic” or “tiered” approach is authorized for CEQA review at the rulemaking stage, the EA takes the tiered approach too far.

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<sup>2</sup> Pub. Res. Code § 21000 *et seq.*

<sup>3</sup> *Save the Plastic Bag Coalition v. City of Manhattan Beach*, 52 Cal. 4<sup>th</sup> 155 (2011); *County Sanitation District No. 2 of Los Angeles County v. County of Kern*, 127 Cal. App. 4<sup>th</sup> 1544 (2005).

<sup>4</sup> Pub. Res. Code § 21081, 14 Cal. Code Regs. (CEQA Guidelines) § 15093.

<sup>5</sup> In addition to the legal issues raised in this portion of WSPA’s comments, the technical flaws in Appendices B and D, as described in other sections of our comments, further undercut ARB’s reliance on these analyses for CEQA purposes. All technical and other comments on Appendices B and D, elsewhere in WSPA’s comments, are incorporated by reference herein and should be considered as part of our CEQA comments.

Even impacts that are significant and unavoidable at the programmatic stage must be fully disclosed, to provide a meaningful opportunity for the public to comment and to propose further feasible mitigation measures. Such issues also must be fully disclosed to enable informed decision-making, a central objective of CEQA. The ARB Board is responsible for considering and balancing benefits and adverse side-effects in deciding whether to adopt the CFO amendments. For each significant and unavoidable impact, ARB must find “overriding considerations”, i.e., that specific benefits outweigh each adverse side-effect. But overriding considerations cannot be legally or factually supportable if the decision-makers have insufficient information to understand the extent of the side-effects they are deciding to accept. Weighing benefits and impacts is impossible when the impact side of the balance is insufficiently disclosed. In short, programmatic “significant and unavoidable” determinations are not a shield for the casual narrative evaluations and conclusions throughout the EA.

**Over-Reliance on Future Project-Level CEQA Review.** Moreover, in following the programmatic approach, the EA relies heavily on project-level CEQA review that supposedly will be conducted by local agencies undertaking or permitting individual hydrogen fueling facility projects. However, it is quite likely that many local agencies will conduct no CEQA review at all. On an individual basis – especially if ARB is correct in assuming that most new hydrogen fueling station projects will be located at existing gas stations – many of these small projects will be exempt from CEQA, under the categorical exemption for minor alterations to existing facilities<sup>6</sup> or other exemptions. Yet ISOR Table IV-2b (p. 50) projects that over 450 new stations will be required under the CFO rule. Of course, capturing impacts that are insignificant for each project considered separately, but significant when nearly five hundred projects are considered together, is the purpose of cumulative impacts analysis under CEQA.

The EA does acknowledge impacts to be addressed by local agencies as significant and unavoidable:

Because the authority to determine project-level impacts and require project-level mitigation lies with the land use and/or permitting agency for individual projects, and programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts. Consequently, this EA takes the conservative approach in its post-mitigation significance conclusions (i.e., tending to overstate impacts) and, for CEQA compliance purposes, discloses that potentially significant impacts related to the development of fueling stations and new or modified manufacturing facilities may be significant and unavoidable.

ISOR App. B, p. 8. Nevertheless, the EA reassures the public and decision-makers that:

ARB expects, however, that as the proposed ACC Program is carried out, these significant impacts can and should be resolved and reduced to insignificance by other

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<sup>6</sup> CEQA Guidelines § 15301; see, e.g., Attachment A, Notice of Exemption for University of California, Irvine, North Campus hydrogen fueling station expansion ; and Attachment B, Notice of Exemption for Alameda County Transit District (AC Transit) Hydrogen Energy Station, May 25, 2011. The AC Transit Notice, p. 2, indicates that a prior hydrogen fueling project in 2004 was also found to be exempt from CEQA.

government agencies, in accordance with their authorities and project review procedures.”

*Id.* This reassurance is hollow, however, since the EA does *not* disclose to the public and decision-makers the extent to which local agencies can be expected to rely on categorical exemptions and not consider CEQA mitigation in the first place. Thus, rather than being conservative, the EA hides the true magnitude of anticipated significant and unavoidable impacts. If unmitigated through project-level review due to CEQA exemptions, the adverse impacts will be greater than the EA admits.<sup>7</sup> This error also further undercuts the basis for overriding considerations, since the adverse impacts side of the balance is understated by assuming more project-level mitigation than can reasonably be expected.

**Failure to Consider Available Information on Foreseeable Project-Level Impacts.** Even at the programmatic or first-tier level, CEQA requires evaluation of all issues that are ripe for review, where feasible and where information is available. Yet, while claiming that extensive analysis must be deferred to the project level, the EA ignores CEQA documents for hydrogen fueling projects that are already in place. Although some existing hydrogen facilities were approved based on CEQA exemptions, CEQA review documents do exist for other projects. Such documents provide concrete, readily available information on matters as to which the EA merely speculates.

For example, the City of Burbank prepared a Mitigated Negative Declaration for its Hydrogen Fueling Station Project, attached.<sup>8</sup> It is true that some impact analyses in Burbank’s Negative Declaration are based on project-specific details (e.g., visual impacts of the facility’s profile in the specific setting) not appropriate for evaluation at the programmatic stage. Nevertheless, some impact analyses in the Negative Declaration provide valuable information on issues inherent to hydrogen fueling facilities – in particular, on the hazards of hydrogen itself (see comment on hazards below). Other impacts likely to be common to hydrogen facilities wherever they are located include air emissions, noise, public services (including fire protection), and transportation and traffic, from both facility construction and operation.<sup>9</sup>

It is also true that the City of Burbank, after full analysis and disclosure, found that all potential impacts could be mitigated to less than significant – but only for that individual project. Findings of insignificance are by no means assured when scaling up the impacts identified in the Burbank Negative Declaration to over 450 new hydrogen stations anticipated as a result of the CFO amendments. Yet the EA could have analyzed reasonably foreseeable means of

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<sup>7</sup> For example, the EA (pp. 141-142) states: “All projects, no matter their size or type would be required to seek local land use approvals prior to their implementation. Part of the land use entitlement process requires that each of these projects undergo environmental review consistent with California environmental review requirements (e.g., CEQA) and other applicable local requirements (e.g., local air district rules and regulations). This environmental review process would assess whether project implementation would result in short-term construction air quality impacts.” This is simply not true of “each of these projects” if a substantial number can reasonably be expected to be categorical exempt, while air district rules would not reach the range of impacts addressed by CEQA.

<sup>8</sup> Attachment C, Burbank Hydrogen Fueling Station Project, Initial Study/Negative Declaration/Environmental Assessment (August 2008).

<sup>9</sup> See Attachment C, Burbank Hydrogen Fueling Station Negative Declaration, pp. 2-12 – 17, 2-36 – 44.

compliance by considering available information from CEQA documents for existing hydrogen fueling facilities. It was ARB's responsibility to identify and consider such available information, but not one such project-level CEQA document is cited in the EA references.

**Failure to Analyze CFO, ZEV and LEV III Actions As Separate "Projects."** Three separate regulatory actions are before ARB: amendments to the CFO regulations and also to the Zero Emission Vehicle (ZEV) and Low Emission Vehicle (LEV III) regulations. These three actions are collectively referred to as the Advanced Clean Cars (ACC) Program. They are also collectively analyzed in the EA for environmental impacts, as though they were a single "project" for purposes of CEQA. See EA, p. 35. However, the EA's characterization of the single "project" is inconsistent with ARB's Notice of Public Hearing to Consider Amendments to the Clean Fuels Outlet Regulation (Nov. 29, 2011), which does not propose a single ACC project. Instead, the proposed regulatory action in the Notice is a stand-alone action on the CFO amendments. The Notice, p. 3, merely notes in passing that the CFO project is "part of the Advanced Clean Cars regulatory proposals" – note that "proposals" is plural – that are to be heard on the same day. Similarly, ARB's website at <http://www.arb.ca.gov/regact/2012/cfo2012/cfo2012.htm> lists the CFO amendments as a stand-alone proposed regulatory action, and the January 26-27, 2012 meeting agenda lists three separate, albeit consecutive, public hearings rather than one hearing covering three subjects; see <http://www.arb.ca.gov/board/ma/2012/ma012612.htm>.

Certainly, it was appropriate for the EA to consider the cumulative impacts of the three separate CFO, ZEV and LEV III projects. Cumulative impact analysis is the correct means of evaluating the effects of past, present and reasonably foreseeable future projects that overlap in time and may combine to exacerbate their respective impacts. However, nothing in the Notice or the EA states that ARB will *only* adopt the CFO amendments if it also simultaneously adopts the ZEV and LEV III changes. Nor does the EA inform the public and decision-makers of the potential environmental consequences should ARB choose to separately adopt the CFO amendments. Accordingly, the EA does not provide a basis for action on the CEQA "project" that is actually proposed.

**Lack of Clarity on Numbers of New Hydrogen Fueling Stations.** A CEQA document must contain a clear, stable and complete project description, in order to provide the essential basis for review of the project's impacts. The EA project description, pp. 33-35, describes the CFO regulation changes themselves but does not describe the reasonably foreseeable means of compliance; i.e., the numbers and locations of new hydrogen fueling stations. Not until pp. 131-133 of the EA is the "compliance response" discussed. Even here, an example for the South Coast is provided, followed by a statement that "Starting in 2016 in the Upper Bound [i.e., fast entry of fuel cell vehicles into the California market] Scenario, the number of vehicles statewide would exceed the 20,000 statewide trigger requiring the construction of 39 additional stations." But that figure is for a single year, without stating the total effect of the rule provided. The reader must hunt for that information in the ISOR, Table IV-2 on p.50.

However, even there it is not even clear exactly how many new hydrogen fueling stations ARB attributes to the CFO amendments. ISOR Table IV-2b, p. 50, includes a column for Total Stations and a column for Total New Stations Installed Per CFO under the fast-entry Upper

Bound FCV Scenario. In the Total New Stations column, 31 stations are indicated prior to the rule and 488 stations by 2024, the difference representing 457 new stations attributable to the rule. However, the sum of the Total New Stations Installed Per CFO, adding the numbers for each year from 2015 to 2024, is 461. This discrepancy is not explained in the document.

The total number of new fueling stations is one of the main drivers of the magnitude of CEQA impacts. The failure to clearly disclose the total number of stations within the EA does not comport with CEQA's informational purposes.

**Unsupported Assumptions Regarding Locations of New Hydrogen Fueling Stations.** The other main driver of the magnitude of impacts is the location of the fueling stations. The EA downplays location-based impacts, assuming that “new individual hydrogen fueling facilities would be constructed at existing public retail gasoline service stations that are already managed by the retail branches of the respective refiners/importers of gasoline. These locations would also likely be in urban areas where they are positioned to serve the most drivers. Thus, it is unlikely that new hydrogen fuel outlets would be located at greenfield sites (land not previously developed), and that they would be built in locations consistent with local zoning.”<sup>10</sup> EA, p. 133. Nothing in the proposed CFO amendments requires this result and the EA cites no evidence to support these assumptions.<sup>11</sup> Instead, since the existing CFO regulations would have directly required gas station owners and operators to locate facilities on their property, ARB simply assumes that the same thing will occur despite shifting the obligation to refiners and importers. This unsupported speculation is the critical basis for conclusions of limited impacts throughout the EA.<sup>12</sup>

In fact, there is reason to doubt the EA's assumptions. Even today, gas stations are the sites of only a small proportion of CFO facilities. The attached spreadsheet identifies 27 hydrogen fueling facilities which currently operate in California and another 15 that are planned.<sup>13</sup> Of the total of 42, only 12 are located in gas service stations. The other 30 are not, including facilities operated by transit agencies, municipalities (for city vehicles) and universities, many not open to the general public.<sup>14</sup>

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<sup>10</sup> Presumably the word “consistent” is a typographical error and the EA intended to state that it was unlikely that new outlets would be in locations inconsistent with local zoning.

