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Response of the Association of Home Appliance Manufacturers
To the California Energy Commission's
Petition for Exemption from Federal Preemption of California's Water and Energy
Conservation Standards for Residential Clothes Washers

Docket EE-RM-PET-100
April 7, 2006

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I. EXECUTIVE SUMMARY

The CEC petition must overcome the high hurdle of the stringent criteria in NAECA which strongly disfavor the granting of an exemption from preemption unless there are:

1. Unusual and compelling state interests for which the regulation is needed, which will substantially relieve the state problem, and which cannot be reasonably alleviated otherwise;

2. No significant negative impacts on the national market; and

3. No deprivation to California consumers and businesses of the product features, designs, utilities and prices they favor.

This petition is based on a water standard which was justified by the California Legislature and the CEC in large part based on energy considerations. Yet, the water factor standard is not shown to be necessary; it is not even contained in the state energy or water plans. Any reasonable estimate of water savings attributable to the proposed standard is an insignificant part of the overall water use picture in California. There are numerous other programs, which with only modest achievement, could save far more water. Based on comparative water use, shortages, and prices the California situation is not significantly different than that of many other regions, cities and states.

Furthermore, the national market would suffer disruption and harm as a result of a California standard which would effectively ban top-load, conventional clothes washers in California. Manufacturers, who already have invested heavily in good faith reliance on the DOE clothes washer standards, would lose large parts of that investment -- adversely affecting cash flow, profitability and the maintenance of domestic employment. Finally, California consumers would be deprived of exactly the combination of features, designs, utilities and price points that the "safe-harbor" provision of the preemption provision is designed to protect. To put it simply, if we show that conventional top-loaders are prevalent and desired in the California market and would be eliminated by this standard, the petition must be denied.

The CEC petition fails all of the tests under 42 U.S.C. 6297 and the Petition should be denied.

II. INTRODUCTION AND SUMMARY

These comments are in response to the February 6, 2006 Federal Register notice regarding the September 15, 2005 petition by the California Energy Commission in which it seeks, pursuant to the 42 U.S.C. 6297(d), a waiver of federal preemption for a clothes washer water and energy standard.

The CEC action was taken pursuant to Assembly Bill 1561, enacted in 2002, which required CEC to adopt separate water and energy standards for clothes washers and file a petition for waiver. The law sharply limits CEC's discretion, requiring that the new standards be at least as stringent as those CEC set for commercial clothes washers. In 2004, CEC promulgated much more stringent residential clothes washer standards than it set for commercial clothes washers: a two-tier water factor of 8.5 by January 1, 2007 and a 6.0 water factor effective January 1, 2010. (The status of these purported 2007 standards are unclear since there is a 3 year "lead-in" period between any final rule granting a petition and its possible effective date. 41 U.S.C. 6297(d)(5)(A)).

The lengthy and specific criteria a petition must overcome to be granted are clearly stated in the Federal Register Notice. See 71 Fed. Reg. 6022, 6024.

The Association of Home Appliance Manufacturers ("AHAM") is the United States trade association for the manufacturers of major, portable and floor care appliances and related suppliers. AHAM membership includes virtually all the manufacturers of residential clothes washers who sell machines in the U.S. We have represented the appliance industry on energy matters for over 30 years.

AHAM and its members were principal industry architects of the federal energy laws on appliance standards and federal preemption and have been active on state appliance standards activities, particularly in California. AHAM led the regulatory and negotiations effort which culminated in the January 2001 final rule for the residential 2004/2007 clothes washers federal efficiency standards. This rule was expressly and carefully designed to save significant amounts of energy and water, maintain full lines of clothes washer models for consumers and mitigate manufacturer impact. Final Rule 66 Fed. Reg. 3314 et. seq. (January 12, 2001) and Proposed Rule at 65 Fed. Reg. 59550 et. seq. (October 5, 2000). This careful balance, and the entire viability of a national system of standards, is at stake in this proceeding. AHAM also was engaged in the CEC rulemaking which promulgated the standard which is the subject of this petition.

The essence, the "bargain," of the Energy Policy and Conservation Act, as amended, (42 USC 6291-6307) is a comprehensive system of federal regulations and periodic updates for a range of appliances and consumer and commercial/industrial products in exchange for which there is virtually complete federal preemption of state energy conservation testing, labeling, standards and related requirements (42 USC 6297). There is a limited opportunity for states in urgent and exigent circumstances to obtain a waiver from the Department. This can only be done where a detailed and credible case can be made for "unusual and compelling state or local water and energy interests" (42 USC 6297(d)(B)), and the statute provides a complete set of criteria that must be proven to make this case. Even if such a case can be made, the Secretary may not grant the exception if it finds that either the regulation would (a) "significantly burden

manufacturing, marketing, distribution, sale or servicing of the covered product on a national basis," or (b) "result in the unavailability in the state of any covered products performance characteristics (including reliability), features, sizes, capacities and volumes that are substantially the same as those generally available in the state at the time of the Secretary's finding … ." This latter provision is known as the "safe harbor" because it protects consumers and the national market regardless of the state's interest and the benefits of the standard. There are a number of supplementary criteria in the statute relevant to these determinations.

The great detail required and difficulty of proof in making the case for waiver is not arbitrary or an historical artifact. It was the intention of Congress, particularly in its most significant revision, the National Appliance Energy Conservation Act ("NAECA"), to limit successful waiver petitions to those circumstances in which a state has no other significant options to protect its energy or water interests and yet its actions will not significantly impact or burden the state or national consumers or manufacturers.

One might expect that the first waiver petition filed by a state would occur under extreme circumstances where the state-proposed solution seems clear, effective, and central to a plan and where consumers and manufacturers are left unharmed. Unfortunately, just the opposite has occurred. The attachment of water requirements to a separate CEC energy standard was not based on expert, rigorous consideration by state agencies of expertise. In fact, the CEC was considering other products as the subject of a first waiver petition but was itself preempted by the action of the Legislature imposing the requirement that the CEC adopt this standard and file a waiver.

This legislation was not developed after a process in which there first was careful consideration in the state water and energy plan of whether separate water and energy standards for residential clothes washers were critical to dealing with California's water supply problems. In fact, as far as AHAM can ascertain, this standard is not even a part of the thousands of pages of the state's water and energy plans or if it is, it is buried as an inconsequential piece of the overall picture. (The CEC submission of reams of pages, in paper and electronically, is not proof; it is simply a data dump.) Instead, the proposed water and energy standard provides little benefit and imposes a direct burden on out-of-state manufacturers who are not influential in California.

As will be described below, the Commission has failed to meet its initial burden under the statute to show as a threshold matter its need and interest in this regulation, its necessity as compared to alternatives, and its efficacy. As we will show, the standard also has enormous implications on the types and costs of products which will be available in the California market and will impact the utility and product selection that consumers expect in California. Its primary effect is to deprive California consumers of moderately priced, conventional, top-loading clothes washers. CEC does not deny this effect; it

simply belittles it. But, the statute is clear that if this result is likely, it is a "show stopper" to the granting of a waiver regardless of California's interest.

A California standard will undermine the federal uniform system of the regulations because California's interest is similar to that of other states and regions which could make the same argument for exemption-from-preemption on this and other products if California is successful. Adequate water supplies in the face of population growth is a problem facing other arid states such as Nevada, Arizona and Texas. And, the regulation, if allowed to be imposed in California, will significantly burden manufacturers in their production, distribution, marketing and sale of these products. In fact, the proposed CEC water/energy clothes washer standard is exactly the type of state standard that NAECA intended to preempt, not permit.

The citizens of California will still have tools to deal with their water and energy problems without this standard. First, the federal energy standards for clothes washers will save not only many quads of energy but billions of gallons of water. Second, Energy Star and California-specific energy and water incentive programs will add to these water and energy savings and continue to pull the market along in the "green" direction in which it already is going. Recent federal tax credits accelerate this pace. There are many alternatives Californians can implement to save water and the energy that is used in the water system. Only minor improvements in some of these massive systems will far outweigh any possible savings in a separate California energy and water standard for clothes washers.

III. THE EXEMPTION-FROM-PREEMPTION PROVISIONS

Reviewing the statutory scheme and Congressional intent is critical because they reveal (a) the considerable burden on both the petitioner and DOE before a waiver can be granted; and (b) that a successful petition must overcome three independent reviews.

The state's interest in and consideration of the proposed standard must be demonstrated under several criteria. But, even if this demonstration is made, DOE must still consider whether the state regulation will significantly burden the production, distribution, and marketing of the product on a national basis (which we will describe as "the national market.") Finally, no matter what DOE's evaluation of the national market, it may not prescribe the rule if it finds that the standard will violate the so-called "safe-harbor" prohibition -- which also applies in the consideration of federal energy standards -- that the waiver may not be allowed if it is likely to result in the unavailability in the state of certain product types, classes, performance characteristics and other key aspects of the product that are currently available.

Thus, if California fails to meet any aspect of its initial burden on state interest, the petition fails. Even if California meets this burden, the petition fails if the national market will be adversely affected. And, no matter what DOE's evaluation is of the state interest and the national impact, consumers in California must not be deprived of any product features or utilities that they consider to be significant and that exist in today's marketplace.

This tripartite structure was intentionally designed to eliminate all but the most extraordinary requests. In this, as in many regards, NAECA was an update and a significant restructuring of prior law. Preemption is clearly an equal hallmark of NAECA alongside a federal system of standards. The legislative history is replete with references that the strong preemption in NAECA was in recognition that appliance manufacturers face "a growing plethora of different state regulations," and are "confronted with the problem of a growing patchwork of differing state regulations." HR Rep. No. 100-11; 100th Congress, 1st Session at 23 (1987); S. Rep. No. 100-6; 100th Congress, 1st Session at 4-5 (1987). The preemption provision "is designed to protect the appliance manufacturer from having to comply with the patchwork of numerous conflicting state requirements." HR Rep. No. 100-11 at 24. The Senate report stated that NAECA, by adding a number of specific federal standards and rulemaking schedules, has the effect of "increasing federal preemption of state regulation." S. Report 100-61 at 12.

