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January 5, 2009

Mr. Gordon Schremp
Project Manager
Fuels and Transportation Division
California Energy Commission
1516 Ninth Street
Sacramento, California 95814-5512

In Re: Docket No. 07-HFS-01 (AB 868 Fuel Delivery Temperature Study)

Dear Mr. Schremp:

Please find attached my written comments on the workshop topics presented and discussed on December 9, 2008 pertaining to the above referenced docket and study. Should you wish to see any of the materials cited in these comments, please do not hesitate to let me know and I will get them to you as quickly as possible.

Sincerely,

Attachment

California Energy Commission

Docket No. 07-HFS-01

AB 868 Fuel Delivery Temperature Study

Written Comments of Jeffrey J. Leitzinger, Ph.D.

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January 5, 2009

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ATC Consumer Impact

Introduction

I am an economist and President of Econ One Research, Inc. ("Econ One"), an economic research and consulting firm with offices in Los Angeles, Sacramento, Houston, and Washington, D.C. I have master's and doctoral degrees in economics from UCLA, and a bachelor's degree in economics from Santa Clara University.

During the past 30 years of my professional career, I have worked extensively on energy-related issues, valuation issues, and the assessment of damages. In the course of that work, I have had occasion to study markets for natural gas, electricity, oil, coal, and steam in the United States and elsewhere around the world. I also have had several occasions to study fuel markets in California and elsewhere in the western U.S. over the last 30 years. I have worked on behalf of several regulated utilities as well as unregulated producers, refiners, marketers, retailers, and other service providers. I have testified as an expert economist in various State and Federal Courts, as well as before the FERC, the CPUC, and the CEC. I also have testified before various legislative bodies and committees.

The California Energy Commission Staff Report, titled "Fuel Delivery Temperature Study" and released on November 26, 2008 ("CEC Staff

Report"), presents a cost-benefit analysis of automatic temperature compensation ("ATC") for retail sales of gasoline and diesel fuel.[1] According to the CEC Staff Report, if ATC had been in place during the study period (April 2007-March 2008), consumers would have been required to pay for fewer gallons of fuel, which, at the prevailing prices, would have resulted in a benefit to consumers of $437.5 million. The CEC Staff Report finds that "[i]f retailer station owners are completely successful in recapturing all of this revenue shift [associated with the volumetric effects of ATC] over the long term by raising prices of fuel and non-fuel commodities a commensurate and offsetting quantity, then implementing ATC at retail stations in California will introduce a small additional cost to retail motorists."[2] The CEC Staff Report also finds that retail service station owners would incur additional expenses associated with the initial ATC retrofit and certain recurring costs.

According to a submission titled "An Economic Analysis of the Fuel Delivery Temperature Study" by Michael A. Flynn of LECG ("Flynn submission") submitted to the December 9, 2008 Committee Workshop regarding the CEC Staff Report, fuel retailing is highly competitive. Because of that, he claims, ATC-related changes in the measured gallons of fuel sold by retailers would be met quickly with offsetting changes in their prices. Mr. Flynn concludes, as a result,

[1] I use the term "fuel" in this paper to refer to both gasoline and diesel fuel.

[2] CEC Staff Report, p. 3.

that consumers would see no benefit associated with the change in fuel volume measurement. According to him, the only consumer impact would be higher prices needed to compensate fuel retailers ("retailers") for the cost of installing and maintaining ATC equipment.

In a submission titled "Comments on the CEC Staff Report" by Kevin M. Murphy of the University of Chicago ("Murphy submission") submitted to the December 9, 2008 Committee Workshop regarding the CEC Staff Report, he maintains that fuel prices already reflect (and adjust for) temperature differences. As a result, with the implementation of ATC and the elimination of temperature-related fuel content effects,[3] retailers simply would undo the adjustments already embedded in fuel prices for temperature, thereby immediately offsetting any volumetric benefits to consumers. Professor Murphy only analyzes the volumetric effects of ATC.

I have been asked by counsel representing putative classes of California motor fuel purchasers in litigation in Federal and California state court regarding the "hot fuels" controversy to address comments and conclusions contained in the CEC Staff Report, the Flynn submission, and the Murphy submission (collectively, the "no-benefit proponents") regarding the consumer

[3] The phrase "temperature-related fuel content effects" used as it is here to describe the status quo refers to the fact that differences in temperature will affect the amount of fuel (and therefore energy) within a volumetric gallon. The implementation of ATC would result in consumers receiving a standardized amount of fuel in every gallon purchased, based on a standard temperature of 60 °F.

impact of ATC, and to offer my own opinions about the potential economic benefit to consumers in California from ATC.

Overview

In essence, the no-benefit proponents assume that the fuel supply chain (retailers, distributors, and refiners) consists of perfectly competitive markets with zero economic profit, as well as identical costs and business models. They also assume that both the fuel supply chain participants and consumers have complete information about fuel temperature differences and the impact of those differences on retail fuel volume measurement. Under those assumptions, they analogize ATC to a simple restatement of unit measurement (e.g., changing the fuel volume basis from gallons to liters). From that perspective, the no-benefit proponents assert that changes in measured retail fuel volumes associated with ATC would have no impact on total retail fuel costs,[4] and that the cost of installing and maintaining ATC equipment would be passed through to consumers. In short, the no-benefit proponents argue that ATC would do little more than increase overall fuel costs for California consumers.[5]

[4] The CEC Staff Report is less definitive on this point--it suggests that there would be little or no long-run effect, implying (at least) some short-term consumer benefit related to temperature-corrected fuel volumes.

[5] Here again, the CEC Staff Report differs to some extent from Mr. Flynn and Professor Murphy. It identifies some consumer benefit flowing from the improvement in fuel price signals that ATC would generate. However, the value associated with this benefit by the CEC Staff Report is not enough to outweigh the added consumer costs that they associate with ATC.

Having analyzed California fuel markets from many different perspectives over the last three decades, I do not believe that one can reasonably gauge the consumer effects of ATC by using economic models of perfect competition. Nor can one assume that retailers comprise a homogenous set of business entities with each one being affected identically by ATC. Finally, one cannot assume that fuel prices in California today already account for temperature-related differences in fuel content.

Properly viewed within the less stylized actual market context in which fuel is sold in California, the potential consequences of ATC for the industry--as well as for consumers--would be very different than those set forth by the no-benefit proponents. Indeed, the very fact that the industry has, on its own, adopted ATC at the wholesale level in California (and at the retail level in colder climates such as Canada) is itself a demonstration that the economic consequences (for at least some stakeholders) are enough to outweigh the costs.[6]

Hence, the issue here would seem to be not whether there are any economic effects, but rather which parties are affected and in what ways.[7] The absence of ATC gives rise to higher hot fuel margins that effectively are hidden in the marketplace. By eliminating temperature-related fuel content effects, ATC

[6] CEC Staff Report, pp. 1, 5-6, 13-15.

[7] In this regard, the opposition by the oil industry to ATC in California provides at least one indication that, contrary to the claims of the no-benefit proponents, ATC would not have a neutral effect on margins.

would eliminate the source of those hidden margins. Given the differences that exist between retailers (e.g., warmer vs. colder fuel, larger vs. smaller sales volume, and combination fuel/convenience stores vs. traditional fuel-only stations), competitive pressures within the entire fuel supply system (refiners, wholesalers, and retailers in combination) likely would make it difficult to simply replace previously hidden hot fuel margins with explicit price premiums. To the extent that the industry could not do so, consumers would benefit.

It should be noted here that even with a modest shortfall in the extent of hot fuel margin recapture, the consumer would be a net beneficiary from ATC. In year one, the consumer would benefit from ATC as long as the industry recaptures less than just over 76 percent of the hot fuel margin and ATC installation costs through higher prices on fuel (and/or non-fuel items).[8] Each year thereafter, the consumer would benefit even with industry recapture rates of the hot fuel margin as high as just over 97 percent.