<sup>11</sup> As the California Fuel Cell Partnership has noted: “Not all of the hydrogen stations need to be traditional retail fueling sites. Some may be built at grocery or big box stores. Fueling dispensers may also be co-located at other hydrogen sites such as with transit stations, forklift fueling or with renewable power generation.” California Fuel Cell Partnership, *Hydrogen Fuel Cell Vehicle and Station Deployment Plan: A Strategy for Meeting the Challenge Ahead* (February 2009), pp. 14-15.

<sup>12</sup> As discussed above, even where the EA concludes that an impact is significant and unavoidable, it cannot unreasonably downplay the impact's magnitude and thereby tilt the balance in favor of overriding considerations. Accordingly, even for impacts that are significant and unavoidable (because outside ARB's regulatory control at the project level), the assumption of location on existing service station sites (tending to reduce impacts compared to new sites) must be supported by evidence. In other words, the significant and unavoidable findings do not shield the EA where it relies on unsupported assumptions.

<sup>13</sup> Attachment D, Hydrogen Fueling in California.

<sup>14</sup> This spreadsheet was developed from information from the following sources: California Fuel Cell Partnership, <http://cafcp.org/stationmap>; US Department of Energy list of Hydrogen Fueling Stations in California, [http://www.afdc.energy.gov/afdc/progs/ind\\_state.php/CA/HY](http://www.afdc.energy.gov/afdc/progs/ind_state.php/CA/HY); “Program Overview - Hydrogen Fueling Infrastructure” presentation by Larry Watkins to the Clean Fuels Winter Advisory Group Winter Retreat

Moreover, just as ARB does not control the behavior of local governments, the refiners and importers do not control the behavior of station owner/operators. The overwhelming majority of service stations in California are now owned by independent operators who only have a supply contract with a refiner or distributor. There are few remaining lessee dealers who lease service stations owned by refiners. Except in those few cases, a refiner has no ability to require station owner/operators to install equipment to dispense hydrogen. The expense would likely be considerable, both to pay for the equipment and to induce station owner/operator to cooperate and surrender its property for a new line of business without a track record of profitability.<sup>15</sup> Moreover, refiners and importers will be reluctant to install costly equipment at locations where they have no control but may be subject to liability in the event of accidents. Accordingly, refiners may be more likely to contract with other parties, such as the existing providers who are already in the hydrogen business and with whom refiners already have business relationships, to establish new outlets specializing in hydrogen. At this point, that prospect too may be speculative, but it appears to make economic sense. But those new outlets are unlikely to be sited at existing retail service stations. At the least, ARB has provided no justification for assuming that the development of outlets in new locations will *not* occur.

In sum, the facts suggest that it is reasonable to expect a significant number of CFO facilities may be located outside existing retail service stations, contrary to the assumption in the EA. As a result, there is no substantial evidence to support the EA's conclusions that are predicated on the restriction of CFO facilities to existing stations, in order to avoid impacts in new locations.

**Improper Use of “Hypothetical Future Conditions” Baseline.** ARB assumes that the existing conditions or “baseline” for purposes of determining impacts of the CFO amendments (as well as the ZEV and LEV III provisions addressed in the EA and EIA) consists of:

existing vehicle and related fuel emissions programs, policies, and regulations. The existing regulatory condition includes the existing LEV regulation (LEV II), including the GHG requirements that are part of LEV II (known as the Pavley regulations), the EPL regulation, and the existing ZEV regulation, as well as other relevant, previous California rulemakings, such as the LCFS and all comparable federal regulations. . . . In the context of regulatory programs, impacts on the physical environment are the result of compliance responses to regulations. Compliance responses to the existing LEV II, ZEV, and CFO regulations are already in place and underway. The environmental effects of proposed amendments to regulations that reduce CAP and/or GHG emissions from light-

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(February 2, 2011), [http://www.aqmd.gov/tao/ConferencesWorkshops/Retreats/2-2011\\_Watkins.pdf](http://www.aqmd.gov/tao/ConferencesWorkshops/Retreats/2-2011_Watkins.pdf); Berkeley Transportation Letter, “Filling the Tank with Hydrogen” (Winter 2011), <http://its.berkeley.edu/btl/2011/winter/hydrogen>; Los Angeles Times, “Torrance Shell station adds hydrogen fuel pump” (May 11, 2011), <http://latimesblogs.latimes.com/greenspace/2011/05/hydrogen-torrance.html>; and review of Google Maps for the locations identified in these sources.

<sup>15</sup> Elsewhere in these comments, WSPA provides an analysis questioning the economic analysis in ISOR Appendix E, which appears to underestimate capital costs, interest rates and hydrogen costs, and overestimate station utilization rates. Applying more realistic assumptions, ARB's projected \$150 to \$531 million in cumulative economic benefit becomes an estimated \$210 to \$775 million cumulative loss.

and medium-duty vehicles would build upon the compliance responses to these existing regulations.

ISOR Appendix B, pp. 24-26. On the contrary, the CEQA baseline consists only of the physical environmental conditions that actually exist.<sup>16</sup> Hypothetical conditions that do not physically exist are not properly included in the CEQA baseline, no matter how reasonable the expectation that those conditions will come to pass.<sup>17</sup> Similarly, anticipated future conditions that will exist on completion of plans, rules and compliance responses cited by the EA cannot be included in the baseline here.<sup>18</sup> Instead, impacts of the CFO amendments must be determined by comparison to the physical environment that now exists. By improperly including regulatory developments which are still in progress in the baseline, the EA obscures the actual impacts required to be disclosed under CEQA, by understating changes compared to conditions that exist today.

**Failure to Correctly Analyze Air Emissions.** Even if ARB were justified in considering the future conditions resulting from compliance with the pre-amendment regulatory regime as the CEQA “baseline”, it failed to correctly implement this approach. The Emissions Impact Analysis, ISOR Appendix D, compares scenarios of fast and slow fuel cell vehicle (FCV) deployment to gasoline vehicles only. However, compliance with the existing regulatory regime, including existing ZEV regulations, should result in the deployment of battery electric vehicles (BEVs) instead. Accordingly, the CFO amendments, fostering the development of the FCV market by ensuring the availability of hydrogen fuel, would be expected to result in the replacement of BEVs with FCVs. Therefore, the EIA should have focused on the differences in air emissions between BEVs and FCVs, the emissions associated with the generation and distribution of electricity and hydrogen, and any secondary issues associated with the use of conventional vehicles for long-distance travel by owners of both BEVs (which require frequent battery charging) and FCVs (which require proximity to hydrogen fueling stations). In particular, utilizing the EA’s claimed baseline, the EIA should have compared hydrogen production to electricity generation emissions, rather than to those of gasoline production.<sup>19</sup>

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<sup>16</sup> CEQA Guidelines § 15125(a); *Communities for a Better Environment v. South Coast Air Quality Management District*, 48 Cal.4th 310 (2010).

<sup>17</sup> See, e.g., *Sunnyvale West Neighborhood Assn. v. City of Sunnyvale*, 190 Cal.App.4th 1351 (2010) (baseline for traffic congestion relief project was the existing environment, not projected traffic conditions based on expected growth under adopted plans).

<sup>18</sup> CEQA Guidelines § 15125(a) defines the environmental setting as a “description of the physical environmental conditions in the vicinity of the project at the time the notice of preparation is published, or if no notice of preparation is published, at the time the environmental analysis is commenced, from both a local and a regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a Lead Agency determines whether an impact is significant.” Courts have interpreted the word “normally” to allow some latitude; e.g., if the environmental analysis commenced during a flood or drought, an average of *past* conditions over time may be preferred to an instantaneous but unrepresentative “snapshot.” However, as explained in *City of Sunnyvale*, hypothetical conditions based on *future* expectations cannot be included in the CEQA baseline.

<sup>19</sup> Moreover, even if the CFO amendments led to displacement of gasoline rather than electricity production, there is no basis for the EIA’s assumption that emissions associated with gasoline production in California would decline. Refiners are more likely to continue producing gasoline (and emissions) and ship the product outside the state, than to forego production and reduce emissions.



These comparisons not only affect the claim of overriding benefits to justify significant and unavoidable impacts, but also have implications for the analysis of adverse impacts. Hydrogen generation, whether at central facilities or at fueling stations, generally can be expected to occur in developed areas, which are more likely to be in non-attainment of ambient air quality standards. By contrast, electricity in California is often generated outside urban and developed areas and in some cases outside the state. Emission increases associated with hydrogen thus may be more likely to cause significant air quality impacts.

**Failure to Analyze and Disclose Air Quality and GHG Impacts from Construction of New Hydrogen Fueling Stations.** The EA air quality section, p. 142, states: “Based on typical emission rates and default parameters for above mentioned equipment and activities, construction activities could result in hundreds of pounds of daily NO<sub>x</sub> and PM, which may exceed general mass emissions limits depending on the exact location of generation.” The short-term construction impact (which is not so “short term” when considering construction of over 450 fueling stations) is considered potentially significant, and mitigation is left to the local permitting authorities during project-level CEQA review. However, the EA does not say what those casual references to “typical emission rates” and “default parameters” may mean, nor explain the “general mass emissions limits” which may apply. Neither the EA nor the EIA (ISOR Appendix D, the emissions impact technical analysis) provides any quantitative estimates of air pollutant emissions beyond the vague acknowledgment of “hundreds of pounds of daily NO<sub>x</sub> and PM.”<sup>20</sup> Readers are given no information to understand or comment on whatever basis ARB may have for that order-of-magnitude figure. Moreover, other construction air quality impacts (e.g., toxic air contaminants) are not even described with order-of-magnitude estimates, and neither the EA nor the EIA even mentions greenhouse gas (GHG) emissions from fueling station construction.

As discussed above, the programmatic nature of the EA and the anticipated future project-level review (at least, for those projects not found exempt from CEQA) are not a shield from CEQA’s disclosure obligations. Determining the readily identifiable magnitude of emission impacts was not properly left as an exercise for the reader.

**Failure to Evaluate Construction and Operation Impacts of New Hydrogen Generating Capacity.** The EA (pp. 134-145) acknowledges that compliance with the CFO requirements would require an increase of up to 9.2% in the state’s currently projected supply of merchant hydrogen. The EA also notes that increased hydrogen purity may be required for merchant hydrogen to be suitable for use as fuel for FCVs. Accordingly, the EA explains: “For delivered gaseous hydrogen, modifications of the central plants may be necessary to further purify the hydrogen so that it meets the purity standards required for fuel cell vehicles” and goes on to rely on other agencies for mitigation as it does elsewhere, noting that “the construction work associated with these plant modifications would have to satisfy State and local requirements for permitting, hazardous materials, and other resource areas, which are typically handled by local agencies” (EA, p. 135).