Indeed, NAECA enhanced and made more difficult the process to obtain waivers by, among other revisions, changing the states' burden from showing "a significant State or local interest" (Pub. L.94-163 89 State 871 (1975)) to establishing "by a preponderance of the evidence that such State regulation is needed to meet unusual and compelling state or local energy interests." The Senate Report stated that this change provided "new and more stringent criteria" that a State must establish. S. Rep. 100-6 at 9 (1987).

There was no controversy in Congress about the preemption provisions and energy conservation groups testified about their importance. Howard Geller, then head of ACEE, stressed that the legislation "will prevent a patchwork of state regulations, a factor of extreme importance for appliance manufacturers." Hearing before the Subcommittee on Energy Conservation and Power, 99th Congress, Serial No. 99-165 (September 10, 1986) at 113. David Goldstein and a colleague at NRDC stressed that appliance manufacturer's benefit under NAECA "by being protected from a potential patchwork of state regulations." Id. at 127.

Indeed, the then Chairman of the California Energy Commission stated in a letter to the Subcommittee that "we understand that this bill is the result of intense negotiations, and that the explicit trade-off was national standards for stronger preemption of state standards than exists under current law. We have thought seriously about the new

exemption criteria, which significantly reduces the state's ability to set standards and weigh them against the benefit of nationwide conservation. We conclude that the trade-off is worthwhile." Id. at 162.

California and New York State were so concerned, however, about the difficulty in obtaining exemption from preemption that they each requested Congress to revise the legislative language or create a legislative history which would state that the DOE would analyze a petition based on the overall benefits of the exempted standard versus the burdens on manufacturers and consumers. It is significant that neither the California proposed language nor the New York State Energy Office proposed language, which would have fundamentally changed the nature of this provision to an overall balancing provision, are part of the intent of Congress, as evidenced in the descriptions in the House and Senate reports. The requests are only included in the record as submitted testimony. Id. at pages 174-185 and 162-163.

Thus, Congress rejected an attempt by California and New York State to change this provision into one involving the weighing of respective interests. Instead, each component of the case -- the state interest; the impact on the national market; and the impact on California consumers -- are separate and necessary determinations. It is irrelevant whether California can demonstrate -- which here it decidedly does not -- that its interest in the benefits of the state water and energy conservation are greater than the burdens to manufacturers and to California consumers. Each aspect of the exemption consideration stands on its own.

There are several other specific aspects of the statutory provision which must be recognized. First, the state must show, by a preponderance of evidence, that the state regulation is "needed" to resolve the unusual and compelling state or local energy and water interest. 42 U.S.C. 6297 (d)(1)(B). A measure being "needed" means proof of a condition beyond desirability, convenience or cost-effectiveness. It means that the state or local energy or water interests cannot be achieved under any reasonable circumstances without this specific standard and, that, in fact, they will be achieved with the application of the standard. This requirement of necessity is separate from the language later in (C) in which as part of the definition of "unusual and compelling state or local energy or water interest," it is stated that the cost, benefits, burdens, and reliability of energy or water savings resulting from the state regulation make such regulation preferable or necessary when measured against alternative approaches.

Second, the factors in determining whether unusual and compelling state or local energy or water interests exist must be evaluated in the context of the state's energy or water plan and forecast, if they exist. This was not a mandate by the federal government that there must be state energy or water plans but if a requirement for such planning exists -- as it does in California -- then the proffered standard must be an integral part of

the plan. As the Congress stated: "It does require the State to show that it has engaged in a rational planning process in which the state has reviewed the cost effectiveness of various alternatives to state appliance standards." H.R. Report 100-11 at 25. This means that there is great significance to the fact that neither the California water nor energy plans contain any significant reference or reliance on this standard. The CEC cannot bootstrap this absence by claiming it did the analysis later, outside of the plan. If this were a courtroom, the petition, if viewed as a complaint, would be subject to a motion to dismiss because it does not contain one of the critical, specific elements required.

Third, AHAM has the obligation to establish, by preponderance of evidence, that the regulation will "significantly burden" manufacturing, marketing, distribution, sale or servicing of the products on a national basis using, among other things, the relevant factors stated in the statute. The requirement is not that we prove that our national market will be destroyed, or that it will be impossible to sell, or that our sales will be significantly diminished. Rather, the requirement is to establish a "significant burden" on the national market.

The relevant factors are considered cumulatively, including increased manufacturer and distribution costs, disadvantage to small manufacturers, distributors and dealers or lessening of competition, the burden on manufacturers to redesign and produce compliant products, and any resulting reductions in availability of models or the current or projected sales volume. The extent to which the state regulation is likely to affect proliferation of state appliance efficiency requirements, and the cumulative impact of such requirements, also is an important consideration.

Finally, as noted, there is an independent and critical consideration of whether the California regulation will result in the unavailability in California of any clothes washer type or class of performance characteristics (including reliability), features, sizes, capacities and volumes substantially the same as those generally available in the state at the time of DOE's finding. To put it simply, if we show that moderately priced, top-loading clothes washers are the type of product substantially prevalent and desired in the California marketplace today and that they are likely to no longer exist after the application of the standard, then DOE is compelled to deny this petition. Interestingly, CEC does not deny that this product will no longer be available; it just does not consider that fact to be significant. It would be an extraordinary and radical revisionist interpretation and understanding of consumer interest to ignore the California market share and consumer interest in moderately-priced, standard, top-loading clothes washers.

IV. METHODOLOGY

In developing these comments, AHAM has relied on two well-regarded and highly experienced analysts. Richard Topping, formerly at ADL and TIAX, has consulted for DOE and industry on technological issues affecting the appliance industry and standards for almost 30 years. Business and economic analyst Everett Shorey is the "inventor" of the Government Regulatory Impact Analyses ("GRIM") widely used in appliance standards rulemakings under the Process Improvement Rule.

We have designated where we use their analyses. The Topping and Shorey studies have been commissioned solely to respond to the CEC petition. Although AHAM would not normally gather sensitive price, cost, and other competitive data, this is required to prepare adequate responses under NAECA. AHAM has engaged these independent consultants not only due to their expertise but so that association staff is not privy to confidential information. Wherever possible, public information has been used.

The cost, market and technology data have been collected under strict procedures using confidentiality agreements with the consultants and ensuring that the data are not shared with competitors except at an aggregated, de-identified level approved by counsel and consistent with long-standing AHAM market data programs. The underlying data will be destroyed when they are no longer required as backup.

Any collective discussions of this report have occurred only when counsel is present and relate solely to the regulatory implications of the data and conclusions therein.

V. CALIFORNIA WATER ISSUES

Curiously, CEC says relatively little about energy use in its Petition although the underlying legislation was premised in large part on energy use related to water supply and wastewater, as was the CEC regulatory proceeding. This is an implicit acknowledgement that a case cannot be made under the waiver provisions on the basis of energy.

A. Significance of Clothes Washers

The crux of the California Petition to DOE is that the state has such an "unusual and compelling" water shortage and impending crisis as to make state standards preferable to alternatives, including action in other water-consuming applications, existing federal NAECA standards, and market induced reductions in clothes washer water consumption. Further, CEC claims that the state has almost uniquely serious water

issues that require a different solution from the other forty-nine states and justify a move away from a consistent nationwide approach. A review, however, of California water use, impending shortages and price/availability differences relative to the rest of the U.S. lead to the conclusion that there is no compelling justification for this petition.

The Petition relies on future water use projections from the California Department of Water Resources ("DWR") (California Water Plan Update 2005). First, it does not appear that separate California water and energy standards are contained in or integral to the water plan. Nor are such standards contained in or integral to the CEC energy plan. This is a fatal blow to the petition because of the NAECA requirement that any such plans contain the proposed standard. It shows how little consideration planners have given to this option.

It also should be noted that there is no clear consensus by experts on DWR's findings. The U.S. Census Bureau predicts lower population growth in California than stated. The well-qualified Pacific Institute ("PI") in Oakland, CA, in its recent response to the 2005 Water Plan (California Water 2030: An Efficient Future, September 2005) concluded that "official scenarios routinely project substantial increases in water use over time, far in excess of the use that actually materializes." After analyzing this and past DWR water plans, PI concluded: "And the projections of the total future water demands routinely exceed estimates of available supplies by several million acre-feet annually, a shortfall projected in every California water plan since the first." Thus, CEC embraces water projections based on a "business as usual" approach, similar to its reliance on standards that historically have overly burdened consumers, local businesses and manufacturers.

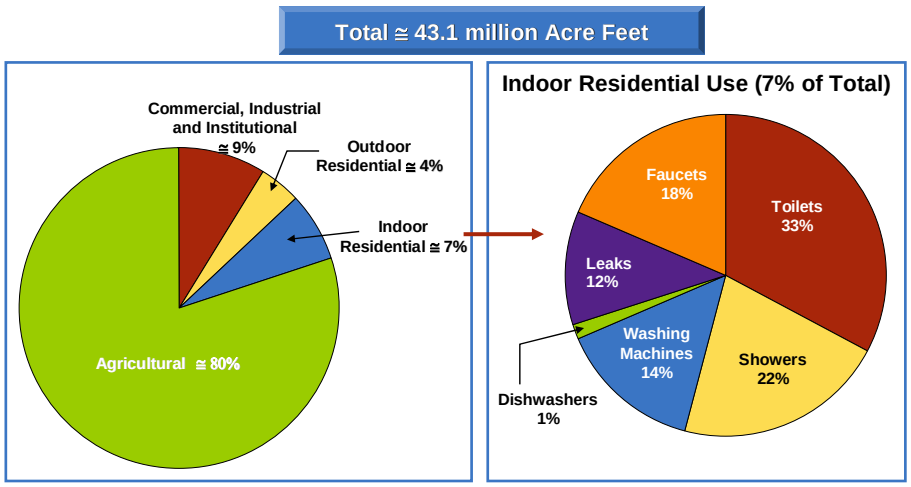
In contrast, PI concludes: "Under a High Efficiency scenario, total human use of water in California could decline by as much as 20 percent while still satisfying a growing population, maintaining a healthy agricultural sector and supporting a vibrant economy." PI supports a comprehensive approach, including clothes washer water standards, but its analysis recognizes that clothes washer standards would make only a minimal contribution to the overall savings proposed.