The Economic Issue

In California, mandated ATC devices would have three direct effects on retailers. First, as noted above, with ATC, consumers would pay for, and receive, a standardized amount of fuel (in terms of energy content) in every

[8] In this regard, I draw the CEC Staff's attention to prior research estimating that in California the industry would absorb at least 25 percent of the gasoline excise tax burden through lower margins. (See, Chouinard, H. and J. Perloff, "Incidence of Federal and State Gasoline Taxes," *Economics Letters*, V. 83 (2004), pp. 55-60 ("Chouinard and Perloff").)

gallon. Using a reference temperature of 60 °F (as is used today for wholesale fuel deliveries), California retailers would satisfy the current fuel demand with the delivery of fewer temperature-adjusted gallons.[9]

Second, California retailers would have to retrofit their pumps to accommodate those devices. The installation of ATC devices would increase the capital costs associated with running a retail service station. This would include the cost of the devices, the labor to install the devices, and any testing/certification of the devices.[10] The retailer would incur the initial ATC retrofit set-up costs one time only. In addition, these costs may be financed through loans resulting in financing costs.

Third, retailers would incur some additional day-to-day operating costs associated with the ATC devices.[11] Compared to initial installation/retrofit

[9] The CEC Staff Report states that the quantity of net gasoline gallons sold would have been "approximately 15.508 billion or about 117 million 'gallons' less" if ATC had been used during the study period of one year. The CEC Staff Report also finds that there would have been "approximately 3.037 billion or about 19 million 'gallons'" less of diesel fuel under the ATC scenario. CEC Staff Report, p. 3. See also, CEC Staff Report, pp. 2-3, 59, 75-76.

[10] The CEC Staff Report notes the following ATC-related costs: new equipment for fueling dispensers, labor to install and calibrate the devices, and fee increases by inspectors to verify correct calibration of ATC equipment. The CEC Staff Report estimates that these total initial costs to retail service stations range from $92.9 million to $110.2 million. (CEC Staff Report, p. 67.) See also, CEC Staff Report, pp. 60-67, 72. With respect to new fuel dispensers that are ATC-ready, retailers would pay a lower, incremental cost for ATC capability. (CEC Staff Report, pp. 69-70.) However, the CEC Staff Report estimates assume that all initial ATC installations will be retrofitting existing pumps. (CEC Staff Report, pp. 59, 63-64.)

[11] The CEC Staff Report includes costs for increased ATC device registration fees, ATC equipment for new or refurbished retail service stations, and maintenance to service ATC devices. The CEC Staff Report estimates that these annual costs range from $4.4 million to $13.5 million. (CEC Staff Report, pp. 69-72.)

costs, these annual recurring costs are estimated to be much smaller in magnitude.

In California, ATC would (or could) impact consumers in the following ways. First, consumers would pay for fewer gallons of fuel. However, retailers may attempt to recapture any lost revenue associated with selling fewer gallons by raising prices on fuel (and/or non-fuel items). Retailers also may raise prices on fuel (and/or non-fuel items) in an effort to recapture the initial and recurring costs associated with ATC installation. The net benefit to consumers would depend in the end on how much of the margin lost to the industry through reduced fuel volume was re-captured through higher prices on fuel (and/or non-fuel items).

CEC Staff Report

The CEC Staff Report sets forth various findings by the CEC Staff about the potential impact on consumers of ATC. In that regard, the CEC Staff Report separately addresses the potential that ATC would reduce fuel costs directly through reductions in fuel volumes and the added consumer payment that would be needed to cover the costs of implementing and maintaining ATC.[12]

The CEC Staff Report is not absolute in its conclusions about whether or not consumers would see any net benefit from ATC. However, the

[12] CEC Staff Report, pp. 3, 59-60, 76.

CEC Staff Report does conclude that over the long run, retailers will be successful in recapturing 100 percent of the revenue that would be lost due to the volumetric effects of ATC.[13] Similarly, the CEC Staff Report concludes that, over the long run, retailers would be able to raise fuel (and/or non-fuel) prices sufficiently to recover any increased costs associated with ATC. While the CEC Staff Report does not explicitly define the "long run," it concludes that retail service station owners will attempt to recapture any volumetric effects associated with ATC "during warmer months."[14] In its quantification of the net consumer benefit (or cost) from ATC, the CEC Staff Report concludes that all revenue potentially lost to volumetric effects of ATC and costs associated with ATC installation are recovered by retailers from consumers through higher fuel (and/or non-fuel) prices within the first year.[15]

The CEC Staff Report recognizes that there may be differences between retailers. For example, the CEC Staff Report notes that different retailers may operate in different local "spheres of competition" which could be a factor in a retailer's ability to pass through any incremental costs to consumers.[16] The CEC Staff Report also notes that retailers that sold non-fuel items--e.g., in a

[13] Even if true, that of course would only mean that, in the long run, fuel prices would not change--i.e., ultimately there would not be any net fuel price increase to consumers from such recapture.

[14] CEC Staff Report, p. 76.

[15] CEC Staff Report, Tables 7 and 8.

[16] CEC Staff Report, pp. 72-73.

convenience store--would have more flexibility in their ability to pass through cost increases to consumers.[17] Further, the CEC Staff Report notes that for those retail service station operations that offered non-fuel items, how the offsetting price increases would be apportioned between fuel and non-fuel items would be uncertain, and could change over time.[18] The CEC Staff Report does not explore the implications of this strategic flexibility on the part of certain retailers for competition, margins, or pricing.

The CEC Staff Report also recognizes that differences in fuel sales volume could have important repercussions for how much fuel prices would have to be raised in order to recover a given additional cost.[19] Again, the CEC Staff Report does not investigate the implications of the fact that ATC potentially would create a competitive advantage for larger fuel volume retailers. Indeed, the CEC Staff Report concludes that, "in aggregate," these differences will not matter and, in the long run, all ATC-related costs "likely" will be fully passed through to consumers.[20]

The CEC Staff Report assumes that retailers in aggregate will be able to recover 100 percent of the cost increases associated with ATC "*assuming* the industry remains as profitable as it has been over the last several years."[21]

[17] CEC Staff Report, pp. 3, 73.

[18] CEC Staff Report, p. 68.

[19] CEC Staff Report, pp. 73-74.

[20] CEC Staff Report, pp. 72-73, 76.

[21] CEC Staff Report, p. 76 (emphasis added).

While elsewhere the CEC Staff Report describes this assumption as "plausible," it is directly at odds with the CEC Staff Report's own observation that convenience store profitability has declined between 2005 and 2007.[22] Indeed, the CEC Staff Report explicitly notes that "[o]ver this period of time, expenses for the industry have been increasing at a faster rate than the industry's collective ability to pass 100 percent of increased expenses through to customers."[23] Apart from noting that this failure to recover increased costs may force some retailers to exit the market, the CEC Staff Report makes no attempt to reconcile these positions.

The CEC Staff Report's views of how the prices on non-fuel items might be impacted by ATC are unclear. For example, the CEC Staff Report interprets the data on fuel prices, fuel margins, and convenience store margins as evidence that retailers with convenience stores would not be able to pass through all the cost increases associated with ATC in higher fuel prices alone.[24] In its analysis of the net benefit to consumers, however, the CEC Staff Report does assume that retailers would be able to pass through all the cost increases associated with ATC in higher fuel prices.[25] Elsewhere, the CEC Staff Report briefly analyzes the potential net benefit to some consumers who avoid

[22] CEC Staff Report, p. 73.

[23] CEC Staff Report, p. 73.

[24] CEC Staff Report, p. 84.

[25] CEC Staff Report, Tables 7 and 8. The CEC Staff Report describes this assumption as a "point of reference." (CEC Staff Report, pp. 68-69.)

purchasing non-fuel items where part of the pass-through of the cost increases associated with ATC were in higher prices for those items.[26] However, this analysis maintains the assumption that retailers--through price increases on both fuel and non-fuel items--will be able to pass through all costs associated with ATC. That is, even if some consumers reap a net benefit from retailers' pricing strategies (by not buying non-fuel items), those who do buy non-fuel items will suffer a net cost and society as a whole will not experience any net benefit.

The CEC Staff Report also describes how improved price transparency would allow consumers to more accurately compare fuel prices across retailers. ATC would eliminate the information asymmetry where consumers do not know the temperature of the fuel they are buying, or the impact of temperature on the energy content of the fuel they are purchasing, and therefore, cannot accurately adjust posted (per gallon) fuel prices to reflect temperature differences across retail service stations. The CEC Staff Report estimates that correcting this market imperfection would result in eliminating a small annual deadweight loss to the economy.[27]

[26] CEC Staff Report, pp. 80-81.