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<sup>20</sup> The EA and EIA could easily have provided reasonable quantitative estimates and an explanation for their basis, scaled up for approximately 450 stations from the individual project level; see, e.g., Attachment C, Burbank Hydrogen Fueling Station Negative Declaration, p. 2-13.

However, the EA fails to indicate what percentage of currently available or forecast merchant hydrogen complies with existing specifications for hydrogen as an alternative vehicle fuel. More important, it does not provide any justification for assuming adding up to 9.2% of higher purity hydrogen to the existing supply can be accomplished merely by “modifications” to existing hydrogen generating plants. In fact, in every reference to impacts associated with meeting hydrogen demand, the EA is careful to assert that the demand will be met with “modifications” of existing plants. See, e.g., EA pp. 139, 141, 148, 151, 152, 155, 158, 161-163, 167-169, 171 (each asserting that “New hydrogen fueling stations could also be constructed and operated along with modifications to existing hydrogen production plants”).

By assuming only modifications to existing facilities, the EA can avoid any impacts from construction and operation of new hydrogen generating capacity, which can be substantial. New merchant scale hydrogen plants are major industrial facilities whose construction and operation, like that of other industrial plants, can have significant environmental impacts requiring evaluation under CEQA. (Among other things, hydrogen generation itself produces GHG emissions, which must be mitigated or offset.) However, the EA provides no basis for the assumption. In fact, it seems unreasonable that so great an increase in supply can be accomplished without new facilities. Moreover, as the EA also notes, pursuant to SB 1505, once statewide demand for hydrogen as a transportation fuel reaches certain levels, state law requires that 33.3 percent of this hydrogen be made from renewable resources. There is no estimate of the amount of hydrogen available from existing sources that meets both this requirement and vehicle fuel specifications. Yet under these circumstances, it seems inevitable that there will be more than a modification of existing facilities.

Just as the EA’s unrealistic assumption that all fueling facilities will be located on existing retail service stations serves to understate impacts from new facilities, so does the assumption that only modifications of existing generating capacity are needed. However, given the far larger footprint and environmental effects of new hydrogen generating capacity, the omission has greater consequences for the inadequacy of the EA.

**Failure to Analyze Hydrogen Hazards.** The EA, p. 158, summarily dismisses impacts related to hazardous materials transport and use, asserting that “New hydrogen fueling stations [and] . . . modifications to existing hydrogen production plants. . . would likely occur within existing footprints or in areas with consistent zoning.” As discussed above, there is reason to doubt these speculative and unsupported assumptions. The EA (pp. 158-159) goes on to address explosion risk from electric vehicle batteries (for the ZEV portion of the ACC initiative) but, remarkably, omits any mention of explosion risk from hydrogen transport and use. Still more remarkably, the only risk of spills the EA discusses is minor diesel spills from fueling construction equipment. No potential impacts (not even insignificant impacts) are recognized for hydrogen transport to fueling stations and operations at stations. No mitigation measures are provided for hydrogen hazards, not even recommended measures to be implemented by local authorities in project-level CEQA review for permitting or approvals.

The failure to discuss hazards or the impacts of hazard mitigation strategies in relation to hydrogen transport and refueling facility operation is a significant omission in the EA. The California Energy Commission (CEC) evaluated potential failure modes and the effects of those failures at hydrogen refueling stations, which include failure modes associated with hydrogen

delivery vehicles and on-site generation.<sup>21</sup> The U.S. Department of Energy developed an on-line tool for hydrogen hazard and risk analysis.<sup>22</sup> As indicated in these references, the outcomes of many potential failure modes are explosion and fire. Some of the analyzed scenarios have low or moderate frequency but, if they do occur, would have severe consequences.” Both of these references also address potential mitigation measures that are not addressed at all in the EA which might address hazards but could create other potential environmental impacts not to mention impact refueling facility design, throughput, cost, and other important factors.

The CEC report (p. 6-3) concludes that:

hydrogen is relatively leak prone, particularly considering the fact that it is usually stored at high pressures, flammable mixtures are easily ignited, and it is difficult to detect. These characteristics may make hydrogen less safe than other fuels in some accident scenarios. While hydrogen’s industrial-use safety record is good, this application does not include all vehicle fuel and lay person issues. Fortunately, safety research is underway and codes and standards are being developed to address hydrogen vehicle fuel applications.

However, neither the Existing Conditions section (pp. 79-83) nor the Hazards and Hazardous Materials section (pp. 158-160) of the EA describes any such codes and standards, either as part of the regulatory setting or as a source of mitigation measures.<sup>23</sup> Moreover, as recognized in the CEC’s allusion to “lay person issues”, customers at hydrogen fueling stations cannot be expected to observe safety procedures as rigorously as trained personnel.

**Failure to Consider Fire Protection/Public Service Impacts.** As in the Hazards and Hazardous Materials section, the EA’s Public Services section contains no discussion of hydrogen risks. Given that the impacts of failure modes at hydrogen refueling facilities are frequently fire, explosion, or both, the EA’s conclusion (p. 168) of a less than significant impact on fire protection public services is untenable.

As shown in the ISOR, Table I-1 (p. 10), there are only ten public hydrogen refueling stations currently open in California. The largest of those ten stations has a capacity of 100 kg/day of hydrogen. Given the lack of existing stations, most fire departments would not be expected to be familiar with nor trained to deal with emergencies at hydrogen refueling stations. These departments could be faced with the need to purchase new equipment, engage in additional training or add additional fire fighters. Moreover, ARB assumes that hydrogen stations attributable to the CFO amendments will be designed for throughputs of 400 kg/day, or four

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<sup>21</sup> Attachment E, California Energy Commission, *Failure Modes and Effects Analysis for Hydrogen Fueling Options* (November 2004).

<sup>22</sup> [http://www.hydrogen.energy.gov/permitting/risk\\_analysis.cfm](http://www.hydrogen.energy.gov/permitting/risk_analysis.cfm)

<sup>23</sup> The Negative Declaration for the Burbank hydrogen fueling station examined hydrogen hazards and safety and accident prevention procedures for facility design and operation. Attachment C, pp. 2-26 – 30. Operational risks including accidental spills from delivery vehicles, hydrogen leaks, breaks in hydrogen lines and fires were examined. After thorough analysis, the Negative Declaration found the impact less than significant, for that individual project. Again, the EA should have provided such analysis for over 450 stations, rather than remaining entirely silent on the subject of hydrogen risk.

times the capacity of the largest existing station. Even fire departments that are familiar with and trained to deal with emergencies at existing hydrogen stations will be faced with much larger potential fires and explosions at facilities with larger volumes of stored hydrogen and/or the increased number of hydrogen delivery vehicle trips. Finally, the increase in hydrogen transport vehicles on the state's roadway network would introduce increased risks, necessitating training and, potentially, new equipment for fire departments in locations that do not have fueling stations, as well as those that do.

If the EA were to follow its usual pattern, relying on the authority of local agencies to address increased demands on local fire protection service, then the impact should be found significant and unavoidable, not less than significant. At the least, the impact must be acknowledged and recommended mitigation measures provided.<sup>24</sup> The EA should also recognize that agencies responsible for disaster response (e.g., in the event of earthquake), as well as local fire departments, likely would be affected by the risks associated with over 450 new hydrogen outlets and the delivery trucks necessary to service them.

**Failure to Analyze Population and Housing and Related Impacts.** Typical impacts in several areas – e.g., population and housing, land use, recreation, utilities, public services in addition to fire protection, and growth-inducing impacts – relate to the numbers of workers involved in construction and operation of hydrogen facilities. The EA makes broad, unsupported assertions that worker numbers will be low and impacts related to worker numbers accordingly insignificant (see, e.g., EA p. 168). Again, the reader has no basis to know how well-founded such assertions are and it was ARB's responsibility to provide support for public review and comment.

**Failure to Consider a Reasonable Range of Feasible Alternatives.** Alternatives analysis is a central aspect of the CEQA review process. A lead agency must consider and evaluate a range of potentially feasible alternatives that will foster informed decision-making and public participation. To accomplish this, the CEQA document must develop and evaluate a range of reasonable alternatives that would feasibly attain most of the basic objectives of the project, but "would avoid or substantially lessen any of the significant effects of the project."<sup>25</sup> However, with respect to the CFO amendments, the EA fails to meet even the "reasonable range" standard.

Other than the statutorily required no project alternative, the sole alternative to the CFO amendments considered is the Memorandum of Agreement (MOA) with major gasoline refiners and importers to carry out the exactly same objectives provided in the CFO amendments.<sup>26</sup>

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<sup>24</sup> Moreover, ARB should consider mitigation measures at the state level to address this issue, rather than leaving it entirely to local fire departments and other local responders. For example, the California Fuel Cell Partnership suggested that resources should be provided "to the state fire marshal to integrate hydrogen training into the state fire curriculum", as one of the key "education outreach needs" for hydrogen fueling. The Fuel Cell Partnership also recommended educational efforts aimed at "emergency responders, building and code officials, and state and federal elected officials as well as the general public in communities that have or will have hydrogen stations." California Fuel Cell Partnership, *Hydrogen Fuel Cell Vehicle and Station Deployment Plan: A Strategy for Meeting the Challenge Ahead* (2009), pp. 26-27.

<sup>25</sup> CEQA Guidelines § 15126.6(a).

<sup>26</sup> The EA also considers alternatives involving more and less stringent LEV and ZEV standards than those proposed, but these are not alternatives to the proposed CFO amendments.

Accordingly, the EA concludes (pp. 195-196) that its impacts would be the same or less than those of the proposed project, since potentially “varying levels of commitment” by MOA participants could lead to fewer hydrogen fueling stations being constructed.

WSPA strongly disagrees with the implication that MOA participants would breach the agreement. ARB has no grounds to impugn the intent of MOA participants to fully comply with requirements to which they have committed. Moreover, intent aside, compliance would not be optional. As the EA (p. 195) states, the “MOA would have the binding power of a contract and be legally enforceable.”

The unsupported presumption of inadequate MOA compliance also has an important consequence for the CEQA review of alternatives. The MOA alternative is designed to and can be expected to achieve the same results as the CFO amendments. Accordingly, the EA fails to consider *any* CFO alternative that is designed to “avoid or substantially lessen any of the significant effects of the project” as required by CEQA. Not every feasible alternative that an agency (or a commenter) can conceive of need be considered. Nevertheless, ARB is obligated to revise the EA to contain, and must then fully and fairly consider, some other alternatives that reasonably can be expected to accomplish actual reductions in significant impacts.

While it is ARB’s obligation to develop a reasonable range of alternatives that can avoid or less impacts, at least two potential alternatives appear feasible.

First, as discussed above, the EA analysis assumes that hydrogen fueling facilities will be constructed at existing gasoline service stations. However, ARB could accomplish the same objective, promoting the availability of hydrogen fuel and so encouraging the manufacturing and purchase of FCVs, without assuming that hydrogen fueling will only occur at public fueling stations. Deployment of FCVs could also create a market for in-home hydrogen fueling. In-home fueling for natural gas vehicles already exists.<sup>27</sup> Hydrogen fueling could be accomplished through exchange of canisters, such as is already being tested on light electric vehicles with fuel cells (such as scooters) in Taiwan.<sup>28</sup> FCV fueling by this method could occur at some public fueling stations, but canisters also could be purchased at retail outlets and installed at home. Under this alternative, far fewer than the 450 public hydrogen dispensing facilities assumed by the EA would be necessary, and associated impacts would be reduced.