Another PI report (Waste Not, Want Not, November 2003) is referenced by DWR in the California water plan as estimating a potential savings of 2 to 2.3 MAF/yr in urban water use. That is based on an analysis assuming full implementation of available conservation technologies in 2000. PI estimated that washers used 330,000 AF/yr and could save 33%, or 110,000 AF/yr, if <u>all the existing washer stock was instantly replaced</u> with units having an average of the water factor of the high efficiency machines on the market in 2000. Despite such a draconian measure, the savings for washers amounted to only about 5.5% of the total 2 MAF/yr in urban savings potential, and that assumption is an upper limit. Not even CEC is suggesting mandatory retirement of the current washer

population. PI goes on to estimate water consumption and conservation savings through 2020 and the percentage savings for washers changes little.

DWR data used in the Petition estimates that total annual water usage in California in 2000 was 43.1 million acre-feet, or 14.0 trillion gallons. Of this, agricultural use accounts for the vast majority, approximately 80% (see Figure 1). The 2003 Pacific Institute report estimates that indoor residential use is about 7% of the total and of that, clothes washers consume 14% which is less than 1% of the total urban and agricultural water use. This is in contrast to the 22% value used in the Petition based on an older (1998) nationwide analysis by the American Water Works Association (Residential End Uses of Water, 1999). We believe the PI data is more recent and more representative of the mix of washers in California.

The water savings predicted from this proposed regulation, therefore, are a fraction of 1% of the water used in California and are even less than the indoor residential water lost to leaks. Thus, how can this measure possibly be "needed"? The largest users of water indoors are toilets, showers and faucets that together consume about 5% of the state's water. Just below this value is the large quantity of water used outdoors for residential landscaping (4%). In fact, California's largest "crop" is lawns and landscaped areas; DWR estimates that between 1.2 and 1.4 million acres are landscape areas, including mainly urban irrigated landscape. This is more than the acreage devoted to any major agricultural product. The Public Policy Institute of California (PPIC Research Brief #102, July 2005) further concludes that "landscaping frequently accounts for more than half of all municipal water use."



1 Acre Foot = 43,560 cu ft or 325,851 Gal
Ref: The Pacific Institute, Nov. 2003

Figure 1: Water Usage in California (2000)

Agricultural water use is nearly twelve times larger than all indoor residential water use combined. To put this in perspective, the CEC petition reports that the average California water consumption per capita (based on 2000 data) is 1500 gallons per day, of which 1200 gallons per day are consumed for agricultural purposes. Indoor residential per capita daily use is approximately 100 gallons, so just 14 gallons per day are used by washing machines.

About a 1% reduction in agricultural water use would equal all the water used by washers today. Such a modest conservation program would deliver two to three times the water savings predicted from the proposed CEC washer standards. Yet, instead, the washer industry is being asked to significantly decrease the water use of its products (by 33 to 50%) while CEC avoids suggesting far more modest improvements for the agricultural industry. The U.S. Environmental Protection Agency (EPA) believes that agricultural irrigation is the largest water usage problem in California. The 2003 Pacific Institute report concluded: "Water use in many parts of California's agricultural sector is inefficient and wasteful, … No comprehensive conservation and efficiency policy – indeed, no rational water policy – can afford to ignore inefficient agricultural water uses."

B. Fungibility of Water Conservation

The petition dismisses agricultural conservation by claiming that water supplies are often not fungible, and that it is difficult to transfer water among sectors. That is a questionable position given that the California State Water Project (SWP) provides water for 23 million Californians and 755,000 acres of irrigated farmland by conveying water across the state through the use of the 444 mile long California Aqueduct that transports water from Northern to Southern California.

California has a growing water merchandising business. A Public Policy Institute of California report (Research Brief #74, July 2003) states: "Among the measures that can alleviate supply and demand imbalances is the development of a water market. A market enables the historical holders of water rights – mainly farmers in the agricultural heartland – to transfer water to other users willing to pay for it. Potential buyers include urban and industrial users, farmers with higher-value crops, and environmental programs to support fish and wildlife habitats."

The Pacific Research Institute in San Francisco (not the Pacific Institute quoted earlier) reports (Pacific Research Institute Fact Sheet, July 1999): "Water markets can alleviate other perceived water crises in California as well, such as disputes over the allotment of the Colorado River. Contrary to alarmist rhetoric, the Colorado River contains more than enough water to meet the demands of all of the states to which it

supplies water. Interstate water markets offer the best way to allocate Colorado River water in the same way that water markets can manage water within California."

DWR, itself, promotes transfers through its Water Transfers Office. On its website (www.watertransfers.water.ca.gov) it states: "Water transfers are a permanent and necessary part of California's water picture. State law supports voluntary water transfers, and directs State agencies to encourage and facilitate voluntary transfers in a manner that protects existing water uses.

The seven southern-most of the California counties (Imperial, Los Angeles, Orange, Riverside, San Diego, San Bernadino and Ventura) account for 11% of all irrigated land in California (US Department of Agriculture, 2002 Census of Agriculture). A 10% reduction in the use of water for agriculture through basic conservation measures, in those counties alone would produce greater water savings than the total consumption of water by washing machines across the entire state. A 3% reduction in agricultural water use in those counties would save as much water as CEC predicts for the proposed regulation. Since this is the most water short area of the state, a suggestion that there is not significant fungibility of water is unsupported by the facts.

Based on Mr. Topping's research, we can find no reason why balanced conservation strategies across the various sectors and geographic areas of California with reasonable transfers from areas with surplus to those with need would not provide a lasting, comprehensive and equitable solution to California's water issues.

C. <u>The Savings Potential From the Standard Is Minimal</u>

As analyzed by the CEC, the savings attributable to the proposed standard is at most a minor component of a California water program. The CEC's approach that "every little bit helps" is charming but hardly meets the criterion of "necessity" in the statute. There have been considerable water savings due to the 2004 and upcoming 2007 DOE standards and even more significant savings due to voluntary consumer purchases of low water factor washers. The market has shifted dramatically. This trend will continue since the 2007 Energy Star ratings incorporate a water factor**.**

In reality, the likely savings from the proposed CEC standard are greatly exaggerated as demonstrated in VI(G) below.

D. There are Many Alternative Strategies to Save Water; The Clothes Washer Standard is not Integral to the California Water or Energy Plans

1. Non-Clothes Washer Alternatives

The California Water Plan Update 2005 does recommend a comprehensive strategy to address urban water use in California, including the adoption of rate structures to encourage conservation and a wide range of voluntary programs such as a "Water Star Homes" program (note this balanced approach does not even specifically mention standards for clothes washers).

Volume 2, Chapter 22 of the Plan covers Urban Water Use Efficiency. There is significant discussion of the success of the CUWCC Best Management Practices (of which BMP #6 covers rebates for high efficiency clothes washers) and the cost effectiveness of water conservation programs vis-à-vis production methods to make more water available. The Light Wash program is described where energy and water conservation rebates of up to $450 are available for high efficiency commercial clothes washers. The plan states that water conservation "has become a way of life for Californians, most of whom have easy and affordable access to a wide variety of off-the shelf water efficient … washing machines …" It references energy in that it mentions that water conservation saves energy (references CEC's estimate that nearly one-fifth of the state's energy use is associated with water development and use).

Specific future recommendations call for continued implementation of BMP's and a wide range of balanced strategies including "financial incentives, new revisions in State and local codes and standards, and legislative initiatives." Most of the emphasis is on incentive programs, rate structures, new BMP's, metering, consumer education, landscape water use reduction, etc. There is no specific mention of residential clothes washers or water factor restrictions; the only products specifically mentioned are toilets and hot water systems.

The recent State Water-Energy Workshop, co-hosted by CEC, is replete with references to the State Water Plans and Water Action Plan. Perusal of the presentations does not indicate a significant role for a clothes washer standard. See http://www.energy.ca.gov/process/water/2006-03-28 symposium/index.html.

The Pacific Institute 2005 report, while critical of DWR's lack of creativity: ("These projections have never included a vision of a truly water-efficient future, where California's environmental, economic and social needs are met with smart technology, strong management, and appropriate rates and incentives."), also strongly asserts that a water efficient future is possible: "We envision a future in which California water use is

highly efficient, permitting us to maintain a healthy economy and healthy ecosystems while reducing overall water use." Further, the report concludes that "A water-efficient future is achievable, with no new inventions or serious hardships."

Also, PI finds that agricultural water consumption can decline "more than 20 percent from actual year 2000 water use… as farmers move to more efficient irrigation methods, without reducing crop area or changing crop type…" Based on this, the narrow and inadequate CEC proposal to unduly burden one product with little resulting impact on state water consumption, which drastically and forcibly alters consumer's preferences and usage patterns for clothes washers, should be rejected.

There are many potential programs to curtail inefficient water use. For example, EPA has announced a program with the landscaping irrigation industry which may reduce overall water use by 25 percent. 215 BNA Daily Environment Reporter A-6 (11/8/2005).

Interestingly, DWR estimates that 700,000 California water users in metropolitan areas are still not metered. The Pacific Research Institute reports (Impact, June 2004): "Water sub-meters are devices that can be installed in apartments with vertical riser pipes to bill individual users for water consumption. With sub-metering, a third party provides residents with a bill that accurately measures their water consumption, so individual costs can be compared to individual benefits, and consumption altered accordingly. Large families, people who delight in long showers, or those who wash their clothes or dishes frequently pay more. Single people or those who conserve water religiously pay less. It's simple, fair and promotes water conservation. The National Apartment Association and the National Multi Housing Council report that submetered properties use 18-39 percent less water than properties where water costs are built into the rent. Another study, conducted in San Antonio, found that sub-metering decreases consumption by 31 percent. Currently, California regulations discourage the installation of submeters."

In Canada, flat-rate users consumed 70% more water than metered users even though Canadian water prices are among the worlds lowest "Effect of Metering on Per Capita Domestic Water use for 1999", Government of British Columbia 1999.

We understand that new legislation will require all households to be metered in California, but not until 2025. This is a choice by California not to implement powerful conservation alternatives earlier. Therefore, this situation will continue for some time, even though studies have consistently shown that water usage is one third less when users are billed on volume of water consumed. The California Water Plan recognizes the conservation value of users paying directly for the water they use and calls for universal metering of all urban customers, billing by volume of use, and submetering of new multifamily construction.