[27] CEC Staff Report, pp. 60, 76-78. Note that the elimination of a deadweight loss is a gain in efficiency for the entire economy. This is separate from issues concerning how resources are allocated across different segments of society--e.g., transfers from sellers to consumers, such as the portion of ATC costs retained by consumers considered elsewhere in the CEC Staff Report.

Flynn Submission

In a series of PowerPoint slides, Mr. Flynn offers more categorical conclusions about the lack of consumer benefit from ATC. Specifically, he asserts that any changes in the measured quantity of fuel sold resulting from ATC installation would immediately be met with offsetting changes in the fuel prices charged by retailers.[28] This assertion apparently rests on two further claims that Mr. Flynn makes about California retailers. First, he claims that they do not generate enough margin to absorb the volumetric effect of ATC without offsetting fuel price increases.[29] Second, he claims that retailers' profits reflect minimum competitive returns of the sort that are not subject to market-based erosion.[30]

Mr. Flynn also claims that the added costs of ATC would be readily and fully passed through to consumers in higher fuel prices.[31] Here too, his

[28] Mr. Flynn illustrates his view of a representative retailer's likely price response through a simple example. In his example, Mr. Flynn assumes that the retailer can simply immediately re-set gasoline prices to restore revenue to pre-ATC levels. He then asserts that the economic conditions driving the (representative) retailer's re-pricing strategy would apply to *all* retailers and thus the representative retailer's gasoline pricing response can be aggregated to analyze overall market effects of ATC. (Flynn, pp. 13-14.)

[29] He devotes no analysis to retailers' (nor upstream suppliers') ability to absorb some amount less than the entire volumetric effect without offsetting fuel price increases.

[30] Flynn, pp. 10, 14.

[31] Flynn, pp. 10, 14. Note that the simplistic analysis of the representative retailer's gasoline price response to the volumetric effects of ATC conducted by Mr. Flynn does not apply to the costs associated with ATC installation. That is, as a theoretical matter, a retailer simply cannot raise gasoline prices to cover an added cost without impacting demand. This is because these costs--unlike the cost of fuel purchased at wholesale by the retailer, which is not impacted by ATC--are additive to existing costs of operations. Thus, "recapturing" the costs of ATC installation and maintenance through higher fuel prices will reduce demand and lower total revenue (and profits). Neither Mr. Flynn, nor Professor Murphy (whose submission I discuss below and who utilizes a similar example of a representative retailer using gasoline price adjustments to keep revenue constant), addresses this issue. (Murphy, pp. 6-8.)

claims apparently rest on his notion that the retail segment is highly competitive. Mr. Flynn devotes no attention in his slides to differences between retailers that might affect their ability to offset the costs associated with ATC through fuel price increases. Indeed, Mr. Flynn criticizes the CEC Staff Report's observation that some adjustments might occur only in the long run as "pure fantasy."[32]

In making his claims about the likely effects of ATC, Mr. Flynn implicitly assumes that the consequences of ATC must be borne either by retailers or by consumers.[33] Accordingly, Mr. Flynn does not discuss the structure of the fuel market or competition at levels upstream of retailing. Nor does he even mention the vertical relationships that bind more than 80 percent of the State's retailers to a handful of large integrated refiners that collectively control the State's fuel supplies and the impact of these relationships on the fuel market.[34]

Mr. Flynn also assumes that fuel price-related reactions to ATC would be identical across the thousands of retailers in the State. In this regard, he does not mention the significant differences between retailers highlighted by the CEC Staff Report.[35] Furthermore, by assuming that each retailer would

[32] Flynn, p. 10.

[33] Flynn, pp. 3, 6, 8-10, 14.

[34] See, e.g., Wolak, Frank A. "Why California Gasoline Prices are So High?" April 1, 2004. White Paper ("Wolak"), pp. 4-5. Also, see discussion infra at pp. 19-22, 27-29.

[35] See, e.g., CEC Staff Report, p. 67 (retailers differ in their access to capital), p. 73 (some retailers sell non-fuel items and volume varies between stations), and Appendices N and O (retailers differ by total retrofit costs).

instantaneously correct fuel prices to maintain total revenue in the post-ATC competitive environment, Mr. Flynn posits a post-ATC environment in which retailers would (in many, or even all, cases) be changing their fuel prices by differing amounts. Yet, despite the highly competitive environment in which he assumes that these retailers operate, he never explains how a myriad of fuel price adjustments of varying amounts could occur without upsetting the competitive balance among and between retailers. Nor does he address how the prospect for a re-balancing of fuel business across retailers might affect fuel pricing incentives, either on the part of the retailers themselves or on the part of the refiners with whom they are aligned.

Mr. Flynn also does not address differences between the fuel-only retailer and the combination fuel/convenience store retailer. If combination retailers elect to compensate for the costs associated with ATC through higher prices on convenience (non-fuel) items, then fuel-only retailers in Mr. Flynn's highly competitive retail environment may be capped competitively on the fuel price increases they can take, leaving them unable to fully offset ATC's volumetric/cost effects.

Murphy Submission

Professor Murphy submitted comments arguing, like Mr. Flynn, that ATC simply will lead to higher fuel prices with no consumer benefit. His analysis

of the issue incorporates an even higher level of theoretical abstraction than Mr. Flynn's invocation of perfect competition. Professor Murphy focuses on the supply/demand equilibrium represented by the amount of fuel being used in California on the one hand and the total payment for that fuel on the other. Since a fuel price increase that fully offsets the volumetric effects of ATC would yield a combination of fuel usage and payment that is unchanged from the status quo, he then claims--simply as a matter of market equilibrium theory--that there would be no reason for any other outcome.[36]

Interestingly, having advanced his market equilibrium theory as the way to understand the volumetric side of the ATC story, Professor Murphy then makes no use of that construct with regard to the cost side. Here, he simply agrees with the CEC Staff Report's conclusion that ATC-related costs would be passed through to consumers. In fact, had he employed the same market equilibrium model that he used to dismiss the prospect of volumetric benefits, he would have reached a different answer. As long as there is some elasticity to market supply (in simple terms, slope to the supply curve), the imposition of added ATC-related costs would produce a market equilibrium which entails the

[36] Murphy, p. 7.

absorption of some of those costs on the supply side (i.e., retail fuel prices would not rise by the full amount of the added ATC costs).[37]

Professor Murphy offers no evidence to link his market equilibrium theory to the manner in which consumers actually make fuel purchase decisions (in other words, no evidence showing that consumers are making fuel purchase decisions based upon energy content as opposed to volume, measured in gallons). Instead, he makes the heroic assumption that fuel purchase decisions by California consumers today reflect a full understanding of the temperature of the fuel they buy, the temperature of fuel available at alternative retailers, and the manner in which that temperature affects the energy content per gallon. Only then, would it be the case that consumers would be indifferent to ATC combined with higher fuel prices which, retailer by retailer, offset its volumetric effects.

Professor Murphy offers no analysis of market structure, the role of integrated refiners in California, or the manner in which that might affect the industry response to ATC. He also devotes no discussion to differences among retailers in size, business models, ownership/control structure (i.e., refiner-owned stations, leased stations, or independently owned stations), or fuel delivery temperatures. Nor does Professor Murphy address the manner in which those

[37] Indeed, while Professor Murphy did not perform any independent analysis on ATC-related cost pass-through in his submission, he did note in his oral testimony before the CEC that it was "unclear that they [retailers] can pass these [ATC-related] costs through…." (Committee Workshop before the California Energy Resources Conservation and Development Commission, December 9, 2008 ("December 9, 2008 Workshop"), p. 199.)

differences might affect the market adjustment to ATC. Finally, being so quick to dismiss the prospect that ATC might have meaningful effects on various stakeholders, he offers no explanation for the fact that ATC is employed at the wholesale level in California and was adopted voluntarily by retailers in Canada (where, unlike California, the volumetric effects of adopting ATC work in their favor).