Second, refiners and importers could be provided the option of meeting CFO obligations through hydrogen dispensing or electric vehicle charging facilities. Electricity is also a clean fuel that could satisfy CFO requirements. The regulatory language in proposed 13 Cal. Code Regs. section 2300(a)(2) defines “clean alternative fuel” as “any fuel used as the certification fuel in a zero-emission vehicle” which includes both electricity and hydrogen.<sup>29</sup> Since this alternative

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<sup>27</sup> See Honda Home Energy Station at <http://automobiles.honda.com/fcx-clarity/home-energy-station.aspx>. Also see “Convenient Home Refueling Appliances Now Available for Natural Gas Vehicles” at: <http://www.honda.com/newsandviews/article.aspx?id=200707092524>.

<sup>28</sup> See <http://www.hydrogencarsnow.com/blog2/index.php/hydrogen-fueling-stations/first-hydrogen-canister-exchange-station-set-up-in-taiwan/>.

<sup>29</sup> Proposed 13 Cal. Code Regs. section 2300(a)(5) defines “designated clean fuel” – that is, fuels subject to the CFO requirements – as any clean alternative fuel, except that “Designated clean fuel does not include electricity unless

would have the effect of promoting a mixed fleet of FCVs and BEVs, the CEQA evaluation would include consideration of impacts associated with BEV batteries. Nevertheless, BEVs are a more mature technology with which consumers are more familiar than FCVs. At the least, hazard impacts and firefighting public service impacts associated with the use of explosive hydrogen fuel could be reduced. In particular, hydrogen handling by “lay persons” as opposed to trained personnel was recognized as an issue by the CEC (see above). Accordingly, this alternative merits consideration by ARB in a revised EA.

**Revision and Recirculation of the EA.** Correcting the deficiencies discussed above require extensive revisions to the EA. Substantial changes (including the addition of feasible new alternatives that clearly would lessen significant impacts) must be made available for public review and comment.<sup>30</sup> Accordingly, the EA should be revised and recirculated for additional public comment before ARB takes action on the proposed CFO amendments.

### **Comments on Initial Statement of Reasons (ISOR)**

Listed below, WSPA has several concerns with the ISOR for the CFO regulatory amendments. Specifically, there are many technical, policy and legal concerns WSPA has relative to what ARB is using as the basis and assumptions to justify the regulation.

#### **I (B)(1)(e) Hydrogen Vehicle Deployment Plans**

In Table 1-2 of the ISOR, ARB staff presents data that are purported to be the results of a 2010 CARB/CEC survey of automakers to ascertain their plans regarding FCV placement in California over the period from 2012 to 2017. According to ARB, the manufacturer responses were predicated on the assumptions that:

1. Adequate hydrogen fueling infrastructure will indeed be in place in the communities ahead of vehicle deployments; and
2. Customers will lease or buy these vehicles.

With these assumptions in place, ARB reports that very few FCVs will be in place prior to the 2015-2017 period, but that manufacturers expect a rapid increase in FCV deployment during that period. These survey results are used as not only the basis for the FCV projections of the “Upper Bound” scenario but also to justify the need for modifications to the CFO regulation to be made now rather than waiting until later to see if FCV demand and the need for hydrogen refueling facilities really materialize.

What ARB staff does not report in the ISOR is that auto manufacturers were asked to characterize their FCV projections with one of three levels of confidence. The survey instructions in this regard were as follows:

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the Board concludes, based on the analysis conducted pursuant to section 2302(c), that public charging infrastructure for electric vehicles should be incorporated into this regulation.” The alternative proposed here would require ARB to so determine.

<sup>30</sup> CEQA Guidelines § 15088.5.

*Please fill in the green shaded areas for all time periods to represent the confidence level regarding the locations of these reported FCEVs, using the descriptions below.*

*10% - interest in area/deployment discussions*

*50% - concept plan*

*90% - delivery plan*

The actual survey results for 2015 to 2017 indicated California statewide placement of 57,490 FCVs. However, only 6,130 (10.6% of the total) were designated with the 90% confidence level, while 11,830 (20.6% of the total) and 39,530 (68.8% of the total) were designated with the 50% and 10% confidence levels, respectively.

The fact that almost 70% of the FCVs projected for 2015 to 2017 were at the 10% confidence level and that almost 90% were at the 50% or lower level, even after manufacturers thought there would be both customer interest and refueling infrastructure, seems to dramatically highlight the continuing level of uncertainty regarding the commercial viability of FCVs. It also suggests that actual FCV placement levels prior to 2017 will be much lower than those associated with the Upper Bound scenario which in turn has significant ramifications regarding both the need for the CFO regulation as well as the reasonableness of the associated Emission Impact and Environmental Analyses.

#### **II (A)(9) – Tools for Evaluating Proposed Outlet Locations**

ARB references various models such as the STREET model, developed by U.C. Irvine that may be used to identify potential CFO location placement in various regions of interest. While such models may be helpful, WSPA is concerned that these often cannot simulate actual market conditions. Additionally, such models cannot take into consideration other factors like retailer interest, community acceptance, land and space availability, and agency permitting requirements including compliance costs. To date, there is no real-world evidence or peer review that supports the accuracy and appropriateness of the use of this academic tool as proposed.

WSPA recommends ARB update this section to clarify that the final siting decision for the clean fuel outlets shall be made by the regulated party, regardless of any modeling tools or other sources of information and data used by either ARB or any local, state or federal regulatory agency.

#### **II (A)(10) – Extending the Timeline for Compliance**

The compliance timeline should include more checks/balances and “look backs” to validate that additional stations are needed. Please see comments under Regulation Section 2304.

#### **II (A)(11) – Compliance Requirements**

While WSPA understands that some manufacturers are pursuing 5,000 psi and others are pursuing 10,000 psi fueling pressure levels, to our knowledge there has been no industry consensus developed or agreed to by the automobile manufacturers on the appropriate fueling pressure for hydrogen fuel cell vehicles. In that regard, rather than require all clean fuel outlets to be equipped with both 5,000 and 10,000 psi pressure dispensers, an analysis should be conducted that would assess the number of FCVs that are equipped with different pressures and

an assessment of the number of stations needed to provide the appropriate pressure dispenser levels.

An alternative approach would be for ARB to require industry to standardize the pressure at a single level. If done now, well ahead of construction of the vehicles and the fueling sites – it would greatly simplify fueling and fueling availability for this fuel. It will certainly cut down on customer frustration if they pull into a site only to find the pressure does not match their vehicle.

WSPA recommends that as part of its annual survey, ARB should request the number of vehicles and deployment geographies, separately, for vehicles at each fueling pressure. ARB should also drive the industry to establish a fueling pressure standard for FCVs. Further, the regulated parties should only be required to install the fueling pressure identified in the industry-wide standard for the vehicles projected to be deployed within a given geography.

## **II (A)(12) – Violations**

WSPA does not support the proposed level of violations that could be assessed to the regulated party (up to \$250,000/day), while the penalty that could be assessed to an auto manufacturer would not exceed \$35,000, which is clearly not equitable given the regulated parties compliance obligations are based on auto manufacturer FCV projections. Since the auto manufacturers' annual projections trigger the CFO regulation and subject the regulated parties to substantial investment on fueling infrastructure in advance of actual vehicle deployment, to have regulatory compliance parity, the penalties assessed to the auto manufacturers should be commensurate with those assessed to the regulated parties for noncompliance.

WSPA recommends ARB reduce the penalties for violations imposed on major producers or importers of gasoline to a level commensurate with the penalties imposed on automotive manufacturers. Alternatively, auto manufacturer penalties (\$35,000) should be increased to be commensurate with fueling infrastructure penalties because auto manufacturer projections trigger significant investment by infrastructure providers.

## **II (A)(13) – Breakdown of Dispensing Equipment-Release from Liability**

WSPA is very concerned with ARB's proposal to reduce the time for equipment repairs from 6 months to 1 month. Any new technology, particularly in regards to dispensing and operating equipment associated with hydrogen, as well as a limited vendor base, most likely will result in delays associated with repairs and replacements of such equipment and technology. Given hydrogen fueling station technology is not yet mature; the vendor base is limited; a robust, skilled workforce capable of performing repairs does not yet exist; and some of the equipment providers are not based in the U.S., these factors could all result in lead times for repair work that could easily exceed one month.

WSPA recommends ARB retain the six month allowable repair timeline.

## **II (A)(14) – Sunset Provisions**

While ARB's proposal to reduce the sunset provisions from 10% to 5% is a step in the right direction, nonetheless a 5% sunset provision is higher than the number needed to "bridge the gap" to commercialization. In fact, according to the California Fuel Cell Partnership's Action



Plan, it identifies 50-100 hydrogen stations are needed for early commercialization (see Attachment F).

WSPA recommends ARB reduce the sunset provisions to 50-100 hydrogen stations.

#### **IV (A)(2)(a) – Capital Costs**

In its economic analysis, ARB provided capital cost ranges. However, in its calculations, ARB used the lower end of those ranges when determining the economic impacts of the regulation. WSPA believes these capital cost estimates are unrealistic since a 400 kg/day hydrogen station has not yet been installed or operated in the field. The capital cost of a 400 kg/day hydrogen station with compressed gas deliveries is estimated by ARB at \$1.5MM in the early years, \$1.4MM in the later years and \$1.8MM for liquid deliveries. These estimates have not been substantiated nor demonstrated in the field. Further they conflict with previous hydrogen station estimates as presented by ARB staff during the July 13 workshop and recent CEC AB118 awards of \$2.3MM for compressed gas and \$2.7MM for liquid deliveries.

The need for the CEC to provide cost share for hydrogen fueling projects up to 75% in its AB 118 awards illustrates that the economic barriers to this technology are very significant.<sup>31</sup>

The U.S. Department of Energy launched its Hydrogen Analysis (H2A) initiative in February 2003 to utilize industry-wide expertise in the development of a standardized approach and set of assumptions for estimating the lifecycle costs of hydrogen and the cost of hydrogen fuel.<sup>32</sup> Based upon publicly available data from the AB 118 grant awards (i.e. capital costs and station size) and utilizing the DOE H2A tool with standard assumptions, the cost per gallon equivalent of hydrogen is estimated to exceed \$28/kg (H2A inputs and assumptions are provided in Attachment G). Mandating such a high-cost transportation fuel will likely have significant adverse economic impacts on those who participate in that market.

WSPA recommends modifying the capital cost estimates to align with the July 13 workshop amounts of \$2.3MM for compressed gas and \$2.7MM for liquid deliveries since it is the most current data representing the actual capital costs for hydrogen fueling stations.

#### **IV (A)(2)(b) – Delivered H2 Cost**

The delivered hydrogen cost appears to be extremely low (\$2.70 - \$2.85/kg). The reference for the delivered hydrogen cost of \$2.70 for liquid hydrogen and \$2.85 for compressed gas, that ARB cites is: “US DOE, 2011b. United States Department of Energy. Satyapal, Sunita. US DOE Fuel Cell Technologies Program. “Overview of Hydrogen and Fuel Cells.” March 3, 2011. This reference is inaccurate.