The same metering issue affects agricultural water use where conservation can result from awareness of the quantities of water used. Yet in 1997 it was estimated that approximately one-third of all irrigation water in California was still distributed on a per-acre fee basis rather than being priced on a per-unit usage basis. Water Use conflicts in the West: Implications of Reforming the Bureau of Reclamation's Water Supply Policies, Congressional Budget Office Study (8/97).

Therefore, there are more effective and straightforward actions other than regulating washers which can be undertaken to save water in California. These alternatives afford more customer choice and will have far less impact on the California consumer, the nation's appliance efficiency program and the appliance industry.

2. Clothes Washer Alternatives

Even in the clothes washer context, the CEC petition equates reliance on reasonably predictable market-induced improvements in efficiency as "doing nothing" (Petition, page 26). In fact, the situation in California is just the opposite and bodes well for the use of incentives and free market forces to significantly improve efficiency without the need for prescriptive standards. Many different entities have done much to support the Federal Energy Star program in California with excellent results. Current market share of Energy Star washers through all retail outlets in California is at least 56%, far higher than nationwide. (California Residential Efficiency Market Share Tracking, Appliances 2004, Itron, Inc.) This share is also a very substantial 17% two-year increase from the 2003 value of 39% presented in the Petition and demonstrates that rebates and market awareness-building activities do work.

Even with this penetration, there are still greater opportunities for California to increase its sales of Energy Star clothes washers. For example, the California share of Energy Star washers sold through national chains lags behind those in the Northwest and New England, the vast majority with water factors below 8.5 or even 6.0.

Furthermore, now that the Energy Star program for clothes washers includes a water factor component, the impact of this very successful market transformation program will be even more beneficial to water conservation. Much of CEC's projected water savings will be achieved voluntarily, without the need for any exemption and with minimal impact on manufacturers and consumers. Currently approximately 40% of Energy Star washers in the Northwest -- without regulation -- have MEFs greater than 1.8 (virtually all of which will have WFs of 6.0 or lower), with a goal in that region of increasing this portion to 50% by 2007(nwalliance.org). In contrast, California only has 28% of its Energy Star washers with MEFs greater than 1.8. California can increase its effort to promote Energy Star washers to the level of penetration reached in the

Northwest and New England. By meeting the results proven in other regions, California can reach half its initial goal for the 8.5 standard and much of its goal for the 6.0 level.

Water efficiency practices have been institutionalized through the California Urban Water Conservation Council's (CUWCC) Memorandum of Understanding (MOU). As of 2003, there were 309 signatories to the MOU, representing 80 percent of all the urban water supplied to California. These agencies plan, implement and track a set of Best Management Practices. One of these, BMP-6: High Efficiency Clothes Washers, is aimed at achieving water savings in clothes washers through rebates. In addition, the state of California has itself funded 200,000 clothes washer rebates (Petition, page 19). In spite of all this success in making water conservation a way of life for Californians, CEC pursues standards at all costs, apparently persuaded that unnecessary regulations are "cheaper" and therefore preferable to education, awareness building and consumer choice.

The CEC debunks the use of alternative approaches to increase the usage of low water washers as it attempts to justify a mandatory standard. This approach is misleading for at least two reasons:

1. The probability is very high that, through ordinary market forces and continued market development, the actual usage of front load washers will approach and exceed 33% of the market.

2. CEC has grossly overestimated the cost of alternative programs.

The Northwest Energy Efficiency Alliance has demonstrated that it is possible to achieve significant penetration of low water usage washers through targeted market development programs that are cost effective. The Northwest region has consistently led in market penetration of Energy Star washers. Of these, nearly 80% (32% of total sales) have MEFs that are only reached, in the current marketplace, with low water factor washers. These penetration rates have been achieved through a balanced program of retailer training and involvement, utility promotion and periodic rebates such as the 2004 "Double Your Savings With Energy Star" and similar programs. The CEC has not met its burden of proof that cost effective market development programs will not yield much of the potential savings it seeks in water and energy. Instead, it seeks to impose a "tax" on all consumers of over $280 per washer in additional washer cost rather than allowing consumers who view this as a sound investment to choose lower water consuming washers.

Nor is it the case, as CEC alleges (Petition at 29), that utilities and governments have few funds to operate voluntary programs. The California Public Utilities Commission, for example, has just launched what it describes as a "Groundbreaking"

energy efficiency effort -- the most ambitious in the history of the utility industry in the U.S. -- by funding $2 billion in 2006-2008 for energy efficiency, including clothes washers. News Release from PUC, Docket #A.05-06-004: news@cpuc.ca.gov.

E. California Water Costs and Interests are Similar to Those in Other Regions.

The Petition also claims that California's water and sewer rates are so high as to justify a water standard apart from the rest of the nation. In fact, California is not at all unique. There are many areas in the country where water and sewer rates are higher than in California (see examples in Figure 2). Customers in several cities across the nation pay more for water and sewer than the citizens of California.

Water and Waster Costs Per Month for Example Cities – 1000 Cu. Ft.			
City	Water	Waste Water	Total
Seattle, WA	$28.95	$44.90	$73.85
Boston, MA	$29.39	$39.69	$69.08
San Diego, CA	$23.41	$39.26	$62.67
Portland, OR	$16.43	$43.24	$59.67
San Francisco, CA	$17.40	$39.42	$56.82
Richmond, VA	$20.84	$33.45	$54.29
Austin, TX	$15.69	$31.69	$47.38
Ft. Worth, TX	$19.50	$23.10	$42.60
Los Angeles, CA	$20.83	$20.11	$40.94

Notes: Source: Raftelis 2002 Water and Waste Water Rate Survey (except for Boston - MWRA)
Rates based on 1000 Cu. Ft./Mo. consumption in the summer
Figure 2: Representative Residential Water Rates

If California has a case based on these data for an exemption-from- preemption then so do other local and state governments, leading precisely to the proliferation of state standards and cumulative burden disfavored in the law. After all, in terms of population growth rate, Nevada is first, Arizona is second, and Texas is sixth. These are all arid states; California is not unique: "Conflicts over current and future allocations of surface water resources exist throughout the western United States. These conflicts typically involve historical patterns of use by irrigated agriculture on one hand and increasing (or increasingly recognized) needs for urban and environmental uses on the other hand. Many western cities- including Los Angeles, Denver and Las Vegas- are experiencing

rapid population growth that will increase pressure on water supplies that are both uncertain and limited." Water Use Conflicts in the West: Implications of Reforming the Bureau of Reclamation's Water Supply Policies, Congressional Budget Office, August 1997.

The following is a brief review of reports on water issues in states similar to California.

NEVADA: The ***L.A. Times*** reports that: "After nearly two decades of busily converting desert into sprawling metropolis in the fastest-growing region in the nation, southern Nevada finds itself beset by a four-year drought and straining against limits in the water that it can pump from nearby Lake Mead. Las Vegas is turning to rural counties to the north to quench a thirst that the nation's largest man-made reservoir can't sustain. Plans include drilling wells and building a $1-billion pipeline to tap rivers and groundwater from neighboring rural counties. … [S]ome at the head of the proposed pipeline worry that their high desert valleys and ranches will dry up if precious underground water is pumped to Las Vegas.

In 2003, Nevada led the nation in population growth for the 17th year, according to the state demographer. About 80% of new residents moved to Las Vegas or nearby. The Lake Mead reservoir behind Hoover Dam is at its lowest level in 35 years, at 1,140 feet above sea level and 65 feet below its high-water mark. It is still more than half full, with about 5 trillion gallons of water. **…** E]conomies of southern Nevada and the rest of the state depend on continued growth, as well as on gambling, tourism and mining **…** "If you're going to have a sustainable city there into the future, Las Vegas has got to get very serious about reducing waste." *http://www.latimes.com/news/nationworld/nation/la-adna-vegaswater7mar07,1,394780,print.story 7mar04*

TEXAS: A Texas A&M Professor reported: "Water fights are not new to Texas; since before the Lone Star State joined the Union, water rights have been bartered, litigated, fought over, bought and sold for years, and are as contentious today as they have ever been." "Hold The Salt: The Promise Of Desalination For Texas," was written by James Smith, Ph.D., a professor in the Department of Construction Science at Texas A&M University and published by the Texas Public Policy.

"Declining water resources, coupled with inexorable population growth, demand that the state find alternative solutions for its future water supply needs," writes Dr. Smith." Texas Public Policy Foundation (texaspolicy.com)

ARIZONA: The then Former Secretary of Interior reported: "Like much of the West … Arizona faces major natural resource challenges, including securing an adequate supply of water to meet its needs.

Between 1990 and 2000, Arizona experienced a 40 percent population growth rate, three times the national average. By 2025, the state is expected to have 6.4 million people, up from 4.2 million people in 1995.

This rapid growth has created uncertainty about future water supplies. **…** Two of the realities driving water supply problems in the West are explosive population growth and competing demands for finite supplies. Almost all of the Indian tribes in Arizona are facing water supply challenges, as are many of its rural communities. In almost every instance, there are significant endangered-species issues that must be addressed in concert with the water supply shortage. Major droughts, such as the one Arizona has been experiencing in recent years, intensify these problems, increasing the potential for conflict. Federal efforts to help Arizona meet its 20th-century water needs led to large-scale initiatives, such as the Salt River Project and the Central Arizona Project, which have played a vital role in the state's growth. **…** To its credit, Arizona is carrying out major water conservation programs throughout the state. Tucson has long had an active water conservation program, and in recent years the Phoenix area and other communities have greatly increased their awareness campaigns. Arizona water management entities have gone to great lengths to ensure their water storage and delivery systems are modernized, lining canals and automating pumping and canal controls to help conserve substantial amounts of water."

Guest Editorial -- Gale Norton, then Former Secretary of the Interior Department. Arizona Republic, July 7, 2003.