The Reality of California's Fuel Markets

As an initial matter, one can, in my view, safely dismiss Professor Murphy's notion that fuel market participants understand and already have taken full account in their purchasing and pricing decisions of the differences in retail fuel temperatures and their consequences on the fuel content of a gallon. First, there is no evidence to suggest that the retailers themselves routinely monitor the temperature of their fuel and adjust prices accordingly.[38] Certainly, consumers do not have information about fuel temperatures at different retailers. Even if they did, there is no evidence to suggest that consumers understand the relationship between fuel temperature and energy content in a way that would allow them to understand the consequences of temperature differences for their fuel purchases. And finally, there is again no evidence that consumers somehow

[38] The CEC Staff Report recognizes that "revenue recapture will neither be precise nor consistent because *station operators will not monitor temperature continuously and adjust retail prices accordingly to compensate* absent any other competitive factors." (CEC Staff Report, p. 76 (emphasis added).)

indirectly recognize the effects of fuel temperature differences as unexplained differences in fuel mileage. Hence, one cannot begin the analysis of ATC by presuming that fuel prices at individual retail service stations already incorporate market recognition of fuel temperature effects.

In one sense, the problem that exists without ATC is--as noted by the CEC Staff Report--one of information asymmetries. Consumers do not have the essential information about fuel temperatures needed to fully and accurately assess fuel prices and fuel purchase alternatives. Sellers of warmer fuel have no incentive to reveal that fact or reduce their prices in recognition of their lower energy content. Sellers of colder fuel do not know the fuel temperatures of other nearby retailers and have no way to signal to consumers that their fuel prices incorporate additional value (as compared to warmer-fuel competitors). Consequently, there is a market failure in the dissemination and utilization of temperature-related information.

It also is important to note here that, contrary to the claims of the Flynn submission in particular, the fuel industry in California is not perfectly competitive (not even in some approximate sense that would render the application of the perfectly competitive model a reasonable step as an analytical matter). The vast majority of refining capacity in California is owned by a handful

of large refiners.[39] In economic terms, one would describe the refining market structure in California as an oligopoly. These same refiners control a significant amount of the storage tanks, port terminals, and other infrastructure critical to the importation and transport of bulk fuel supplies in the state.[40] California's fuel markets have become more concentrated over the past several decades through mergers and the closure of independent refiners.[41] Many observers have concluded that California's fuel market is not competitive.[42]

California refinery margins generally are understood to be among the highest in the U.S.[43] The ability of in-state refiners to earn high margins on fuel sales is strengthened by a shortage of in-state refining capacity relative to consumer demand for fuel.[44] Complicating matters is the fact that California

[39] For example, the top seven refiners control over 90 percent of in-state refining capacity. ("2008 Worldwide Refining Survey," *Oil & Gas Journal*, December 22, 2008, pp. 40-42.) See also, Borenstein, S., Bushnell, J., and Lewis, M., "Market Power in California's Gasoline Market," University of California Energy Institute Working Paper, May 2004 ("Borenstein, et al."), p. 3.

[40] Borenstein, et al., pp. 18-19.

[41] Office of the Attorney General Task Force Report, "Report on Gasoline Pricing in California," May 2000 (2004 Update) ("Task Force Report").

[42] Borenstein, S. and J. Bushnell, "Retail Policies and Competition in the Gasoline Industry," CSEM Working Paper, May 2005, p. 11. Indeed, in 2007, Chevron's Executive Vice President told stock analysts that "[t]he Chevron brand continues to garner both increased market share and pricing power in the [West Coast] marketplace." (Baker, D., "Gasoline Prices Ready to Hit New High in S.F.," *San Francisco Chronicle*, March 30, 2007 ("Baker").)

[43] Gilbert, R., "Prepared Statement of Richard J. Gilbert before Hearing of the Select Committee on Gasoline Consumption, Marketing, and Pricing," April 28, 2004, p. 2 ("Gilbert") ("The California Energy Commission reported that in March 2004 the refiner margin in California averaged about 60 cents per gallon. The U.S. Energy Information Administration estimated that nationwide the average refiner margin was about 33 cents per gallon.") See also, Baker.

[44] See, Baker; Borenstein, et al., p. 6.

operates to a great extent as a “motor fuel island” with limited competition from outside suppliers. This is due in part to geographic distances from other refining locations and in part to stringent State requirements for cleaner-burning fuel.[45]

California’s oligopoly refiners exercise substantial vertical control over fuel retailing in the State. Through ownership or long-term contractual relationships, they control over 80 percent of the State’s retailers.[46] In contrast to Mr. Flynn’s characterization of fuel retailing as a distinct, highly competitive market segment, one can reasonably conceive of retailers merely as the consumer contact points of the State’s refining oligopoly, subject to the economic incentives and behaviors that an oligopoly creates. The significant roadblocks to genuine competition created by the refiners’ vertical control over fuel retailing have been highlighted in a number of previous studies.[47]

This departure from notions of competition embedded in the submissions of the no-benefit proponents has overarching importance for the questions at hand. Competitors pass through added costs and, either through higher prices or reduced output, tend to restore competitive margin levels when

[45] Federal Trade Commission, “Gasoline Price Changes: The Dynamic of Supply, Demand and Competition," June 2005, p. 87 ("California, however, remains relatively isolated from other regions, in part because it lacks pipeline connections with other major refining regions in the U.S. and in part because of its environmentally mandated fuel."). See also, Borenstein, et al., p. 2; Wolak, p. 3.

[46] Wolak, pp. 4-5. See also, Hastings, J., "Prepared Statement of Justine S. Hastings before The California State Assembly Select Committee on Gasoline Competition, Marketing, and Pricing," April 28, 2004, pp. 3-4.

[47] See, e.g., Hastings, J., “Vertical Relationships and Competition in Retail Gasoline Markets: Empirical Evidence from Contract Changes in Southern California,” *American Economic Review*, v. 94, n. 1 (March 2004), pp. 317-328 (“Hastings”). See also, Borenstein, et al.

outside circumstances cause declines in margins. By contrast, oligopolists have a powerful interest--grounded in their existing high margins--in protecting market volumes. Faced with higher costs or unexpected reductions in demand, they typically absorb some of the impact of those changes in cost or demand through lower per unit margins in the interest of maintaining sales volumes.[48]

Changes over time in the relationship between wholesale and retail fuel prices provide ready demonstration of the fallacy of the no-benefit proponents' claim that retailers automatically pass through changes in costs to consumers.[49] Indeed, expectations about future changes in prices or costs may be as important to pricing as current costs.[50]

Moreover, there is considerable evidence that retail gasoline prices respond more slowly to wholesale gasoline price decreases than they do to

[48] See, e.g., Gron, A. and D. Swenson, "Cost Pass-Through in the U.S. Automobile Market," *The Review of Economics and Statistics*, v. 82, n. 2 (May, 2000), pp. 316-324 at p. 323 ("…[W]e also reject the hypothesis that costs are fully passed through to prices [in the oligopolistic automobile market].").

[49] See, e.g., Davidson, P., "As Gas Prices Fall, Gas Stations' Profits Actually Rise," USA Today, December 1, 2008 ("Davidson") ("When [wholesale] prices soared last spring, demand sank and stations couldn't pass along the entire increase in their wholesale costs."); Coit, M., "It's Not the Fuel," *The Press Democrat*, April 20, 2008 ("Coit") ("As wholesale prices rise, retail profits shrink"). See also, Bannow, T., "Despite Rising Gas Prices, Retailers Face Low Profit Margins," *Spectator News*, April 28, 2008.

[50] Borenstein, S. and A. Shepard, "Dynamic Pricing in Retail Gasoline Markets," *Rand Journal of Economics*, v. 27, n. 3 (Autumn 1996), pp. 429-451. The authors show that an expectation of high demand in the next month raises retailers' margin in the current month.

wholesale gasoline price increases.[51] This is the so-called “rockets and feathers” phenomenon--gasoline prices go up like a rocket in response to higher costs, but come down like a feather when costs fall. The underlying premise is that retailers face a different strategic environment depending on whether their costs are going up or down. According to this “theory,” retailers are driven to quickly meet cost increases with higher gasoline prices, but retailers can (strategically) wait to see if their competitors lower their gasoline prices following a cost decrease. As long as competitors similarly wait to lower gasoline prices, higher margins can be maintained temporarily. Eventually, one or more competitors upsets this balance and lowers the price of gasoline, thereby forcing everyone in the market to follow suit.