The title of the slides containing this reference is “Infrastructure (Station with Liquid Truck Delivery) — Progress: Cost” and “Infrastructure (Station with Tube Trailer Delivery) — Progress: Cost.” In reviewing the detail on these slides, it is apparent that the \$2.85 and \$2.70 estimates are not the delivered hydrogen cost at all. They are the cost of the infrastructure associated with the delivery of hydrogen assessed on a per kilogram basis. Using compressed gas as an example, the \$2.85 includes compression, storage, terminal fees, cooling, tube trailer

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<sup>31</sup> [http://www.energy.ca.gov/contracts/PON-09-608\\_Revised\\_NOPA.pdf](http://www.energy.ca.gov/contracts/PON-09-608_Revised_NOPA.pdf)

<sup>32</sup> [http://www.hydrogen.energy.gov/h2a\\_analysis.html#h2a\\_project](http://www.hydrogen.energy.gov/h2a_analysis.html#h2a_project)

and other station costs - not the cost of hydrogen molecules as ARB has indicated in its economic analysis.

Further, the reference notes that the costs are for “high-volume” hydrogen stations. DOE defines “high-volume” as hydrogen stations capable of dispensing 1,000 kg/day. Scaling these costs down to a station size of 400 kg/day is not appropriate as they will not realize the benefits of economy of scale that were assumed for the “high-volume” scenario.

WSPA recommends modifying the cost of hydrogen in the economic assessment. ARB could consider the estimates from the MOA or an alternative reference.

### **Operating Cost**

Additionally, ARB has not provided a transparent dataset that offers estimated operating costs for hydrogen fueling stations. These costs include: actual costs for hydrogen (the molecule), delivery of hydrogen from the production facility to the station, and the cost to operate and maintain the equipment at the station capable of compressing, storing and dispensing the hydrogen, repairs, maintenance, replacement and decommissioning.

Integrating hydrogen into an existing retail gasoline station is not without technical and logistical challenges. Analysis is needed to fully understand how such challenges can be addressed and the impacts that the hydrogen equipment will have on the existing retail business. Further, as we commented in our November 4, 2011 letter, the Collaborative Workgroup identified an estimated negative cash flow of \$175,000 or more per year for at least 4 years, or possibly longer. In fact, the operator may never realize a profit.

Thus, it is clear that early hydrogen station operators would be faced with operating a business that does not make economic sense and a business case cannot be made without recognizing the need for financial support.

WSPA recommends making the operating cost data available for review by the regulated parties. The reference ARB provided is UCD, 2011, University of California, Davis. Ogden, Joan et al. UCD Institute of Transportation Studies. “Analysis of a “Cluster” Strategy for Introducing Hydrogen Fuel Cell Vehicles and Infrastructure in Southern California.” Sept. 16, 2011. Revised Oct. 5, 2011. This version could not be found in the public domain. WSPA requests ARB provide a copy so that WSPA can review and provide additional comments as necessary.

### **SB 1505 Premium**

ARB has assessed a \$0.70/kg additional cost for the SB 1505 requirements. There is significant competition for renewable energy in the marketplace due to requirements in the Renewable Portfolio Standard. Has ARB conducted an analysis to confirm that the renewable energy required for compliance with SB 1505 will be available? Further, in its worst case scenario, why is ARB using biogas as the renewable energy source? Solar electrolysis is currently the high-cost hydrogen production pathway, so the worst case analysis should include the highest cost technology.

WSPA recommends performing a more thorough analysis of: (1) the availability of renewable energy that could be utilized in the production of hydrogen; and (2) the impact of competition for

renewable energy on cost. Additionally, WSPA recommends ARB consider a true worst case scenario that includes the high cost alternative for producing hydrogen – solar electrolysis.

#### **IV (A)(3) – Station Utilization and Payback Assumptions**

WSPA does not agree with ARB’s position that hydrogen stations will operate at 100% utilization. Utilization rates are typically <100% to ensure that fuel is available when customers need it – even for gasoline stations. Hydrogen fueling stations new technology, so equipment downtime should be expected and planned for. It will also be difficult to predict when customers actually need fuel.

WSPA recommends ARB modify the economic analysis with a utilization rate of 70% to account for demand spikes and equipment downtime.

#### **IV (B)(5) – Summary of Economic Analysis Results**

ARB estimates that a retailer will be able to recover costs and begin making a profit within 3 years. As mentioned in Section IV (A)(2)(b) – Delivered H2 Cost, WSPA stated in our November 4, 2011 letter, the Collaborative Workgroup identified an estimated negative cash flow of \$175,000 or more per year for at least 4 years, or possibly longer, and in fact the operator may never recognize a profit.

#### **Interest Rate for Commercial Loans**

ARB does not provide a reference for using a 6% interest rate on business loans. Interest rates for commercial/business loans are typically higher, especially for unproven technology in a new market.

WSPA recommends ARB provide information to support a 6% interest rate. In the absence of such information, WSPA recommends ARB update the economic analysis with a more reasonable number based upon actual commercial interest rates.

### **Comments on Appendix A: Proposed Regulation Order**

#### **§2300 - Definitions**

(14) Importer – Definition should be consistent with the CaRFG3 regulation and/or LCFS regulation.

#### **§2302(b)(1) – Retail Outlet Requirements**

The requirement to provide “upon request” fueling capability for both 5,000 and 10,000 psi vehicle storage tanks is problematic. See II (A)(11) comments above.

#### **§2302(c)**

The regulatory package indicates ARB will conduct an analysis on the feasibility and need for EV charging and EV charging may be added to the CFO regulation following the conclusion of the analysis. WSPA feels strongly that there is no need to include provisions for a study in this regulation and that sufficient electric vehicle recharging infrastructure efforts are well under way in the state. Further, it is WSPA’s position that the same legal concerns associated with

mandating hydrogen fueling infrastructure exist with electric charging infrastructure. It is apparent that ARB believes the regulation can be modified to accommodate different fuels, so the agency could again opt for pursuit of modifications to the CFO to include electric charging infrastructure when the need is imminent.

WSPA strongly recommends the EV charging study be excluded from the proposed regulatory amendments and ARB conduct a study outside of the regulation to determine if any further EV charging infrastructure will be needed and, if so, options for achieving the funding requirements in consultation with utilities and other involved stakeholders.

#### **§2303(b)**

There appears to be a problem with the reference cited in 2303(b) for the reporting of FCV sales projections. Specifically, reference is made to "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles" as incorporated by reference in Title 13, California Code of Regulations, section 1961. This reference only requires reporting of model-year TLEVs, LEVs, ULEVs, and SULEVs not certified exclusively on gasoline or diesel.

WSPA recommends revising the reference as appropriate, presumably such that it aligns with that used in §2303(a).

#### **§2303(b)(2)**

In the ISOR, ARB extrapolates vehicle projection data. In the regulation, it is unclear if the methodology for triggering the CFO will be similar.

WSPA recommends all survey data be made publicly available, especially to the regulated entities. Additionally, ARB has indicated that it is collecting and analyzing data to determine whether auto manufacturers are on track to manufacture FCVs within a given timeframe. Such information should also be made publicly available to ensure the regulated parties have full knowledge and information given they are required to expend capital to comply with the requirements of the regulation.

Additionally, WSPA recommends in the regulatory language, that ARB should explicitly state that the trigger can only be calculated by the summation of actual responses received. Projections should only include actual, auditable responses from each individual auto manufacturer. Extrapolation of data (as referenced in the ISOR) should not be allowed. If an auto manufacturer does not respond or project vehicles, their response shall be recorded as zero and also be made part of the public record.

#### **§2303.5(a)(1)**

ARB has added a regional trigger of 10,000 vehicles in an air basin, where CFOs would then be required to be installed.

WSPA recommends ARB remove the regional trigger of 10,000 within the boundaries of an air basin. Alternatively, the regulation should explicitly state that if ARB does not remove the regional trigger of 10,000, then CFOs will only be required within that region.

**§ 2304(a)(1)**

ARB's calculation for the number of CFOs required, are based upon 146,000 kg/yr. It is unclear if ARB expects that compliance is based upon this minimum capacity.

WSPA recommends that regulated parties must have the flexibility to install station types and scale appropriately for each location. The calculation assumes 146,000 kg/year (400 kg/day), but this should not be a requirement. The flexibility to install smaller and/or larger stations should be allowed and determined by the regulated party.

**§2304(a)(2)(C) – Determination of the Number of CFO's**

It is unclear if the CFO can be redacted if projections fall below the 10,000 or 20,000 vehicle threshold. There is no robust look-back mechanism to validate that additional CFOs are needed.

WSPA recommends new sections (3 and 4) as shown in red italicized underlined language below.

- (C) Reducing the number of required retail clean fuel outlets to reflect certain preexisting outlets and based on the actual demand for the designated clean fuel.
1. For each year, the Executive Officer shall determine for each designated clean fuel the number of retail clean fuel outlets that [i] are owned or leased by persons who are non refiner/importers of gasoline, [ii] have a design capacity as set forth in section 2302(b) where applicable, [iii] satisfy the provisions of section 2309 (b), and [iv] certify that they will operate throughout the compliance year for which the determination is being made.
  2. For each year, the Executive Officer shall reduce the total number of required clean fuel outlets required for each designated clean fuel, as determined pursuant to sections 2304(a)(1), and (a)(2)(B) by the number of retail clean fuel outlets determined in accordance with section 2304(a)(2)(C)1. The Executive Officer shall notify the refiner/importer responsible for each retail clean fuel outlet included in the determinations made pursuant to this section 2304(a)(2), and no such outlet may be constructively allocated pursuant to section 2308.
  3. At the end of each year, the Executive Officer shall conduct a needs assessment to validate the total number of clean fuel outlets required for each designated clean fuel before increasing the number of required clean fuel outlets for the next year. The needs assessment shall include analysis of the vehicle manufacturers' projections pursuant to section 2303(b)(2), the number of vehicles deployed in the State of California compared with the vehicle manufacturers' projections, and the available supply of versus demand for the designated clean fuel. Based upon the findings in

the needs assessment, the Executive Officer shall reduce the number of clean fuel outlets required if:

- a. The vehicle manufacturers' projections pursuant to section 2303(b)(2) exceed the actual number of vehicles deployed in the State of California for that year, resulting in an excess supply of the designated clean fuel as projected by the TPMV calculations set forth in section 2303(c).
  - b. The state-wide fueling capacity of the designated clean fuel exceeds the state-wide demand for that designated clean fuel by greater than 20%
4. In the event that the vehicle manufacturers' projections pursuant to section 2303(b)(2) decline below the trigger level requirement during the twelve months prior to the start of the year described in section 2303.5, the Executive Officer shall delay the requirement to install clean fuel outlets until the trigger level requirement is again reached. The Executive Officer shall notify the parties of this delay within 4 months of receipt of the vehicle manufacturers' projections.

#### **§Section 2308 – Constructive Allocation of Retail Clean Fuel Outlets**

Section 2308(a) seems to disallow constructive allocation of a retail clean fuel outlet if the outlet is also a retail gasoline outlet.

WSPA recommends ARB strike the words “which is not a retail gasoline outlet” in line 2. We believe that dual purpose or multi-purpose fuelling facilities may be more attractive to owners, operators and customers and should be allowed.