OREGON: An Oregon Department reported: "Water is an unusual resource. It has some characteristics of renewable resources like forests and some of non-renewable resources like minerals. But finding, using and managing water resources, especially groundwater resources in arid parts of Oregon, can be a frustrating task – witness the evolving difficulties in the Klamath Basin this past year. In fact, seventeen counties had drought declarations in 2001, causing serious economic, social, and environmental problems across the state. The problems with our water supply are not going to go away and how we find and use water has become one of the most critical questions to the future of our state." *Oregon Department of Geology and Minerals Industries, Winter/Spring 2002 issue of Cascadia (OregonGeology.com)*

COLORADO: The University of Colorado Reported: "In many locales in Colorado, growth causes increased competition for limited water supplies between the municipal, agricultural, and environmental sectors. Among Front Range municipal water providers,

the nature and intensity of this competition varies greatly from city to city due to different water rights portfolios and infrastructures. Many of the associated legal and policy issues involve trans-basin diversions, environmental protection, water quality management, and interstate obligations. Coping strategies generally focus on new development of surface and groundwater, reallocating supplies from agriculture to municipal use, and conservation and efficiency. Each type of solution, however, poses problems and concerns, as new management strategies must be reconciled with existing water use regimes." colorado.edu/law/centers/NRLC

In contrast, it recently has been reported that in California the "state has an abundance of water in the bank. Reservoirs at 100% capacity -- and snow melt will boost supply." *San Francisco Chronicle* March 18, 2006. The article states that: "If California suddenly went dry, and no rain or snow fell for two straight years, the state still would have enough water to go around thanks to this winter's wet winter, meteorologist and water experts said … ."

VI. IMPACT ON CALIFORNIA CONSUMERS IF THE CALIFORNIA STANDARD WAS IMPLEMENTED

A. Energy and Water Clothes Washer Technology Issues

In order to understand the implications of potential water factor standards on product availability, features, performance characteristics and costs, it is important to consider washer performance and design. In washers, cleaning takes place through the application, interaction and duration of three processes:

Chemical – detergent/water concentration
Mechanical – agitation/mixing
Thermal – wash and rinse water temperatures

All washers utilize these processes to clean clothes but to varying degrees based on their design. In addition, rinse performance (and the related ability to use liquid fabric softener) and dryer energy requirements are also functions of washer design.

Higher Modified Energy Factors (MEF) (higher means more efficient) are typically achieved by using less heated water and higher spin speeds (to reduce residual moisture content (RMC) and therefore minimize drying energy). Water Factor (WF) is the measure of water used per normal washing cycle. Low WFs (lower means more water conserving) are the result of changing designs to wash and rinse with less water. MEF and WF are related indirectly. Water temperature and spin speed significantly impact MEF but not WF. WF is dependent on the washer platform design and the

quantity of water required for washing and rinsing. MEF can be improved without affecting WF and vice versa. In prior testimony, efficiency and water advocates have faulted the industry because decreases in WF have not kept up with recent increases in MEF. However, these comments do not take into consideration the fundamental design differences and market shares of basic types of washers on the market. To project what is achievable both in energy and water savings, design configuration must be considered.

There are three basic design families of washers being sold in the U.S. today:

1. Top Load – Agitator (Conventional Deep Fill)
   - Lowest inherent cost
   - Rugged, reliable and most popular with consumers (80-85% national market share)
   - Good cleaning performance
   - Good rinse performance
   - Best able to use liquid fabric softener
   - Inherently lowest MEF
   - Inherently highest WF

2. Top Load – Reduced Fill (Low Water Level, High Efficiency Top Loader)
   - Inherently higher cost than Top Load – Agitator due to additional parts and controls
   - Operations and styling similar to traditional US washers
   - Good cleaning performance in most situations
   - Possible unsatisfactory rinse performance with very dirty loads
   - Low sales volumes to date as technology matures (<5% market share)
   - Achieves higher MEF's than can be obtained with Top Load – Agitator machines
   - Achieves lower WF's than can be obtained with Top Load – Agitator machines

3. Front Load
   - Inherently higher cost than Top Load – Agitator due to additional parts and controls; cost for base design could be similar to Top Load – Reduced Fill
   - Operations and styling different from traditional US washers, surveys and market data indicate design not preferred by the majority of consumers.
   - Cleaning and rinsing performance subject to soil load
   - More difficult for some models to use liquid fabric softener
   - Growing sales volumes (15-20% market share nationwide to date as a niche product)
   - Potential to achieve highest MEF's

Potential to achieve lowest WF's
Longer Cycle times

Figure 3 is a comprehensive plot of MEF and WF for models currently on the market together with the approximate market share by family. All products meet the current Federal Standard (1.04 MEF) and many already meet the upcoming 2007 level (1.26 MEF). The Energy Star program sets higher standards for efficiency, currently 1.42 MEF and increasing to a 1.72 MEF coupled with an 8.0 WF in 2007. The 2007 Energy Star level is not met by any current Top Load – Agitator machines.

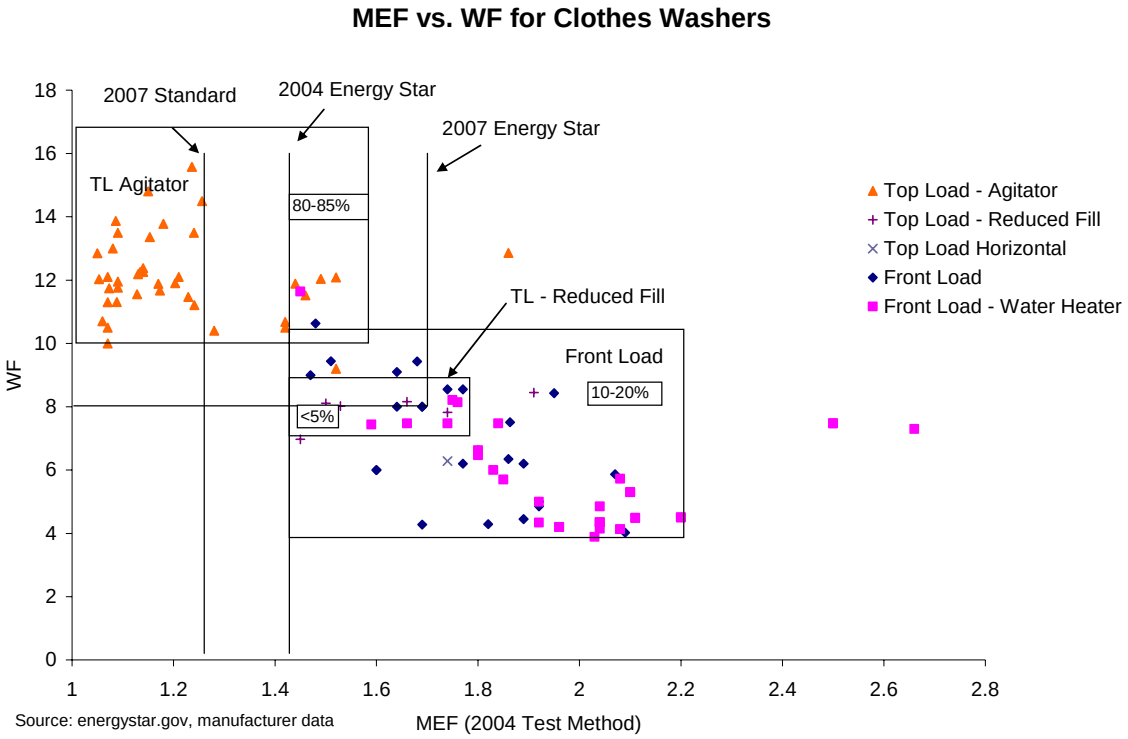


Figure 3: MEF vs. WF by Washer Family and Shipments

B. Washer Technology Platform Description

1. Top Load – Agitator (Conventional Deep Fill) Technology

The conventional deep fill top load-agitator, vertical axis configuration commands a dominant 80+% share of the national market. Mr. Topping's review, based on market studies performed by both manufacturers and DOE as well as on actual sales results in the marketplace, indicates that this technology platform is viewed by most consumers as providing the best balance of performance, price, efficiency and water use. Most U.S. consumers have shown clearly that they prefer the ability to load clothes from the top of the machine and during the wash cycle itself (in front loaders the door locks when the cycle starts.) Product developments have led to improved energy performance for this technology platform and have resulted in reduction in water consumption. Further product developments may lead to further improvements in MEF but are unlikely to yield water factor levels below approximately 10.

Conventional Top Load – Agitator washers achieve their performance through use of relatively large quantities of water in both the wash and the rinse processes. Manufacturers have improved the energy performance of Top Load – Agitator washers through a variety of relatively low cost approaches including:

- Reduced wash temperature, maintaining cleaning through mechanical and chemical action, with the mechanical action provided by the agitator and requiring water to float the clothes.
- Enhanced and adaptive controls to link water and energy requirements to load conditions
- Increased spin speeds to reduce residual water content and increase MEF through larger motors, more robust transmissions, door locks and similar hardware additions

It is very difficult to reduce the water consumption of traditional Top Load – Agitator machines below WFs of 10 while maintaining adequate wash and rinse performance in all applications. Several deep fills are necessary both for cleaning and for rinsing, especially of heavy soils. Mr. Topping's review of current and potential washer technology developments indicates that WF levels below 10 could lead to inadequate rinsing (see VI (D) below). The result would be unacceptable to those consumers who clean large, dirty loads, i.e., dingy clothes, poor fabric softening, soil remaining in tub, etc. Design options such as spray rinse systems use less water in the rinse cycle but they do not meet standards expected by most consumers for rinse performance. This latter technology may be acceptable in some niche applications but it is very unlikely to be acceptable to the vast majority of US consumers.

2. Top Load – Reduced Fill

This is an intermediate approach designed to provide many of the consumer features present in Top Load – Agitator machines while approaching the energy and water performance of Front Load washers. To date, this technology has had limited market acceptance for reasons both inherent in the technology itself and also due to specific product problems in early models. (In fact, Maytag discontinued its product offering of this type because of lack of consumer acceptance.) The Top Load – Reduced Fill technology platform achieves improved energy and water performance through several mechanisms:

- Use of some method other than deep fill and an agitator to achieve cleaning, substituting chemical and thermal cleaning for the mechanical action of an agitator. This results in lower water levels (and less energy to heat the water) in the cleaning cycle.

- Higher spin speeds to reduce residual moisture content in order to reduce dryer energy consumption and improve MEF with no effect on water usage

- Enhanced controls in order to match energy and water consumption more closely to load requirements

All of these techniques inherently add cost to the washer platform, so that the basic minimum cost of a Top Load – Reduced Fill washer will be closely equivalent to the minimum cost of a Front Load washer.