The fact of “rockets and feathers” pricing may have important implications for the consumer impact of ATC. First, it suggests that the industry does not price in the manner one would expect based upon textbook models of perfect competition. In that case, one cannot expect (as asserted in the Flynn

[51] Deck, C. and B. Wilson, "Economics at the Pump." *Regulation*, Spring 2004, pp. 22-29; Galeotti, M., A. Lanza, and M. Manera, "Rockets and Feathers Revisited: an International Comparison on European Gasoline Markets," *Energy Economics*, v. 25 (2003), pp. 175-190; Karrenbrock, J., "The Behavior of Retail Gasoline Prices: Symmetric or Not?," *Review - Federal Reserve Bank of St. Louis*, Jul/Aug 1991; v. 73, n. 4; pp. 19-29. See also, Stouffer, R., "Gasoline Prices Up Like a Rocket, Down Like a Feather," *Pittsburgh Tribune-Review*, September 25, 2005; Coit (“Station owners said that they tend to make the greatest profits when refiners drop prices because retail prices come down slower”); Davidson (“Now, with oil and wholesale gasoline prices tumbling, retailers can trim their prices more gradually [in order to earn higher gross profit margins].”) Note that Mr. Flynn apparently agrees with the premise behind this retail price-setting theory. (December 9, 2008 Workshop, pp. 129-130.)

submission) that any margin affects associated with ATC would readily be offset through fuel price changes.

Second, the strategic behavior which underlies rockets and feathers pricing may be at odds with real-time price adjustments for gasoline temperature. For instance, when ATC-induced volumetric effects driven by "hot" gasoline (say, a particularly warm month) coincided with falling wholesale gasoline prices, retailers would face a tradeoff: either they could pass through the cost increase associated with the volumetric effects of ATC and risk upsetting the "feather" pricing period brought by falling wholesale gasoline prices, or they could absorb those ATC-related volumetric effects and attempt to preserve their temporary high margins. Given that the changes in wholesale gasoline prices generally are much greater than the changes in retailers' costs associated with ATC, it seems plausible that at least some retailers, some of the time, would elect to pursue the latter strategy.

While Mr. Flynn claims that California retailers' quick response to wholesale gasoline price increases is "proof" that retailers always set prices to maintain revenue,[52] this observation does not mean that California retailers will raise fuel prices to fully offset a cost increase or that that they operate in a

[52] Flynn, p. 10.

perfectly competitive environment. Even a monopolist responds to a cost increase by raising prices to some extent.[53]

For the question at hand, one can think of an increase in ATC-related costs as analogous to an increase in excise taxes. Economists have empirically investigated who pays the burden from increased taxes on gasoline.[54] Hence, in contrast to the unsupported assertions offered by the no-benefit proponents with regard to the 100 percent pass-through of costs, there is some scientific evidence on the question. Recent work by Chouinard and Perloff indicates that consumers would be expected to bear only 50 percent of a federal tax increase on gasoline.[55] For a California-specific gasoline excise tax, Chouinard and Perloff estimate that gasoline suppliers would absorb about 25 percent of the tax.[56]

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[53] Although a monopolist--recognizing the impact of a price increase on demand--would not raise prices to fully offset the increase in cost. See, e.g., Carlton, D. and J. Perloff, *Modern Industrial Economics*, Third Edition, Addison-Wesley: Reading, MA, 2000, pp. 89-90 (showing that raising (marginal) cost will not be fully passed through due to the slope of the demand curve). Professor Murphy apparently agrees with this. See, December 9, 2008 Workshop, pp. 177-178 (responding to a claim that a monopolist would pass through 100 percent of costs, Professor Murphy remarked "that's not correct.").

[54] See, e.g., Chouinard and Perloff.

[55] Chouinard and Perloff, p. 59 ("The consumer incidence is a half for the federal tax….").

[56] Chouinard and Perloff, p. 59 ("A 1¢ increase in a specific tax raises the retail price by…0.75¢ in California.") The reason for the difference in tax incidence between state and federal taxes is that suppliers can shift supply between states in response to a state-specific tax. This is not possible with a federal tax. Chouinard and Perloff use data from March 1989 - June 1997. Inasmuch as these data largely were collected prior to the switch to special fuel formulations in 1996--which would make California a "motor fuel island" and thus tend to limit suppliers ability to shift California motor fuel to other states in response to a tax increase--Chouinard and Perloff's estimate of the consumer tax incidence for a California tax is overstated. See also, Energy Information Administration, "Motor Gasoline Assessment Spring 1997," p. 25.

Credit card fees represent another cost to retailers that has been increasing over time.[57] Under the perfect competition theory advanced by the no-benefit proponents, changes in credit card fees should not impact retailers' total margins because fuel prices should be adjusted quickly (indeed, instantaneously according to Mr. Flynn) to compensate for any increase in credit card fees. Here again, this prediction is confounded by real-world evidence.[58]

Another problem with the application of the perfectly competitive retail model in this context is that California retailers are not homogenous business enterprises all surviving on the same razor-thin competitive margins. The retail fuel business is a high fixed cost business which means that stations with higher fuel sales volumes will be able to spread their fixed costs across more gallons, thereby resulting in lower average costs and higher margins.[59] Retail service stations which operate convenience stores have higher average

[57] Lofstock, J., "High Gas Prices Impacting C-Store Profitability," *Convenience Store Decisions*, v. 17, n. 1 (Feb. 2006), p. 12.; Reschke, D., "Charging On: The Latest Efforts and Advances in the Petroleum Industry's Battle to Lower Credit Card Fees," *National Petroleum News*¸ v. 100, n. 2 (Feb. 2008), pp. 32-33; Alexander, S., "Gas Stations' Bread and Butter," *McClatchy - Tribune Business News*, April 15, 2008; Goldman, D., "How Credit Cards Boost Gas Prices," May 17, 2008, CNNMoney.com website, (url: money.cnn.com/2008/05/14/news/economy/credit_cards_gasoline/); Kruger, J., "Retailers Not Profiting at Pumps." *McClatchy - Tribune Business News*, June 26, 2008. Since credit card associations charge fees to merchants (like fuel retailers) as a percentage of sales, rising fuel prices have similarly resulted in higher total sales volume and thus higher per gallon credit card fees.

[58] Farrell, M., "How Small Businesses Can Survive the Storm," *Forbes*, July 24, 2008; Wethe, D., "Gas Station Owners Squeezed by Credit-card, Fuel Cost," *Fort Worth Star-Telegram*, June 30, 2008; NACS, "The Convenience and Petroleum Retailing Industry Fact Sheet," February 1, 2008. See also, CEC Staff Report, pp. 73, 83-84.

[59] CPPI, "How Gasoline Markets Work," p. 6: ("…[H]igh-volume service stations are almost always more profitable than lower-volume sites.")

margins (i.e., across both fuel and non-fuel sales) because non-fuel items generally command higher margins than fuel.[60]

There also is evidence that the ownership structure of the retailer impacts the level of "competitiveness" and thus, the margins earned on fuel sales. In particular, one researcher found that the presence of (unbranded) independent retailers had a significant (downward) effect on retail gasoline prices.[61] In addition, refiners have established "zone pricing"--where the wholesale fuel price is lowered for certain retailers--in some areas as a way to meet the competitive impact of low-price independent retailers.[62]

This margin variability across retailers potentially leads to differing responses to external changes. At the very least, higher-margin retailers (whether as a result of size, convenience sales, or a favorable local market environment) may be more inclined to opt for business growth over margin protection by keeping their fuel prices unchanged in an ATC environment. Even the prospect that retailers with different market positions and business models may be inclined to react differently to ATC in terms of their fuel pricing could make other retailers generally reluctant to immediately raise fuel prices.

[60] CEC Staff Report, pp. 83-84, Figure 27. See also, Associated Press, "Stations Hope You Fill Up with More than Gas," April 1, 2008; Coit.

[61] Hastings.

[62] Task Force Report, p. 26.

A Proper Economic Framework

The evidence described above indicates that the implementation of ATC would involve more than a simple market-wide unit recalibration. ATC would unmask temperature-driven fuel price differences, forcing retailers of warmer fuel (and by implication their suppliers) to choose between surrendering some margin or competing at an increased fuel price disadvantage. Contrary to the position advocated by Professor Murphy, one simply cannot assume that all retailers would immediately opt for offsetting fuel price adjustments and that nothing else would change. Moreover, the simplistic economic framework under which retailers adjust (fuel) prices to maintain constant margins is inadequate--both as a matter of economic theory and real-world experience with fuel pricing--to analyze the economic impact of ATC on consumers. A more complex framework is required.