#### **§2309(b)(2)**

ARB requires that the regulated party, “store a commercially reasonable quantity of the designated clean fuel at the outlet.” This requirement is technology limiting and favors hydrogen deliveries over onsite production.

WSPA recommends ARB consider modifying the requirement to “make a commercially reasonable quantity of the designated clean fuel at the outlet available”, as opposed to requiring a minimum amount of hydrogen to be stored on site.

#### **§2309(d)(2)**

ARB’s provisions for reporting operational details of clean fuel outlets at facilities not owned by the regulated party are problematic. WSPA does not support the regulated parties being responsible for reporting operational requirements, such as the manner of how fuel will be supplied at outlets that our members do not own and operate.

WSPA recommends modifying or excluding the detailed operational reporting requirements for outlets that are not owned and operated by the regulated parties from this section.

#### **§2311(a)(1)- Breakdowns**

WSPA does not support the limited time to provide notification in the event of CFO equipment malfunction. In terms of a “major breakdown,” for example, the requirement to notify the Executive Officer within 4 hours is burdensome and onerous. As stated in section §2309(d)(2), WSPA does not support regulated parties being held accountable for operational requirements, which includes requirements to report breakdowns at outlets that they do not own and operate.

WSPA recommends deleting the definition of “minor breakdown” and removing all requirements regarding “minor breakdowns”. In terms of a major breakdown we recommend a notification period of 72 hours. We also support the original regulatory language that allows for a repair time of six months.

### **§2312 - Reporting**

WSPA recommends this section be deleted. Since the regulation is being changed to regulate producers and importers, the requested information is unnecessary.

### **§ 2315(d) – Violations of Section 2303 (b)(2)**

As stated above in the ISOR section, we believe false vehicle projection penalties should be equivalent to the CFO non-compliance penalties. If an auto manufacturer decides not to deploy the number of vehicles it already projected at the last minute due to lack of consumer interest/sales, the manufacturer would likely take the ARB penalty of \$35,000 over a choice of continuing to build cars for which a market does not exist. However, the regulated party to the CFO regulation will have already invested substantial capital to comply with the regulatory requirements. An investment that would ultimately be a stranded liability with sunk costs. Given this potential realistic scenario, it is critical that the penalty to auto manufacturers be comparable for both the CFO regulated parties and the auto manufacturers. Further, it ensures that OEM projections are accurate, particularly during the second year of the three year survey analysis.

WSPA recommends the false vehicle projection data penalty be equivalent to the CFO non-compliance penalties. It is currently significantly lower. Additionally, the vehicle projection data penalty is slated to remain with the government. ARB should utilize the vehicle projection data penalty revenues to reimburse the CFO regulated parties for stranded investment as a result of inaccurate OEM projections.

### **Comments on Appendix B: Environmental Analysis**

#### **Environmental Analysis Related to Hazards, Hazardous Materials, and Public Services**

WSPA recommends ARB staff review the deficiencies and issues identified below and augment/correct them in the final regulatory documents.

As part of the ARB’s Environmental Analysis for the Advanced Clean Cars Program (Appendix B to the Initial Statement of Reasons (ISOR) for the 2012 Proposed Amendments to the Clean Fuel Outlet (CFO) Regulation), the potential impacts of the CFO regulation on Hazards,

Hazardous Materials, and Public Services are analyzed along with means to mitigate potentially significant impacts.

Beginning with Hazards and Hazardous Materials ARB analyzed three issues. These are:

1. Routine Transport, Use, or Disposal of Hazardous Materials
2. Upset and Accident Conditions, and
3. Hazardous Emissions, Materials, or Substances Near Schools, Hazardous Material Site, Airport Land Use Plan, Private Airstrip, Emergency Response Plan or Emergency Evacuation Plan, and Wildland Fires.

With respect to Public Services ARB analyzed only the following issue:

4. Response Time for Fire Protection, Police Protection, Schools, Parks, and Other Facilities.

With respect to issues 1 and 4, ARB concluded that impacts would be less than significant.

With respect to issue 2, ARB identified only the potential of fuel spillage associated with the refueling of construction equipment as a potentially significant impact but went on to indicate that “...*this impact could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of the ARB.*” No description of what the “mitigation” to which ARB refers is provided. What is clear is that impact has nothing to do with the delivery of hydrogen to refueling stations or the operation of those stations.

With respect to issue 3, ARB indicates that “*impacts...may be significant and unavoidable*”.

It appears that ARB ignored germane factors that should have been included in the Environmental Analysis for issues 1, 2 and 4 that could have also lead to findings of significant impacts and unavoidable impacts. These factors are related to the potential failure modes and the effects of those failures at hydrogen refueling stations which include failure modes associated with hydrogen delivery vehicles and on-site generation. These factors have been studied extensively and documented, for example, in a report prepared for the California Energy Commission<sup>33</sup> and in an on-line tool for hazard and risk analysis available from the U.S. Department of Energy.<sup>34</sup> As indicate in these references, the outcome of many potential failure modes are “explosion and fire”. This seems to directly contradict ARB’s conclusion that risks with respect to issues 1 and 2 are not significant and do not require mitigation.

Given that the impacts of failure modes at hydrogen refueling facilities are frequently fire, explosion, or fire and explosion, it is difficult to understand how ARB arrived at the conclusion that there would not be significant impacts with regard to fire protection services which are

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<sup>33</sup> Failure Modes and Effects Analysis for Hydrogen Fueling Options, California Energy Commission, CEC-600-2005-001, November 2004.

<sup>34</sup> The tool is available at [http://www.hydrogen.energy.gov/permitting/risk\\_analysis.cfm](http://www.hydrogen.energy.gov/permitting/risk_analysis.cfm)



included in issue 4. As described below, it is clear that there will be significant impacts on fire protection services which will require either mitigation or which will have to be deemed to be significant and unavoidable.

As shown in Table I-1 of the CFO ISOR (page 10), there are only ten public hydrogen refueling stations currently open in California and of those ten stations, the highest capacity is 100 kg/day of hydrogen. This is important for at least two reasons. The first is that given the lack of existing stations, most fire departments would not be expected to be familiar with, nor trained, to deal with emergencies at hydrogen refueling stations. These departments could be faced with the need to purchase new equipment, engage in additional training or perhaps add more fire fighters. A similar issue could be raised by the introduction of hydrogen transport vehicles operating in their jurisdictions which could raise new threats necessitating new equipment and/or training.

The second reason is that ARB assumes that hydrogen stations created by the CFO will be designed for throughputs of 400 kg/day or four times the capacity of the largest existing station. Given this, even fire departments that are familiar with and trained to deal with emergencies at existing hydrogen stations will be faced with much larger potential fires and explosions owing to the larger volumes of stored hydrogen and/or the increased number of hydrogen delivery vehicle trips created by the operation of the station.

Another potential factor that could impact public services that was not identified or analyzed by ARB is the impact of hydrogen refueling stations on disaster response requirements. Given that their numbers are currently very small, the increases required under the CFO regulation could affect public agencies responsible for earthquake response requirements as well as responses required for prolonged outages of electric service potentially resulting from high wind events and other types of disasters.

Returning to issue 3, where ARB did indicate that potentially significant and unavoidable impacts could exist, one way to mitigate the risk associated with a hydrogen refueling station could be for the local lead agencies (which ARB states will be responsible for approving construction of those stations) to simply reject applications for station construction submitted by refiners subject to the CFO regulation precluding their ability to comply with the CFO regulation.

As review of the CEC and DOE references cited above quickly indicates, there are different potential failure modes and hence risks associated with different hydrogen refueling station designs. Given this, another potential mitigation measure would be to dictate station design. Given that ARB's economic model presented in Appendix E to the CFO ISOR indicates significant differences in the cost of station construction as a function of their design, these local lead agency actions could have significant impacts on the costs of compliance with the CFO regulation that CARB staff has failed to take into account.

#### CFO Environmental Analysis Related to Hydrogen Production

WSPA recommends ARB staff review the deficiencies and issues identified below and augment/correct them in the final regulatory documents.

As part of ARB's Environmental Analysis for the Advanced Clean Cars Program (Appendix B to the Initial Statement of Reasons (ISOR) for the 2012 Proposed Amendments to the Clean Fuel Outlet (CFO) Regulation), the compliance response of increased hydrogen generation for fuel for fuel cell vehicles (FCVs) is recognized and discussed. The impacts associated with the compliance response are analyzed with respect to air quality but not with respect to greenhouse gas (GHG) emissions.

With respect to air quality, ARB concludes that compliance with CEQA would ensure that all impacts associated with the construction and operation of hydrogen production facilities are mitigated to a "...*less-than-significant level*". However, it appears as discussed below that ARB ignored a number of factors in analyzing the air quality and GHG impacts associated with the required increase in hydrogen production for compliance with the CFO regulation.

ARB's discussion of hydrogen production is embedded on pages 134 and 135 of the EA. ARB notes that compliance with the CFO requirements would require increases in the supply of up to 9.2% in the state's currently projected supply of merchant hydrogen. The EA also notes that increased hydrogen purity may also be required for merchant hydrogen to be suitable for use as fuel for FCVs. However, ARB does not indicate what percentage of currently available or forecast merchant hydrogen complies with the agency's existing specifications for hydrogen used as an alternative motor vehicle fuel<sup>35</sup> or what the environmental impacts associated with changes required at hydrogen production facilities to produce sufficiently pure hydrogen could be.

ARB also notes that pursuant to SB 1505, once statewide demand for hydrogen as a transportation fuel reaches certain levels, state law requires that 33.3 percent of this hydrogen be made from "eligible renewable resources as defined in subdivision (a) of section 399.12 of the Public Utilities Code." However, ARB provides no estimate of the current amount of hydrogen that is available that meets both this requirement as well as its motor vehicle fuel specifications and does not include any forecasted estimates.

Finally, ARB assumes the required hydrogen will be available (and in its economic analysis, at prices equivalent to those associated with local production at centralized steam methane reforming facilities). However, no basis is provided for that assumption.

The first problem with the ARB analysis is the assumption that all potential air quality impacts will be mitigated to be non-significant as a result of the need for CEQA compliance, and the simultaneous assumption that all of the increase in hydrogen production capacity required for CFO compliance will occur in a timely fashion.

Looking first at central hydrogen production facilities producing local merchant hydrogen, ARB has provided no evidence that refiners either have direct control over these plants or that refiners can somehow compel the expansion of their capacity. Therefore, the decision with regard to whether or not to expand hydrogen production will likely be made based on economics by the

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<sup>35</sup> CARB's current hydrogen fuel composition regulation is found at §2292.7, Title 13, California Code of Regulations.

plant owner who will factor the costs of CEQA compliance into that analysis and may well conclude that expansion does not make economic sense, particularly in areas such as the South Coast Air Basin where necessary emissions offsets are difficult to obtain or expensive. If merchant hydrogen meeting ARB's hydrogen fuel specifications is in short supply, costs will likely rise and to the extent that supply is unable to satisfy FCV demand, FCV owners would have to turn to other modes of transportation, most likely conventional vehicles with the result being increases in emissions of both air pollutants as well as GHG emissions.

Similarly, existing merchant hydrogen plants are subject to the AB32 cap-and-trade regulation, which will likely require reductions in GHGs from those plants. Expansion of those plants would increase GHG emissions and force plant operators to purchase additional offsets. Again, this fact would be accounted for in the economic decision-making of hydrogen plant owners and tend to discourage decisions to increase capacity.