3. Front Load

Front Load, horizontal axis washers rely on chemical and thermal action to clean clothes in much lower quantities of wash water than are used in Top Load – Agitator machines. As a trade-off for the reduced wash water consumption, Front Load washers inherently are significantly more costly to build than conventional Top Load – Agitator washers. In addition, the front loading characteristic and other features (or absence of features) desired by US consumers has limited the acceptance of this platform in the US market.

Many consumers are dissatisfied with the front loader's lack of access to clothes during operation, the longer cycle times, difficulty in loading, space restrictions, and door location. Under the "safe harbor" these consumers cannot be deprived of these utilities and designs.

C. California Consumer Satisfaction Effects if Moderately Priced, Conventional Top-Load Machines Are No Longer Available

The Topping-Shorey analysis indicates that any mandate forcing consumers away from conventional top-load machines will be perceived with disfavor by consumers. The majority of consumers in the US continue to prefer key features provided by conventional, agitator top-load washers, particularly the low cost and large capacity associated with traditional top-load machines. Furthermore, any forced adoption of low water rinse approaches will lead to increased consumer dissatisfaction in some applications, consumer complaints and use of extra rinse cycles.

Recent consumer research and actual marketplace experience indicate that there are three segments of clothes washer buyers:

1. Traditional consumers who prefer the features associated with top-load agitator platforms, i.e. low price, large capacity, simplicity of operation and loading. This segment represents the majority of households (60%+ in most studies, which probably understates actual purchase behavior, since customers routinely express preferences for features they reject when faced with actual costs).

2. An emerging price/value segment that will pay a premium for additional features. Recent consumer research indicates that this segment is starting to value energy and/or water savings. The emergence of this segment accounts for the increasing share gained by front-load washers. Experience in Canada and with other major appliance categories is that this segment unlikely to exceed 40% of clothes washer purchasers.

3. High end, early adopter consumers who will buy the latest, most feature laden and, generally, most attractive appliances. This segment has not grown above 10% in any appliance category – including the more visible kitchen appliances. Sales of front-load washers with prices above $1,000 are concentrated in this segment.

The consumer research results from both publicly available and from manufacturer proprietary studies relating to this segmentation are consistent, particularly for all studies where consumers are exposed to actual, physical washers. There are four publicly available consumer research studies relating to consumer interest and acceptance of various clothes washers:

- The High Efficiency Laundry Metering and Marketing Analysis Project (THELMA)

- WashWise - *Coming Clean About Resource-Efficient Clothes Washers: An Initial WashWise Program and Market Progress Report - Final Report*
- Arthur D. Little Consumer Study for AHAM
- DOE Consumer Study for NAECA Clothes Washer Rule Making

In general, these studies use a combination of consumer focus groups and structured conjoint surveys to evaluate consumer preferences. In all of these studies, the single most important factor for consumers is the price of the clothes washer. Other factors of importance in consumer choice include capacity, load size options, energy and water savings, ease of loading and other performance-related issues. Where consumers are exposed to an actual, physical washer (the THELMA and ADL/AHAM studies), consumers evidenced increased concern about loading characteristics of front-load clothes washers. All of these studies reinforce the actual marketplace experience that most consumers strongly prefer the low price and associated features of Top Load – Agitator washers.

There is a segment of consumers who are willing to accept higher prices for the constellation of features associated with Front Load washers. But, to cavalierly dismiss the former (and larger) segment of consumers, as the CEC does, is to miss a critical portion of the marketplace and denies the majority of California consumers the combination of features and price that they desire.

D. <u>Consumer Preference/Utility and Rinsing Issues</u>

Mr. Topping was asked by AHAM to interview manufacturers, confidentially, and evaluate the consumer utility impacts of eliminating in California conventional top-loading machines.

As noted, any regulation that forces users away from conventional top-load washing machines will be disfavored by many consumers. A majority of households in the US (including California) continue to prefer the features provided by deep fill top-load washers, particularly the affordable price, good cleaning, cycle time flexibility and large capacity associated with these traditional machines. This is particularly true for low-income households and for senior citizens.

Furthermore, forced adoption of low water rinse approaches as currently used in the more expensive, non-agitator, high efficiency top-load washers will lead to consumer dissatisfaction in heavy duty cleaning applications because of perceived inadequate rinsing performance, potential health issues and consumer complaints in certain wash situations. Consumers may compensate by adding rinse cycles, eviscerating the water savings. Reducing the quantity of rinse water will also make it difficult for consumers to use liquid fabric softener (currently used by about half of all households).

The familiar deep fill, top-load agitator washer configuration commands a dominant 80+% share of the U.S. market and is still viewed by most consumers as providing the best balance of performance, price, efficiency and water use. Its overall cleaning function depends on filling the tub with water both when washing and rinsing. The water factor levels proposed in the California standard particularly the 6.0 WF, even if technically achievable, would lead to consumer unhappiness about rinsing in certain applications and be unacceptable to consumers who clean large, dirty loads. The result would too often be dingy clothes, poor fabric softening, soil remaining in the tub after use and potential health issues from inadequate removal of contaminants.

As noted, conventional top-load agitator washers are joined in the US market by two additional configurations that inherently have lower water consumption. The front-load washer performs quite well but is more complex and much more expensive. Market data shows that it appeals to a smaller customer base. The high efficiency top-load washer is a non-agitator hybrid, offering some of the more attractive features of both the other designs. But it is expensive to build and is a niche product, appealing to a very small segment of consumers. Rinsing large, dirty loads in these low water usage, top-load machines can be problematic.

Mr. Topping learned in his discussion with manufacturers that both consumer research and actual warranty/complaint experience show that consumers are extremely concerned with the perceived quality of clothes washing. Manufacturers regularly report that changes in wash or rinse characteristics, changes in sorting requirements, changes in detergent usage, and changes in water levels and wash temperatures all generate complaints. Furthermore, any decline in the perceived cleanliness of clothes has been shown to increase returns of newly purchased clothes washers. Consumers are very quick to react whenever the quality of the clothes washing experience or the actual cleanliness (broadly defined – rinsing, graying, stain removal, etc.) is seen to diminish. If new washers do not meet their expectations, it is clear they will use hotter water, reduce load size or even rewash their clothes, using more energy and water than before.

Conventional, top load deep-fill rinse practices make the clothes washing process more "forgiving" by using adequate water to remove detergent, bleeding dyes, soil , etc. from the clothes. Sufficient rinsing also aids in flushing bacteria, odors, etc. out of the wash tub at the end of the cycle. Moving away from deep-fill rinsing to other low water approaches in top load machines will make the laundry process more sensitive. Removal of "chunky", heavy soils in these designs (such as construction waste, diaper residue, heavy hair, sand, gravel, etc.) can be problematic. Also, consumers with sensitive skin will need to be very careful about soil and detergent carry-over. At a minimum, with low water factor, top load machines, consumers will need to sort laundry more carefully in order to prevent fading, dinginess, bleeding, or other color transfer. This will likely result

in an increase in the number of loads washed per year (with resulting decreases in water savings).

Manufacturers are also extremely concerned about the impact of low water use on residual bacteria, leading to potential health issues, especially for those customers with allergies, skin conditions or reduced resistance to disease. The lower limits for rinsing to prevent these complications have not been scientifically determined. Manufacturers are justifiably hesitant to further lower water usage to meet standards without adequate field testing and evaluation.

Therefore, any standard, regulation or other factor that effectively forces the majority of consumers, who are more than satisfied with their current washers, into other platforms or into washers with less effective rinse characteristics, will result in a significant loss of consumer welfare. As shown in both the consumer surveys and in the actual practice in the marketplace, this loss of performance and other desirable features is more important to consumers than any associated savings in operating costs or in direct environmental benefits. The result will be complaints by consumers to manufacturers, dealers and regulators, reductions in washer shipments as consumers hold on to and repair existing washers and decreased overall consumer satisfaction. The "safe harbor" provision of NAECA does not permit DOE to grant a waiver in the face of these effects.

This issue is of such great concern that AHAM is developing a rinsing effectiveness test procedure to measure and compare units and designs. In Australia, where large rebates are being offered for low water machines, there has been an influx of imported units that use low water during the normal test cycles in order to qualify for the rebate. In actual use, however, it appears that consumers are using extra rinse cycles to obtain adequate rinsing, thus defeating the purpose of the rebates. The extra rinse option is provided for consumers who suffer an allergic reaction to residual detergent, but it appears that the extra rinse option is being used by the general consumer.

E. Cost and Price Implications

The Topping-Shorey analysis indicates that clothes washers with water factors under 8.5 and/or 6.0 will cost significantly more than washers currently purchased by the vast majority of consumers. Reducing water consumption from current WFs for the predominant top-load agitator machines (current WFs range from 10 to 13 with the majority of shipments at the higher end) will require changing the rinsing approaches or migrating consumers from top-load machines to another platform, any one of which will have higher costs. Manufacturers are not in a position to absorb additional costs in the magnitude of the differences in the platform and maintain any significant return on investment, so increased platform costs are very likely to be passed on to consumers.

A WF of 8.5 will create a situation where the lowest priced washer will be approximately $500, versus $220 for the lowest cost machines today and $325 for a shipment weighted average machine, an increase of $280, or 127% over the lowest cost machine. A WF of 6 will result in even greater incremental prices, with a minimum price of approximately $600 after cost savings through high production, or an increase of $380.

Most manufacturers have a limited number of basic platforms and then achieve product differentiation by adding controls, cycles and other features that can command higher retail prices. From the standpoint of predicting marketplace responses to regulations, it is important to focus on the cost/price of these basic platforms:

1. Standard top-load agitator washers
2. Modified top-load agitator washers using lower water temperatures but retaining the current tub sizing and using deep-fill rinses (Energy Star top-load washers)
3. Modified top-load agitator washers with non-deep fill rinse systems (spray rinse, etc.)
4. Top-load, non-agitator washers
5. Standard front-load washers with conventional rinse performance
6. Front-load washers with modified rinse characteristics

To date, increases in the energy efficiency of washers (higher MEFs) have been accomplished within the core top-load platform through incremental improvement (see Figure 4). These modifications have been sufficient to meet the current Energy Star levels and have had some effect on water consumption. Energy Star washers, on average, have higher retail prices than non-Energy Star models. This is due to regulation-induced costs as well as differences in features. Further improvements in energy efficiency start to add significant costs, such as changing spin speeds to extract more water from the clothes, thus lowering the required dryer energy. None of these approaches changes the basic tub design (or size) nor do they change the rinse approach.