As an initial matter, it is essential to consider the retailers' position in the California fuel supply system--which includes refiners and wholesalers as well--in understanding how retail fuel prices are set. Ultimately, retail fuel prices in California result from market interactions between economic decision makers throughout the supply system. In this regard, the vertical ownership and/or control relationships between retailers and their upstream suppliers also play a role in fuel pricing. Certainly, there is no reason to assume that an unbranded independent retailer with no contractual ties to any wholesale fuel supplier will

price its fuel to consumers in the same way as a retailer that is owned by a major refiner.

For all of these reasons, it seems clear that the extent and vigor of competition among refiners, wholesalers, and retailers collectively will determine the effects of ATC. Furthermore, in many cases, fuel prices, and presumably therefore ATC effects, are determined by highly localized economic conditions.[63] Price competition may be fierce in some locales (e.g., near certain types of retailers such as hypermarketers) but not in others.

The idiosyncrasies of the operations of the retailers themselves--the potential demand, whether or not they sell non-fuel items, etc.--also will play a role in the retailers' decision-making process. Seasonal fuel demand patterns may be important for some retailers as well. For example, retailers located on a mountain pass that primarily serve consumers during the warm summer months may view the economics of ATC very differently from retailers relatively close by that serve consumers all year round.

Finally, insofar as increases in the retail price for fuel decrease the quantity of fuel demanded by consumers, refiners face incentives to moderate those price and quantity changes through offsetting adjustments in wholesale fuel price levels. Similarly, refiners also face incentives to mitigate the impact of

[63] See, e.g., CEC Staff Report, p. 72. Mr. Flynn apparently agrees that retail competition is localized. See also, December 9, 2008 Workshop, p. 128 ("[W]hat has been found repeatedly is that the retail prices in a particular area are a significant function of the density of stations in that area.").

cost increases faced by particular retailers--who are an integral part of the refiners' distribution system--when those cost increases jeopardize a retailer's long-term viability. Hence, part of the equation in understanding the effects of ATC is to consider the manner in which it could affect wholesale fuel prices.

ATC Would Eliminate Hidden Hot Fuel Margins and Change Retail Competition

The absence of temperature correction provides retailers of hot fuel with a hidden source of margin advantage over their cooler-fuel competitors.[64] As a result, they make more money than those competitors even while charging the same prices.[65] Consumers do not have information about fuel temperature differences and, one can fairly assume, do not realize the lower energy content in a hot gallon given the myriad of other factors that affect their per-gallon driving mileage. Consequently, consumers do not have the means to create competitive erosion of hot fuel margin premiums.[66]

ATC would change that. By correcting retail fuel sales volumes to the same standard temperature, the source of the existing hidden hot fuel margin

[64] CEC Staff Report, p. 77.

[65] Note that fuel temperature does not affect the cost of the retailer's inventory, only the value for which it can be sold. This is because wholesale fuel volumes are temperature corrected to 60 °F, so the temperature of the fuel purchased by the retailer does not matter. (CEC Staff Report, p. 5.) However, fuel that is hotter than average occupies more physical volume than the average fuel gallon. When delivered at retail (absent ATC), that difference in volume is a source of margin advantage. For the same wholesale fuel cost, the retailer with hotter fuel has more physical volume to sell.

[66] CEC Staff Report, p. 77.

premiums would disappear. The no-benefit proponents have assumed that retailers promptly would recapture those premiums by raising fuel prices.[67] In essence, their claim is that retailers simply could replace a hidden source of margin that consumers had no ability to respond to with explicit fuel price differences, notwithstanding the fact that consumers readily could observe and react to those differences. There is ample reason to reject such a claim.

To see why, consider the following example with two retailers on opposite corners of an intersection. Retailer "Blue" sells gasoline that is 60 °F, and retailer "Red" sells gasoline that is 15 °F warmer.[68] Pre-ATC, both retailers sell a (gross) gallon of gasoline for $3.00 and divide the available demand (assume both Blue and Red are equally accessible so that only price matters to consumers). Consumers believe themselves to be purchasing the same gallon at either service station at the same price. However, because of the hidden effects of temperature, Red makes three cents per gallon more in margin than

[67] Here, Professor Murphy constructs a simple example which he purports can be "aggregated" in order to analyze the experience for all California retailers. (Murphy, p. 7.) Mr. Flynn similarly analyzes the pricing decisions of a single (representative) retailer. (Flynn, pp. 4-5, 10, 13-17.) By focusing on the average per gallon impact of ATC, the CEC Staff Report implicitly is assuming that the expected economic experience of the "average" retailer (according to its analysis) similarly is representative of all California retailers. (CEC Staff Report, pp. 60-72, 78.)

[68] The hypothetical temperature differences between Blue and Red in this example are consistent with some actual data for California, as well as other states. Kurt Floren, Director of Weights and Measures for Los Angeles County testified that his staff observed an 11 degree °F difference for the same grade of gasoline between two retailers "directly across the street from one another[.]" (December 9, 2008 Workshop, p. 81.) In analyzing single day temperature variations for Maryland, Oppermann found the daily range was 10 °F or more for 25 percent of his observations. (Oppermann, H., "Temperature Data from Weights and Measures Programs," January 28, 2008, slide 33 ("Maryland: Variation in Product Temperature per Day").)

Blue and consumers are, in effect, paying Red a hidden three-cent price premium.

Post-ATC, Blue achieves the same margin with a per gallon price unchanged at $3.00. Red, however, must raise its per-gallon price to $3.03 if it is to retain the same margin that it enjoyed prior to ATC. However, in this environment consumers explicitly would observe a three cent per gallon price premium associated with Red's gasoline. Unable to sell gasoline at a premium relative to Blue, Red then would be forced to accept the same margin that Blue historically had enjoyed and consumers then would be relieved of the hidden price premium that they previously had been paying to Red.

By eliminating hidden hot fuel margins, ATC would change the relative competitive positions of warmer vs. colder fuel retailers, larger vs. smaller sales volume retailers, company owned vs. independent retail service stations, and combination fuel/convenience store vs. traditional fuel-only retailers. And, as long as the per-gallon costs and volumetric effects of ATC are not distributed evenly across retailers (and it is clear they would not be), ATC will affect relative fuel prices across retailers. Ultimately, changes in relative fuel prices will cause shifts in fuel purchase decisions by consumers. This necessarily will shift the market positions of retailers. As some retailers are forced to accept lower margins, even for some interim period, then this will benefit consumers.

Furthermore, if Mr. Flynn is correct about retailers' inability to absorb ATC-related cost increases, then changes in market positions associated with ATC necessarily could place some retailers in financial difficulty. Those retailers would be expected to pressure refiners for some wholesale fuel price relief. This is exactly what retailers have done previously when faced with nearby hypermarketers who introduced retail fuel operations.[69] And, refiners have acceded to this pressure, giving the affected retailers some wholesale gasoline price relief in the form of "zone pricing."[70]

Zone pricing allowed refiners to fine tune wholesale fuel prices to account for differences in "traffic volume, station amenities, nearby household incomes, the strength of competitors and other factors."[71] The high margins

[69] FTC, "The Petroleum Industry: Mergers, Structural Change, and Antitrust Enforcement," August 2004, pp. 9-10 (hypermarketers have "placed competitive pressure on existing gasoline outlets"), p. 15 (hypermarkets have increased competition at the wholesale level). See also, Hoag, C., "Florida Gasoline Prices Depend on Where You Pump." *Knight Ridder Tribune Business News*, January 18, 2004; Larabee, M., "Huge Retailers Set Off Mom and Pop Gas War: Hypermarkets Take on Traditional Service Stations," *Houston Chronicle*, May 15, 2005.

[70] Kleit, A., "The Economics of Gasoline Retailing: Petroleum Distribution and Retailing Issues in the U.S.," December 2003 ("Kleit"), p. 23.