ARB also fails to identify the potential impacts of the need to increase hydrogen supply and the specific production methods used on hydrogen prices which in turn may have environmental impacts. As noted by the California Hydrogen Highway Network<sup>36</sup> (see Attachment H) and as CARB staff is aware, the cost of hydrogen produced by different methods varies dramatically, in this case ranging from \$1.44 to more \$7.00 per kilogram. As hydrogen fuel prices will be related to the marginal cost of the source of the last increment of hydrogen needed to satisfy demand, it is crucial that CARB identify the sources of supply it assumes will be added to satisfy the increased demand. The price of hydrogen will be critical to decisions made regarding supply increases and also to FCV purchase decisions made by consumers.

In addition, because compliance with the ZEV regulation requires only that vehicle manufacturers deliver vehicles for sale in California and allows manufacturers to count FCVs sold in other states towards compliance with the ZEV regulation, the supply and price of hydrogen in California are going to be critical determinants in both the impacts of the ZEV regulation as well as the actual need for the CFO regulation.

### **Appendix C: Status of Alternative Fuel Infrastructure for Non-ZEV Alternative Fuel Vehicles**

No comments.

### **Comments on Appendix D: Emissions Impacts Analysis**

WSPA recommends ARB staff review the deficiencies and issues identified below and augment/correct them in the final regulatory documents.

ARB has incorrectly performed the analysis of fuel cell vehicles (FCVs) by comparing them only with gasoline vehicles. However, it would appear from a technical point of view that the correct baseline for assessment of the emission benefits of FCVs in general and the CFO regulations in

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<sup>36</sup> See presentation at [http://www.arb.ca.gov/msprog/hydprod/SB\\_1505\\_workshop\\_feb2010.pdf](http://www.arb.ca.gov/msprog/hydprod/SB_1505_workshop_feb2010.pdf)

particular is with a scenario where battery electric vehicles (BEVs) are assumed to be produced instead of FCVs to comply with the “pure-ZEV” requirements of either the existing ZEV regulation or the modified ZEV regulation being proposed by ARB staff.

While this might not at first seem intuitive, the ZEV regulation requires vehicle manufacturers to produce and offer for sale a range of vehicles including ZEVs which as indicated in Table 1.1 of the ISOR for the ZEV regulation are either BEVs or FCVs. Manufacturers can elect to comply with the pure ZEV requirements using either BEVs or FCVs. Therefore, to the extent that ARB takes action to foster the development of one technology over the other – for example FCVs as is the case with the proposed modifications to the CFO regulations - then fewer BEVs will have to be produced and offered for sale.

Since the proposed modifications to the CFO regulations are intended to support the introduction of FCVs, one assumes that in the absence of the revised regulations manufacturers would be required to sell more BEVs instead. Therefore, the emissions impact analysis of the CFO regulation should focus only on the differences in emissions between BEVs and FCVs, the emissions associated with the generation and distribution of the “fuels” that power these vehicles, as well as any secondary issues associated with inability of both BEVs and FCVs to fully account for the travel demands of their owners who may be forced to use conventional vehicles for long distance travel or travel away from hydrogen refueling stations. ARB staff has failed to perform this analysis.

While any real EIA would have to include a complete comparison of emissions impacts for BEV and FCV compliance under the ZEV mandate that includes not only emissions associated with fuel production, but also emissions associated with fuel transportation and the need to use conventional vehicles for some portion of travel given the range and refueling infrastructure limitations that will affect BEVs and FCVs regardless of the CFO, it is easy to show that there will be differential impacts. The following table shows the CI values contained in the most recently modified version of ARB’s LCFS “Lookup Table” for electricity and hydrogen production along with those same values divided by the energy efficiency ratios (EERs) of 3.4 and 2.5 that apply to BEVs and FCVs, respectively. As shown, in almost all cases the values for the carbon intensity divided by the EER associated with hydrogen and therefore FCV operation is higher indicating that ARB regulations like the CFO regulation that promote FCVs relative to BEVs are likely to have adverse impacts on CO<sub>2</sub> emissions which need to be identified and quantified in the EIA and considered under CEQA.

Fuel	Source	CI gCO <sub>2</sub> eq/MJ	CI/EER
ELEC	California average electricity mix	124.10	36.50
ELEC	California marginal electricity mix of natural gas and renewable energy sources	104.71	30.80
H2	Compressed H2 from central reforming of NG (includes liquefaction and re-gasification steps)	142.20	56.88
H2	Liquid H2 from central reforming of NG	133.00	53.20

H2	Compressed H2 from central reforming of NG (no liquefaction and re-gasification steps)	98.80	39.52
H2	Compressed H2 from on-site reforming of NG	98.30	39.32
H2	Compressed H2 from on-site reforming with renewable feedstocks	76.10	30.44

The EIA does not contain any estimate of emissions associated with the construction of hydrogen refueling facilities required under the modified CFO regulations. Although this deficiency should be noted, it is unlikely that these construction emissions will be substantial.

Different scenarios are evaluated in the EIA with respect to criteria pollutant and GHG emission impacts. Again, this finding is correct and should be noted as a deficiency in the EIA which should use the same scenarios throughout the analysis. However, the impact of this deficiency is not likely to be substantial.

In addition, there are a number of additional issues that should be raised with respect to the EIA. The first issue deals with the analysis of criteria pollutant impacts associated with hydrogen production presented on pages D18 to D23 of the EIA.

The first problem with this analysis is that ARB staff claims on page D-18 that it was performed “using GREET”. While California has created a version of GREET for use in estimating life-cycle greenhouse gas emissions associated with different fuel pathways that is incorporated into the LCFS regulation, this model is not used to develop emission inventories of criteria pollutants for use in the development of State Implementation Plans (SIPs) and the reasons for its use here, instead of the official methods for inventory development, are not explained.

Further, the GREET-based numbers in Table D-6 do not track in any way the numbers from the South Coast Inventory shown in Table D-7. For example, the ratio of NO<sub>x</sub> to VOC for gasoline in Table D-6 is about 2 while it is less than 1 for petroleum refining in Table D-7. Similarly, the ratios of NO<sub>x</sub> to VOC for all four hydrogen production processes shown in Table D-6 are all greater than 1 while the ratio for Industrial chemical processes in Table D-7 is less than 0.01 or more than 100 times different than the GREET-based ratios shown in Table D-6.

Notwithstanding the other issues identified with the so called “analysis” of criteria pollutants, impacts must be based on ARB approved emission inventory procedures, must be performed specifically for gasoline and hydrogen production occurring in California, and must be documented such that the public can properly comment on it (e.g. understand and reproduce the reported values).

The second problem is that hydrogen production is compared to gasoline production rather than properly compared to electricity generation. Issues associated with the proper comparison of criteria pollutant emissions associated with hydrogen production versus electricity generation include where the emissions occur. With hydrogen generation those emissions are likely to occur in the urban areas where FCVs are operated and where non-attainment with ambient air quality standards is likely. As a result, increases in emissions associated with increased

hydrogen production may exacerbate air quality problems. In contrast, electrical generation in California often takes place away from urban areas and in some cases outside the state of California. In this case, increases in electrical generation may not have any impact on air quality within any California non-attainment area. Again, the EIA must both recognize and address these issues.

Further, even if FCV use was displacing the use of gasoline rather than electricity, there is no basis to assume that emissions associated with gasoline production in California would decline. In order for that to happen refiners would have to either reduce throughput at California refineries (which may or may not reduce criteria pollutant emissions) or shut down refineries. It is unlikely that changes in local gasoline consumption are likely to cause refiners to operate their refineries differently as they would still have the option of producing gasoline in California but shipping it elsewhere for consumption – without any change in refinery emissions.

Similarly, even a refinery shutdown would not necessarily reduce emissions because those emissions are subject to local stationary source regulations and the shutdowns would generate emission reduction credits (ERCs) which could be used to offset emissions from new sources that could not otherwise be constructed in the area where the refineries were located. Again, the failure of the EIA to even raise this issue highlights the fact that it is fatally flawed and cannot be relied upon by the Board in making a decision to adopt the proposed modifications to the CFO regulation.

The third issue is the relation between the so called travel provisions of proposed section 1962.2(d)(5) (E) Title 13 California Code of Regulations (CCR) which allow FCVs sold in some states other than California to be counted towards compliance with the requirements of the ZEV mandate and the hydrogen-fueled vehicle reporting requirements associated with the CFO regulations in Section 2303(b)(2) Title 13 (CCR). Under the travel provisions, vehicle manufacturers receive credit with respect to compliance with the both the California ZEV regulation for the sale through the 2017 model-year of most BEVs and all FCVs in states other than California that have adopted the California vehicle regulations as well as the ZEV regulation in place in the state where the vehicle was actually sold. For FCVs, but not BEVs, these provisions continue to apply without sunset from the 2018 model-year. In contrast, the CFO regulation requires manufacturers to report the number of FCVs they plan to offer for sale in specific air basins of California.

Based on the above, it is not clear that the FCV sales projections shown in Figure D-1 of the EIA represent estimates of FCVs in operation in California or nationwide. To the extent that the estimates reflect the nationwide sales of FCVs upon which compliance with the ZEV regulation would be evaluated, the California hydrogen demand estimates and all California specific corrections in the EIA are incorrect. ARB must include estimates of the fraction of FCVs that are expected to be sold in states other than California under the ZEV regulation and account for the fact that many FCVs required under the ZEV regulation may not even operate in California in the EIA.

In addition, the calculations shown in the EIA were reviewed. While the methodology used in the analysis and the basis for a number of the assumptions are not well documented, there were no substantial issues identified.

Lastly, ARB should have analyzed the potential emissions impacts from truck deliveries of hydrogen in the case where on-site generation of hydrogen is not used. Liquid H<sub>2</sub> trucks carry approximately 4,000 kg and gaseous carry 400 kg. Assuming an 8000 gallon gasoline volume and an EER of 2.5, there are 25% less tanker trips to support a fleet of similar vehicles than with gasoline. But for gaseous, there would be 8 times as many tanker trips required. Also, one would expect H<sub>2</sub> tanker travel distances to be longer as you cannot pipe it to distribution facilities like gasoline. Like construction emissions, we don't think truck emissions are a major emissions impact but the issue should have been considered in the emissions and CEQA analyses.

### **Comments on Appendix E: Economic Model**

WSPA recommends ARB staff review the deficiencies and issues identified below and augment/correct them in the final regulatory documents.

WSPA does not support placing the cost of hydrogen refueling infrastructure or electrical chargers on refiners and importers. These costs should be borne by those electing to produce the vehicles or produce the alternative fuel (the car manufacturers, the hydrogen producers and the electricity providers). Forcing a party to engage in a business that is in direct competition with their primary product makes no sense from any standpoint. Forcing a party to fund infrastructure that will exist on property owned by another party is also unfair. This proposed regulation does not treat all parties equally and is clearly an anti-petroleum fuel measure that will raise with little or no benefit. There are still emissions when hydrogen is produced and electricity is generated - they just are not at the tailpipe.