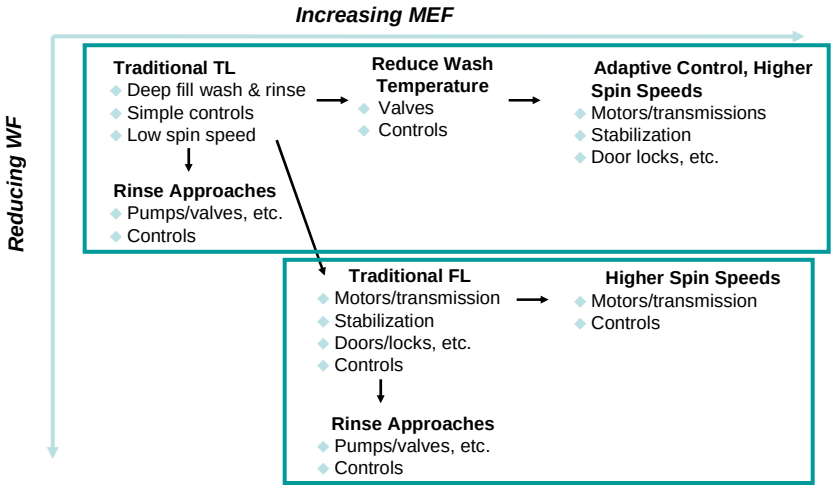


Figure 4: Design Approaches to Improve MEF and WF

Significantly decreasing the amount of water used by clothes washers requires either more expensive modifications to the top-load design or a shift in type to front-load or non-agitator top-load platforms. The most direct path to reduced water consumption in top-load washers entails modified rinse systems with additional pumps, spray mechanisms, controls and other items that add cost but also have rinsing performance implications. Further, as noted, such spray rinse machines cannot use fabric softener -- a requirement of 60% of all households.

The next step is to shift platforms, either to standard front-load washers or non-agitator top-load washers that have energy and water performance characteristics similar to front-loaders. Both of these platforms inherently have lower water consumption (and higher cost) than conventional top-load washers (for equivalent drum capacities). Again, further reducing water consumption within the front-load platform requires changes in the rinse approach with the corresponding addition of pumps and controls and their respective costs. In the context of comparing front-load versus top-load washers, it has traditionally been the case that front-load washers have smaller capacities than top-load washers. Care must be taken in any analysis of energy and water consumption to assure that comparisons are for similar amounts of laundry, not just cycles.

Mr. Shorey's analysis indicates that cost changes for platforms translate into changes in retail prices. While this relationship is not totally rigid, the low margin structure at both the manufacturer and the retail levels provide very little room for manufacturers to absorb cost increases without offsetting cost reductions or price increases. Some cost increases have, in fact, been masked by continuous efforts to value engineer products and to gain production efficiencies. However, these efforts by

manufacturers have often obscured the actual cost increases due to regulations. It is extremely unlikely that manufacturers will be able to offset the change in platform costs for new rinse systems for top-load agitator washers, let alone the costs for front-load washers. Manufacturers, in good faith, have made millions of dollars in investment in reliance on the DOE standard, much of which would be "stranded" if new water factors applied.

Reducing water factors will result in increased washer prices and reduced utility for consumers, either from increases in the price for top-load agitator washers or by forcing consumers to switch from top-load agitator washers to other platforms.

Base prices are the lowest retail price for washers with reasonable feature sets. Estimated Base prices for 2007-2010, as shown in Figure 5, reflect the effects of probable future design changes, value engineering and additional production scale. These future Base prices are speculative and there is no guarantee that they can be achieved; there are no models in pre-production that can be sold at those prices. However, the future Base prices represent reasonable estimates of the *minimum* price that could be achieved in the marketplace at current margin levels. (There often is commentary that high-end, innovative products carry higher manufacturer margins. While this may be true for limited periods of time, competition quickly reduces those margins. All analyses here are based on the expected retail prices after these competitive effects.)

Current top-load washers with WFs of 10+ have a Base price of $220 and volume-weighted average price of $325 (See Figure 5). All other washer platforms have considerably higher costs and retail prices. Reducing the WF of top-load agitator machines will increase prices to $500 in the short term, with some future reduction following additional product engineering. Converting to front-load platforms increases retail prices to $550, with only modest future reductions likely; first because the fundamental front-load platform is well understood from European designs and second, because competition in the US market will force increases in front-load washer capacities to levels closer to current top-load washers. Furthermore, the complexity and materials inherent in front loaders result in higher costs. Higher efficiency units have correspondingly higher prices. Also, the top-load non-agitator platform will remain high priced because it is an inherently high cost platform. The complexity of this design limits the likelihood of major cost reductions.

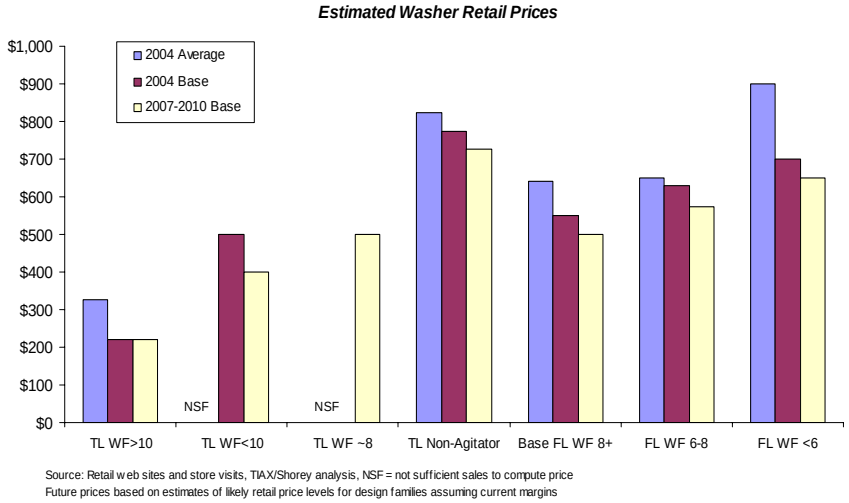


Figure 5: Estimated Washer Retail Prices

As discussed in the technology review, a standard with a WF of 8.5 or lower would eliminate all conventional Top Load – Agitator washers. This would have the effect of eliminating a variety of performance characteristics and features that consumers have consistently shown they desire. Most importantly, Topping and Shorey estimate that it would force the retail price of the least expensive full-size washer with adequate wash and rinse performance to $500, an increase of $280 from the current lowest cost machines with those performance features and approximately $200 over the average price of those washers. This cost impact does not include the cost of a companion dryer that most consumers consider important for matching purposes. Arguments that manufacturers will respond and reduce the cost (and price) back down to levels closer to current costs are based on theory, wishful thinking or incorrect and totally speculative analogies. The basic bill of materials needed to achieve low water usage at acceptable wash and rinse performance adds significant costs that can not be avoided through experience or productivity improvements.

CEC, in its petition makes references to various features in an attempt to say that no consumer benefit would be lost. They ignore the feature that consistently ranks as most important to consumers both in surveys and in the marketplace – *price*. A WF standard of either 6 or 8.5 would deprive the vast majority of consumers the single feature they value most. The CEC also blithely ignores the effects of such a standard on smaller households, low income families and other groups who have lesser operating savings or much lower ability to pay higher prices.

Beyond the effect on washer costs and prices, eliminating traditional Top Load – Agitator washers would deprive a majority of California consumers of their preference

for the combination of simplicity, ease of loading, low cost and reliability inherent in that design. Forcing consumers to purchase Front Load washers does more than just change door location; it changes how the machine is loaded, how it is used, the time for a wash cycle and other factors. For example, as demonstrated in the marketplace, many consumers purchasing Front Load washers have had to add the additional cost of a pedestal to raise the washer for convenient loading since the loading characteristics of Front Load washers are difficult for may consumers.

CEC cannot have it both ways. On the one hand, it says that market development measures are too slow and costly. It notes that the marketplace will not convert to low water factor (i.e. front load washers) on its own. By clear inference, this means that consumers prefer the package of price and features contained in current washers. On the other hand and despite all marketplace evidence to the contrary, CEC contends that consumers will have all the features they want from front load washers that meet its proposed standards. CEC tries to gloss over the data by contending that some form of top load washer will be available, but the burden of proof is on the CEC to demonstrate that this statement is true and it has advanced no evidence that top load technology of any sort can meet a WF of 6. On the contrary, all available engineering evidence shows that this will not be true.

At various times, analysts have attempted to model the cost/efficiency relationships in clothes washers using linear regression analysis techniques. This is a futile effort. The underlying assumptions in a linear regression analysis are (among others):

1. The variables (in this case price and efficiency) are essentially continuous, i.e. that it is meaningful to interpolate between data points along the regression line

2. There are a sufficient number of independent points to demonstrate reasonable statistical relationships

3. The reliability of the data is high relative to the differences between each data point

4. There is, in fact, some causal relationship between the variables (in this case price and efficiency)

Although there is some relationship between price and efficiency, none of the other three assumptions is correct. Most importantly, the data is not in any sense continuous. Costs for efficiency levels are very "lumpy", not incremental. Efficiency changes, especially for lower WFs tend to come in relatively large jumps. It is not meaningful to interpolate between the basic platforms. Secondly, there are a relatively small number of actual,

useful data points – only prices of basic models. It is neither relevant nor useful to measure or analyze price/efficiency relationships between feature sets for similar performance levels. This effect is most obvious in high-end front-load machines, where prices can vary by $1,000 for products with similar energy performance. Finally, while retail data is useful as an indicator of underlying costs, there is substantial variation in retail prices for the same basic platform depending on retailers, retail sales situations, inclusion of delivery/removal, etc. Creating a valid data base for statistical analysis is virtually futile. Attempts to circumvent these problems through non-linear models (logit, probit, etc.) essentially bring the analysis back to platforms and platform considerations. These statistical detours simply bring the analysis back around to an examination of the simple platforms above.

F. The California Standard Would Result in Much Higher Prices and a Reduction in Product Availability to California Consumers.