[71] Task Force Report, p. 26. See also, Douglas, E. and G. Cohn, "Zones of Competition in Gasoline Pricing," *Los Angeles Times*, June 5, 2005.

enjoyed by refiners provided ample room for them to bail out troubled retailers.[72] Through zone pricing, refiners preserved the economic viability of their retailers in the face of market challenges to their margins:

> With the introduction of more non-traditional retailers, such as hypermarkets, zone pricing becomes a mechanism designed to help dealers compete and respond to new marketing challenges. Price zones are not the cause of the competitiveness of such locations. Thus, eliminating price zones could result in some retailers being unable to compete. This, in turn, could result in failure of some sites, and thus affect the overall level of competition in the gasoline retailing sector.[73]

One Cannot Assume That ATC Costs Would Be Subject to 100 Percent Pass-Through

The installation of ATC involves a fixed, one-time cost to retailers. The CEC Staff Report's "high" estimate finds this cost (exclusive of financing costs) to be $110.2 million.[74] This cost is "fixed" in the sense that it does not vary

[72] According to the CEC Staff Report, based on the study period, post-ATC California consumers would be expected to consume about 18.5 billion (net) gallons of fuel--15.5 billion gallons of gasoline and 3.0 billion gallons of diesel fuel. (CEC Staff Report, p. 3.) All the volumetric and ATC-related costs together amount to approximately $574.6 million in potential lost revenue for fuel sellers--$438 million for the volumetric effects of ATC and $136.6 million for ATC-related costs. (AB 868 Fuel Delivery Temperature Study, Staff Report Overview & Findings, Committee Workshop, Sacramento, CA, December 9, 2008, pp. 36, 43.) This means that even if the fuel sellers were unable to recapture *any* of these costs, it would only amount to about 3¢ per gallon. This figure would be lower for later years once initial installation costs had been incurred. As noted above, California refiners enjoy a margin of "about 60 cents per gallon." (Gilbert.)

[73] Kleit, p. 24.

[74] CEC Staff Report, p. 72, Appendix M. The CEC Staff Report also includes a "low" estimate of both installation costs and financing costs (discussed below). For simplicity, I focus on the high estimate here.

with the amount of fuel sales made by retailers. Each no-benefit proponent assumed that retailers would pass through these installation costs in the form of higher fuel prices.

However, as the CEC Staff Report notes, there is a wide variance in the volume of fuel sold by retailers.[75] An implication of this fact is that a high-volume retailer will be able to spread the cost of ATC installation over more fuel sales. This means, of course, that the higher-volume retailer would not have to raise its fuel price as much as the lower-volume retailer would in order to cover the cost of ATC installation. Indeed, the CEC Staff Report explicitly recognized this point.[76]

Thus, if each retailer set out to pass through all of its ATC installation costs to consumers through higher fuel prices, the relative fuel prices between retailers that existed as a result of "prevailing competition"--to use Mr. Flynn's term[77]--prior to ATC installation would change following the implementation of ATC. In that case, consumers would have incentives to shift their fuel purchases to retailers with more favorable fuel prices. As they did so, the industry likely would be forced to absorb some of those costs. Indeed, this

[75] CEC Staff Report, pp. 73-74, Appendix P.

[76] CEC Staff Report, pp. 73-74.

[77] Flynn, p. 14.

mirrors the findings of previous studies showing that increases in gasoline excise taxes would be absorbed, at least in part, by the gasoline supply chain.[78]

As part of the cost of ATC, the CEC Staff Report estimates that retailers would face financing costs of $12.7 million associated with the installation of ATC.[79] This figure assumes that all retailers will borrow the required funds at the same relatively high interest rate.[80] However, as with fuel sales volume, retailers will differ in their access to capital as well. The cost of financing ATC installation will depend on the ownership structure and financial strength of the retail operation.[81] Indeed, as noted within the CEC Staff Report, some retailers may not need to borrow any money for ATC installation.[82] As a consequence, an industry-wide effort to pass through ATC financing costs in retail fuel prices also would contribute to a changing competitive balance.

The extent to which retailers sell non-fuel items also differs across retailers. As the CEC Staff Report notes, retailers that sell both fuel and non-fuel

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[78] See Chouinard and Perloff.

[79] CEC Staff Report, p. 68. As noted above, this figure represents the CEC Staff Report's "high" estimate.

[80] Specifically, the CEC Staff Report assumes that ATC installation would be "…financed through loans at the highest prime rate experienced over the last decade and paid off within one year." (CEC Staff Report, p. 67.)

[81] For example, Chevron operates 300 company-owned retail service stations in California. (Jurgens, R., "Chevron Calls Off Deal for USA," *Oakland Tribune*, November 18, 2006.) Assuming these stations faced the CEC Staff Report average per station installation costs ($11,365 per station--see, Appendix M), this would represent a total cost of $3.4 million. To put that figure in perspective, Chevron's total 2007 Sales and Operating Revenues were $214 billion. (Form 10-K, Chevron Corp (CVX), 12 month period ended December 31, 2007.)

[82] CEC Staff Report, p. 67 ("…[S]ome retail station owners may elect to pay the retrofit costs with cash or other liquid assets….")

items have increased flexibility in their fuel pricing decisions, including how they attempt to recover costs associated with ATC.[83] For example, retailers with non-fuel sales may elect to raise prices for non-fuel items, rather than raising fuel prices, in order to recover any costs associated with ATC. This strategy allows some retailers to pass through costs associated with ATC without raising the price of fuel, and without jeopardizing their competitive viability.

In addition, a retailer that also operates a convenience store may choose to forego higher fuel prices post-ATC and instead, draw more convenience store volume by offering more attractive fuel prices. This latter strategy may be particularly attractive where non-fuel items are more profitable than fuel.[84] This is because retailers can absorb higher costs on these higher-margin, non-fuel items and still remain economically profitable. Again, the extent to which such pricing strategies are feasible will depend upon the magnitude of non-fuel sales, the presence of competitive retailers in the "sphere of competition,"[85] etc., and certainly will differ across retailers. Of course, for those fuel-only retailers, estimated by the CEC Staff Report to be 24 percent of the total,[86] any pass through of ATC costs must be done through higher fuel prices.

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[83] CEC Staff Report, p. 73.

[84] See, e.g., CEC Staff Report, pp. 83-84, Figure 27. See also, Associated Press, "Stations Hope You Fill Up with More than Gas," April 1, 2008; Coit.

[85] The CEC Staff Report refers to a "sphere of competition" for fuel retailers as a geographical region where consumers can visually compare prices for fuel. (CEC Staff Report, p. 72.)

[86] CEC Staff Report, p. 73.

This issue likely will be particularly acute in "spheres of influence" that include "hypermarketers" like Costco. These retailers face many of the same pricing choices that combination fuel/convenience store retailers face, but because their stores are larger and sell a wider variety of goods and services, their business model is more focused on driving non-fuel sales.[87] Thus, hypermarketers may drive in-store, non-fuel sales with discounted fuel sales.[88] Faced with intense fuel price competition from a nearby hypermarketer, a traditional retailer may not be able to pass on any cost increases associated with ATC through higher fuel prices without losing customers.[89]

In addition, refiners' recognition that demand for their fuel is derived from consumer demand will lead refiners to consider the impact on that demand from retail fuel price increases driven by ATC. This will provide another incentive for refiners to offer lower wholesale fuel prices in an attempt to mitigate the demand effect that higher retail fuel prices would imply. That is, rather than have retailers pass on the full cost of ATC installation (for example) which would result

[87] Kleit, p. 22 ("In general, the retailing strategy for hypermarkets is to attract customers to their stores through a low price of gasoline and a large number of gasoline pumps, and then induce those customers to come inside their stores and buy other products.").

[88] Kleit, pp. 22-26. See also, NACS, "Hypermarkets Entering Petroleum Marketing," February 1, 2008 ("Hypermarkets are hoping that motor fuels sales can lure more customers into their stores by offering discounted motor fuels prices, particularly upon opening fueling facilities.").

[89] The extent to which this is true will depend on the strategic decisions made by the relevant competitors. The point here is that from a competitive standpoint, it appears as though some retailers essentially operate under different "rules." Indeed, competition from hypermarketers has forced some refiners to create special "price zones" in order to offer lower wholesale prices to affected retailers in order to maintain their viability in the face of the hypermarketer's discount fuel prices. (Kleit, pp. 22-26.)

in a decrease in aggregate demand for fuel, refiners may lower wholesale fuel prices so that retail fuel prices are not raised as much. Thus, refiners, acting in their own self interest, would lower fuel prices to limit the impact on demand.

Implications for Consumers

In my opinion, the reality of the California fuel market casts serious doubt on the underlying assumptions upon which the conclusions of the no-benefit proponents rest. In particular, by failing to take into account the market significance of temperature-adjusted fuel volumes, differences between retailers as to fuel temperature, size, and business models, or the broader fuel market structure in which retailers participate, the no-benefit proponents overlook the market mechanisms through which ATC could readily benefit consumers.