The proposed regulation is not treating all parties equally. The potential penalty for vehicle manufacturer's providing high estimates of future production of hydrogen vehicles are significantly lower than the penalty for refiners not building enough clean fuel outlets, let alone the cost of funding the hydrogen dispensing equipment that is not needed. Clearly, the vehicle manufacturers should be the one providing the majority of the funds. After all, they are choosing to produce hydrogen vehicles, a vehicle that uses a fuel without a current distribution system or infrastructure. ARB's stated reason for changing the regulated party to major producer/importers of gasoline is because it "evenly spreads the requirement to build CFO's among the parties that continue to benefit financially from California's use of gasoline" is flawed as it is the refiners who will suffer economically as demand for their product declines due to this regulation. ARB is making the party that carry's the major brunt of the economic impact of declining gasoline demand fund the CFO's. The section of the ISOR on "Regulated Party" just identifies the ownership of retail outlets and production of gasoline. It provides no justification for making refiner/importers the regulated party.

This regulation will cost the retail service station owners lost sales, revenue and profit.

Retail gasoline stations have little or no spare land. Installing hydrogen refueling infrastructure will result in lost sales, revenue and profits. Gasoline stations have three busy times of the day, before work, lunch time and after work. During these times the fueling positions are normally fully occupied and the limited parking spaces are full.

- a. If the hydrogen refueling equipment uses existing parking spaces then in-store sales will decline as people need to either be fueling their car or park their car in order to go into the store.
- b. If the hydrogen dispenser replaces a gasoline dispenser then gasoline sales will decline and in-store sales will also as there will be less hydrogen customers than gasoline customers.
- c. If the hydrogen dispenser is added to a fuel island, a car using it will prevent another car from using the gasoline pump next to the hydrogen dispenser. Thus gasoline sales will likely decline.
- d. If the hydrogen refueling equipment displaces a car wash or other revenue generating asset, the sales from these assets would likely be eliminated completely.

The Initial Statement of Reasons (ISOR) for the 2012 Proposed Amendments to the Clean Fuel Outlet (CFO) Regulation, includes an economic analysis of the impacts associated with the regulation (pages 47 to 65). This analysis is generally based on an “economic model” for hydrogen refueling facilities that is presented in Appendix E of the ISOR. These documents are supplemented by two spreadsheets posted on the ARB website.<sup>37</sup> This memorandum documents the results of a critical review of the ARB economic analysis for the CFO regulation.

The CFO economic analysis begins with projections of fuel cell vehicle (FCV) populations operating in California during the period from 2014 to 2028 under two scenarios referred to as the “Upper Bound” and the “Lower Bound”. These FCV populations are then used to estimate the number of hydrogen refueling outlets that would be required under the proposed CFO regulations from which the economic impacts are assessed using the “economic model”.

The fuel cell vehicle populations for the Upper Bound case are described as being based on automaker projections of FCV that are expected to be sold in specific areas of California through 2017 and then assuming that manufacturers elect to comply with the requirements of ARB’s Zero Emission Vehicle (ZEV) regulations using only FCVs. The Lower Bound population of FCVs is reported to represent ARB’s “most likely compliance scenario” for the ZEV mandate. The numbers of FCVs estimated to be in operation in California under both scenarios are presented in Figure III-1 of the ISOR.

However, it should be noted that FCVs sold in states other than California that have adopted the California ZEV regulation pursuant to section 177 of the Clean Air Act also count towards compliance with the ZEV regulation in California. It is not clear how many FCVs ARB staff estimates will be sold in other states or how, if at all, those vehicles are accounted for in FCV population estimates presented in Figure III-1 and in the CFO economic analysis. It should be

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<sup>37</sup> [http://www.arb.ca.gov/msprog/clean\\_cars/clean\\_cars\\_ab1085/clean\\_cars\\_ab1085.htm](http://www.arb.ca.gov/msprog/clean_cars/clean_cars_ab1085/clean_cars_ab1085.htm)



noted that vehicle manufacturers can elect to comply with the ZEV mandate using only battery electric vehicles (BEVs) without producing any FCVs.

Although the costs of FCVs are not a consideration in the economic analysis of the CFO, they will likely be a major factor in determining the number of FCVs that will actually operate in California. It should be noted that compliance with the ZEV regulation is based on the number of ZEVs “produced and delivered for sale in California” rather than the number of ZEVs actually sold. Therefore, manufacturers can comply with the ZEV mandate without the public having to purchase FCVs. ARB estimates of incremental costs for FCVs taken from Table 5-4 of the ZEV ISOR are presented in Table 1 for the 2016 and 2025 model-year for three different types of vehicles. On-board hydrogen storage capacities associated with cost estimates are also presented. As shown, ARB estimates for FCV costs in 2016 range from about \$20,000 to \$35,000 more than a conventional vehicle. By 2025, ARB assumes these incremental costs have dropped to about \$7,500 to \$13,500. These cost reductions are driven as explained in the ZEV ISOR mainly by assumed reductions in the cost of fuel cells expected as the result of high volume production.

Although the costs shown in Table 1 do not necessarily reflect the prices that vehicle manufacturers will charge for FCVs and do not reflect the impact of any purchase incentives, or tax credits that may be offered, it is clear that FCVs will be expensive and are likely to cost more than comparable conventional vehicles making which may make them less attractive to consumers. Given, it is not clear that FCVs will be sold in California in the volumes assumed by ARB staff in the time frames assumed by ARB staff.

Overall, given the fact that vehicle manufacturer compliance with the ZEV mandate doesn’t depend directly on selling vehicles, manufacturers can get credit in California for FCVs offered for sale in certain other states, and the costs of FCVs, it is possible that actual in-use FCV populations may be substantially lower than those used in computing the number of hydrogen refueling facilities mandated under the CFO regulation. This may lead to lower station utilization rates than would reasonably be estimated which lead to greater economic impacts.

<b>Table 1</b> <b>ARB Estimates of FCV Incremental Costs Relative</b> <b>to Conventional 2016 Model-Year Vehicles</b> <b>(2009 \$)</b>		
<b>Vehicle Type/(H2 storage)</b>	<b>2016</b>	<b>2025</b>
Subcompact Car (3.3 kg)	19,060	7,513
Midsize Car (3.8 kg)	23,472	9,334
Large Car (4.3 kg)	33,238	13,406

Turning now to ARB’s “economic model” for hydrogen refueling facilities, the model is based on capital cost estimates for construction costs and annual fixed costs associated with operation and maintenance, cost of hydrogen either delivered to or produced at the facility, and station

utilization rates. The estimates used by ARB staff are taken from studies prepared by U.C. Davis and the U.S. Department of Energy.

ARB's capital cost estimates are based on U.C. Davis studies and assume that stations are designed to supply 400 kg of hydrogen per day to FCVs. These estimates apply to three different types of station design and include higher "early years" and lower "later years" values which range from \$1.4 to \$3.8 million. These values are used with an ARB-assumed interest rate of 6% and an assumed seven year cost recovery period. No supporting bases for these assumptions are provided by ARB, and ARB provides no assumption regarding the lifetime or replacement costs associated with hydrogen station equipment. Others, including a U.C. Davis study,<sup>38</sup> (see Attachment I) have used different assumptions including much higher capital costs even in the early years under "low cost" scenarios, a 12% real discount rate and a 15 year equipment replacement lifecycle all of which call into question the reasonableness of ARB's assumptions and lead to higher costs than CARB has estimated for hydrogen refueling stations.

ARB's assumed fixed costs for operation and maintenance are \$100,000 per year regardless of station type.

Turning to the cost of hydrogen supplied to stations, ARB staff assumes relatively low costs for delivered gaseous and liquid hydrogen from central hydrogen plants and staff also assumes produced costs for hydrogen from on-site reformation of natural gas will be even lower than these costs. In addition, ARB assumes that compliance with the requirements of SB 1505 (which specifies once statewide demand for hydrogen as a transportation fuel reaches certain levels, that 33.3 percent of this hydrogen be made from eligible renewable resources) will add only \$0.70 per kg to the cost of hydrogen.

These ARB assumptions lead to hydrogen production costs of \$1.45 to \$3.00 per kg before the addition of the SB 1505 surcharge. The costs are not assumed to change over time except with respect to the addition of the SB 1505 surcharge in later years. However, the ARB assumptions appear to be at odds even with the estimates that are reported in the reference<sup>39</sup> (see Attachment J) that ARB cites as their source, which range from a low of about \$3 per kg to as much as \$10 per kg and suggest an average of about \$5 per kg based on a 2009 study before accounting for the cost impacts of SB 1505. The impact of higher hydrogen costs is of course that higher hydrogen prices will have to be charged in order to recover capital and recurring fixed costs which in turn will make the cost of operating FCVs higher relative to vehicles operating on other fuels, and the ownership of FCVs less economically desirable.

The next factor to be considered is station utilization rates. These are important because they establish the annual volume of hydrogen dispensed at a refueling facility over which capital costs and fixed annual maintenance and operating costs can be recovered. ARB assumes a four year ramp up (25, 50, 75 100%) to 100% utilization for all hydrogen refueling stations installed during the early program years and a two year ramp up (75%, 100%) for all hydrogen stations in the later years. There is no basis provided by ARB to support the assumed utilization rates,

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<sup>38</sup> Nicholas M., and Ogden, J., "An Analysis of Near-Term Hydrogen Vehicle Rollout Scenarios for Southern California", Final Draft January 29, 2010.

<sup>39</sup> Satyapal, S., "Overview of Hydrogen and Fuel Cells", March 22, 2011.

which are again higher than maximums of 70 to 80% referenced in the U.C. Davis studies <sup>40</sup> (see Attachment K). Again, use of more reasonable utilization rates will raise the price of hydrogen that has to be charged to recover capital and operating costs.

In summary, our review of the ARB economic analysis of hydrogen fueling facilities indicates that relative to other sources, ARB:

1. Underestimated capital costs;
2. Underestimated interest rates;
3. Underestimated hydrogen costs; and
4. Overestimated station utilization rates.

All of which lead to an underestimation of the economic impacts of the CFO regulation.

Based on the assumptions used by ARB regarding FCV populations and operation; the assumptions described above related to the economic analysis; and two assumed retail hydrogen pricing scenarios the basis for which is not disclosed; ARB concludes that the operation of hydrogen stations required to be built based on the CFO mandate will yield cumulative profits of between about \$150 and \$531 million over the course of the regulations. This includes percentage ratios of annual profit to cost (e.g. the dollars of profit per dollar spent) running at of over 35% by the time the CFO regulations are assumed to sunset. Given the apparent profit potential of hydrogen refueling stations revealed by the ARB economic analysis, one has to question why a regulation forcing the development of the industry and retail outlets is required.

However, this question is easily answered by re-examining the ARB analysis using some of the more reasonable assumptions described above. For example, if one simply assumes that the cost of producing or procuring hydrogen is \$5 per kg rather than the values assumed by ARB, and that the maximum average station utilization rate is 80% rather than 100% as ARB assumed, without changing any other ARB assumptions, the estimated \$150 to \$531 million in cumulative profits becomes instead an estimated \$210 to \$775 million dollars in cumulative *losses*. Obviously the magnitude of the estimated losses would be increased by using the alternative assumptions regarding capital cost and interest rate described above that appear to be more reasonable than those ARB selected.

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<sup>40</sup> Ogden, J., and Nicholas, M., "Analysis of a "Cluster" Strategy for Introducing Hydrogen Fuel Cell Vehicles and Infrastructure in Southern California", September 16, 2011.