Depending upon the extent of margin recapture (by refiners, wholesalers, and retailers in combination), there would be significant and long-term consumer net benefit from ATC. **Exhibit 1** shows the consumer volumetric benefit, pass-through to consumers of ATC equipment costs, and the resulting net consumer benefit under various levels of margin recapture. As is shown in Exhibit 1, ATC would provide a net consumer benefit in the first year even if the degree of margin recapture is as much as just over 76 percent. **Exhibit 2** assumes that margin recapture exactly meets this first-year (net) break-even point and, taking account of recurring ATC-related costs, carries the net

consumer benefit analysis forward for 10 years. Exhibit 2 shows that even at this high level of margin recapture, consumers would achieve a net benefit of $844 million over the next ten years. As is shown in **Exhibit 3**, a 50 percent margin recapture would leave a net consumer benefit of $2.1 billion over the next ten years.[90]

[90] **Exhibit 4** shows the net consumer benefit assuming a 25 percent margin recapture.

Net Consumer Benefit from Mandatory ATC Devices in Year One
Various Alternative Scenarios Based on Extent of Margin Recapture

Scenario	Gross Consumer Benefit	Cost of ATC Devices[1]	Assumed Margin Recapture	Consumer Benefit from Additional Fuel Gallons	Consumer Cost of ATC Device	Net Consumer Benefit
	($million)		(%)	($million)		
	(1)	(2)	(3)	(1)x[100-(3)] (4)	(2)x(3) (5)	(4)-(5) (6)
1	$ 438.0	$ 136.6	90.00 %	$ 43.8	$ 122.9	$ (79.1)
2	438.0	136.6	76.23	104.1	104.1	0.0
3	438.0	136.6	75.00	109.5	102.5	7.1
4	438.0	136.6	50.00	219.0	68.3	150.7
5	438.0	136.6	25.00	328.5	34.2	294.4
6	438.0	136.6	10.00	394.2	13.7	380.5

( ) negative

Note: Detail may not add to total due to rounding.

[1]Based on the high cost estimates for initial ATC retrofit costs and recurring ATC-related costs.

Source: AB 868 Fuel Delivery Temperature Study, Staff Report Overview & Findings, Committee Workshop, Sacramento, CA, December 9, 2008;
Col. (1): p. 43;
Col. (2): p. 36.

Net Consumer Benefit from Mandatory ATC Devices Over Ten Years
Assuming a 76.23 Percent Margin Recapture

Year	Gross Consumer Benefit	Cost of ATC Devices[1]	Recurring ATC-related Costs[2]	Consumer Benefit from Additional Fuel Gallons	Consumer Cost of ATC Device	Consumer Cost of Recurring ATC-related Costs	Net Consumer Benefit
	($million)						
	(1)	(2)	(3)	(1)x[1-0.7623] (4)	(2)x0.7623 (5)	(3)x0.7623 (6)	(4)-(5)-(6) (7)
1	$ 438.0	$ 123.1	$ 13.5	$ 104.1	$ 93.8	$ 10.3	$ 0.0
2	438.0	0.0	13.5	104.1	0.0	10.3	93.8
3	438.0	0.0	13.5	104.1	0.0	10.3	93.8
4	438.0	0.0	13.5	104.1	0.0	10.3	93.8
5	438.0	0.0	13.5	104.1	0.0	10.3	93.8
6	438.0	0.0	13.5	104.1	0.0	10.3	93.8
7	438.0	0.0	13.5	104.1	0.0	10.3	93.8
8	438.0	0.0	13.5	104.1	0.0	10.3	93.8
9	438.0	0.0	13.5	104.1	0.0	10.3	93.8
10	438.0	0.0	13.5	104.1	0.0	10.3	93.8
Total, All Years	$ 4,380.0	$ 123.1	$ 135.0	$ 1,041.3	$ 93.8	$ 102.9	$ 844.5

Note: Price transparency benefit is not included.
Detail may not add to total due to rounding.

[1]Based on the high cost estimates for initial ATC retrofit costs.
[2]Based on the high cost estimates for recurring ATC-related costs.

Source: AB 868 Fuel Delivery Temperature Study, Staff Report Overview & Findings, Committee Workshop, Sacramento, CA, December 9, 2008;
Col. (1): p. 43;
Col. (2): p. 36;
Col. (3): p. 36.

Net Consumer Benefit from Mandatory ATC Devices Over Ten Years
Assuming a 50 Percent Margin Recapture

Year	Gross Consumer Benefit	Cost of ATC Devices[1]	Recurring ATC-related Costs[2]	Consumer Benefit from Additional Fuel Gallons	Consumer Cost of ATC Device	Consumer Cost of Recurring ATC-related Costs	Net Consumer Benefit
	($million)						
	(1)	(2)	(3)	(1)x[1-0.50] (4)	(2)x0.50 (5)	(3)x.50 (6)	(4)-(5)-(6) (7)
1	$ 438.0	$ 123.1	$ 13.5	$ 219.0	$ 61.6	$ 6.8	$ 150.7
2	438.0	0.0	13.5	219.0	0.0	6.8	212.3
3	438.0	0.0	13.5	219.0	0.0	6.8	212.3
4	438.0	0.0	13.5	219.0	0.0	6.8	212.3
5	438.0	0.0	13.5	219.0	0.0	6.8	212.3
6	438.0	0.0	13.5	219.0	0.0	6.8	212.3
7	438.0	0.0	13.5	219.0	0.0	6.8	212.3
8	438.0	0.0	13.5	219.0	0.0	6.8	212.3
9	438.0	0.0	13.5	219.0	0.0	6.8	212.3
10	438.0	0.0	13.5	219.0	0.0	6.8	212.3
Total, All Years	$ 4,380.0	$ 123.1	$ 135.0	$ 2,190.0	$ 61.6	$ 67.5	$ 2,061.0

Note: Price transparency benefit is not included.
Detail may not add to total due to rounding.

[1]Based on the high cost estimates for initial ATC retrofit costs.
[2]Based on the high cost estimates for recurring ATC-related costs.

Source: AB 868 Fuel Delivery Temperature Study, Staff Report Overview & Findings, Committee Workshop, Sacramento, CA, December 9, 2008;
Col. (1): p. 43;
Col. (2): p. 36;
Col. (3): p. 36.

Net Consumer Benefit from Mandatory ATC Devices Over Ten Years
Assuming a 25 Percent Margin Recapture

Year	Gross Consumer Benefit	Cost of ATC Devices[1]	Recurring ATC-related Costs[2]	Consumer Benefit from Additional Fuel Gallons	Consumer Cost of ATC Device	Consumer Cost of Recurring ATC-related Costs	Net Consumer Benefit
	($million)						
	(1)	(2)	(3)	(1)x[1-0.25] (4)	(2)x0.25 (5)	(3)x0.25 (6)	(4)-(5)-(6) (7)
1	$ 438.0	$ 123.1	$ 13.5	$ 328.5	$ 30.8	$ 3.4	$ 294.4
2	438.0	0.0	13.5	328.5	0.0	3.4	325.1
3	438.0	0.0	13.5	328.5	0.0	3.4	325.1
4	438.0	0.0	13.5	328.5	0.0	3.4	325.1
5	438.0	0.0	13.5	328.5	0.0	3.4	325.1
6	438.0	0.0	13.5	328.5	0.0	3.4	325.1
7	438.0	0.0	13.5	328.5	0.0	3.4	325.1
8	438.0	0.0	13.5	328.5	0.0	3.4	325.1
9	438.0	0.0	13.5	328.5	0.0	3.4	325.1
10	438.0	0.0	13.5	328.5	0.0	3.4	325.1
Total, All Years	$ 4,380.0	$ 123.1	$ 135.0	$ 3,285.0	$ 30.8	$ 33.8	$ 3,220.5

Note: Price transparency benefit is not included.
Detail may not add to total due to rounding.

[1]Based on the high cost estimates for initial ATC retrofit costs.
[2]Based on the high cost estimates for recurring ATC-related costs.

Source: AB 868 Fuel Delivery Temperature Study, Staff Report Overview & Findings, Committee Workshop, Sacramento, CA, December 9, 2008;
Col. (1): p. 43;
Col. (2): p. 36;
Col. (3): p. 36.