As discussed in the technology review above, a standard with a WF of 8.5 or lower would have the effect of eliminating all conventional Top Load – Agitator washers and would require that all washers be either Top Load – Reduced Fill or Front Load. If the standard remained confined to California, then it is possible that there is sufficient US capacity for these alternative platforms to meet California demand in the short term by largely eliminating shipments of those units to other states, for no net nationwide savings in either water or energy. There is not sufficient capacity to meet a WF standard of 6. Similarly, if other states also applied for waivers and also instituted WF standards of 8.5 or 6, then there would not be sufficient current capacity to meet demand, resulting in reduced availability of washers.

In practice, actual reduction in product availability in California may be mitigated because it is likely that some consumers will travel to other states to purchase (and have delivered) lower cost, traditional washers. So, some California consumers will be merely inconvenienced without any effect on energy or water consumption. Millions of others will be deprived of the product they have relied on for over 50 years.

G. The Analysis Used In The California Petition Is Inaccurate for Product Costs And Consumer Savings.

Mr. Shorey's analysis indicates that the CEC estimates of retail washer prices are totally inaccurate for base case washers and for the minimum prices that might be charged for washers that meet the CEC standards. In addition, the implications and total savings drawn from these per unit amounts are incorrect:

1. CEC has significantly overestimated the cost to a consumer of a base case washer. It uses a cost of $550. The actual retail price of the basic platform Top Load –

Agitator washer is $220 and the weighted average price is $325. (Note – CEC itself uses much higher incremental prices when it is debunking rebates. The lack of internal consistency is startling.) It also overestimates the price of a basic washer meeting an 8.5 WF standard, which will asymptotically approach $500. Even with these offsetting changes, the incremental cost to the consumer is $280, not the $66.44 claimed by CEC. Similarly, the asymptotic price for a base model meeting a WF of 6.0 will be $600, for an incremental cost to the consumer of $100 over an 8.5 WF washer and $380 over a current standard washer.

2. CEC does not consider the incremental effects of a 6.0 WF standard relative to an 8.5 level.

3. CEC does not consider the effects of changing consumer behavior through existing market mechanisms, crediting standards for all energy and water savings from the current situation. They take all of the gain as a benefit of regulation and tax the least able to pay consumers with regulation's cost.

4. CEC does not consider that many consumers do not pay directly for water usage so they will not get the economic benefit of water savings, a critical component of the CEC consumer benefit calculations. Over 700,000 households in California do not have water meters. In addition many residents of apartments do not have their own individual water meters. In both those situations, the CEC petition is left with annual consumer savings of $3.30 for the 8.5 standard and $4.59 for the 6.0, hardly enough to justify any significant increase in cost, let alone the real impact of hundreds of dollars.

The effects of these errors are on consumer payback:

1. The actual payback to a consumer for a WF standard of 8.5 is over 25 years ($280 incremental cost divided by $10.91 in annual water and energy savings).

2. The actual incremental payback to a consumer for a WF standard of 6.0 versus one of 8.5 is over 9 years ($100 incremental cost divided by the difference between $21.52 in operating savings for a 6.0 standard and $10.91 for an 8.5 standard).

3. The actual direct payback to a consumer for a WF standard of 6 is over 17 years.

No reasonable policy standard leads to a conclusion that consumers are benefited by paybacks of 25 or 17 years (longer than the expected life of the product even disregarding the time value of money).

Adjusting for probable changes in consumer behavior leading to increasing acceptance of low water factor washers, delays due to likely reduction in shipments as consumers postpone washer replacement and the incremental nature of the 6.0 standard leads to the likelihood that actual total water savings will be less than 50 million gallons from the combination of an 8.5 standard and a 6.0 one, not 66.7 million gallons. Figure 6. Similarly, the likely savings in electricity used by clothes washing will be 142 gWh, not the 227 gWh projected by CEC. Figure 7. Even CEC's projected savings are minimal in the total California context. The actual savings are certainly less than CEC estimate.

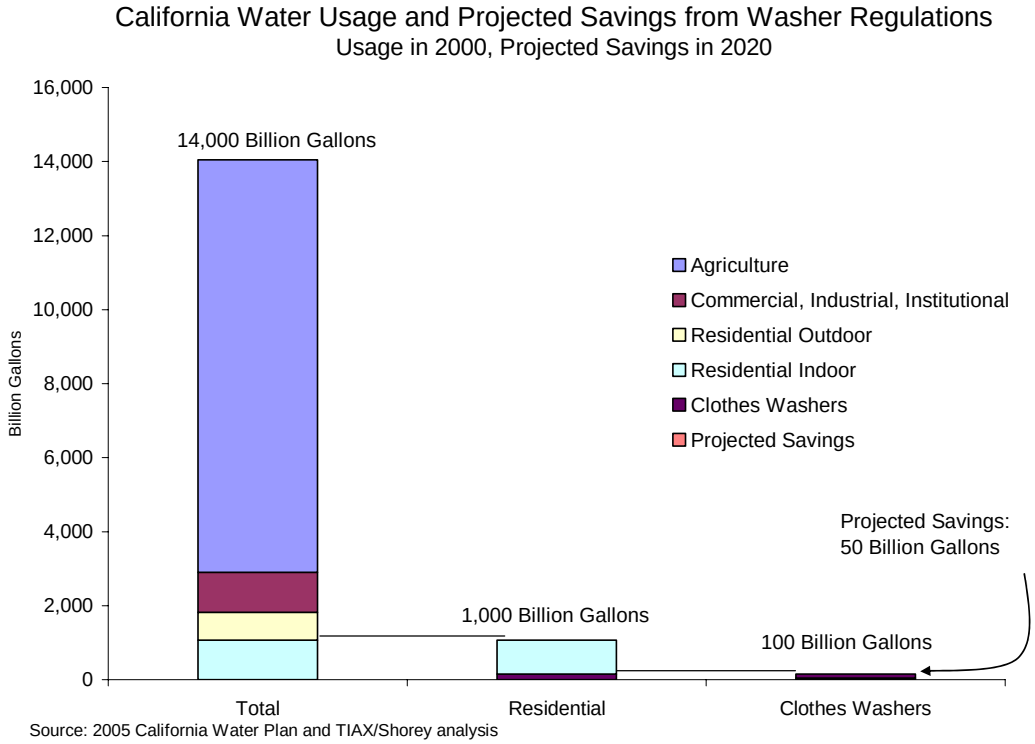


Figure 6: Corrected Estimated Water Savings

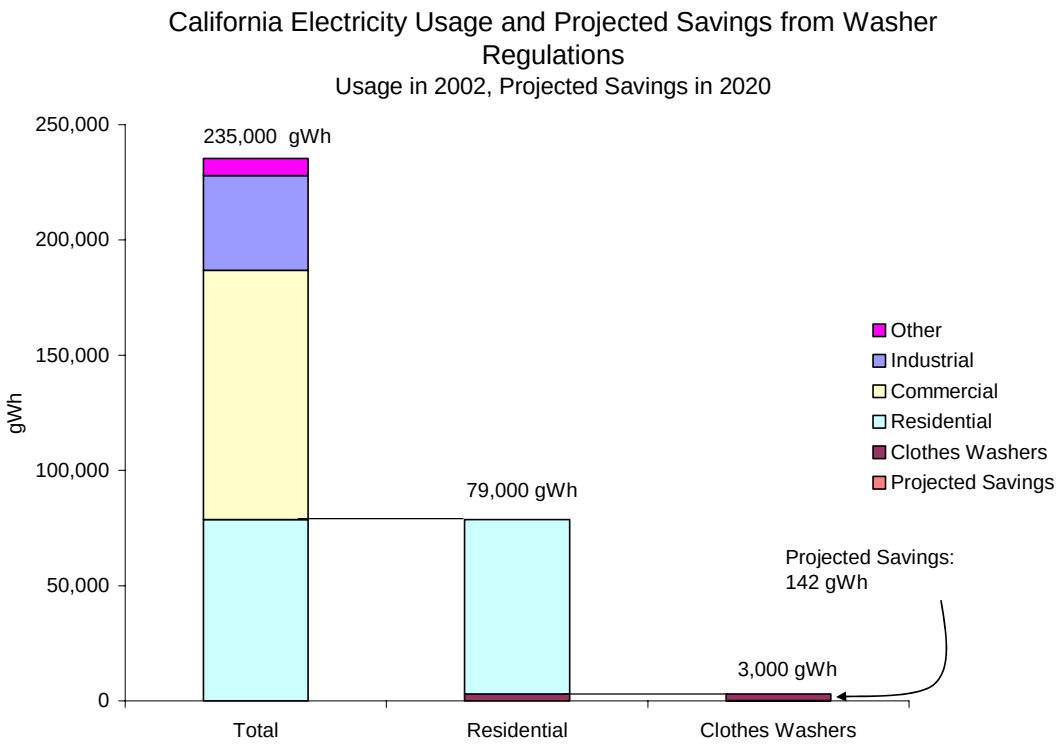


Figure 7: Corrected Estimated Energy Savings

It is interesting to note that the CEC only discusses energy savings in the context of consumer payback analysis or in tables that have survived unedited from earlier filings. Somehow the notion of energy savings as an important factor in the analysis (overstated as those savings are by CEC) has disappeared.

The total savings are infinitesimal in California and hardly create a compelling need that will have a measurable effect on either California's water or energy situation.

VII. EFFECT ON THE NATIONAL MARKET

Based on in-depth interviews with manufacturers, AHAM consultant Everett Shorey has concluded a maximum California water factor standard of 8.5 in 2007 and 6.0 in 2010 would have significant deleterious effects on washing machine manufacturers, their suppliers and employees. Complying with any state standard affects national production decisions; manufacturers would have great difficulty meeting the California standard, a potential plethora of different state standards and the federal standard.

NAECA was designed specifically to prevent such a situation from occurring. The economic effect on manufacturers would be negative due to the additional investment requirements for new capacity before normal capacity replacement cycles. These same pressures would be transmitted down to the industry's suppliers. Any major new capacity decisions also raise the possibility of shifts in manufacturing locations, possibly outside of the US, for either component assemblies or complete clothes washers. Further, cumulative regulatory burden has been shown to negatively impact the financial performance of appliance manufacturers as historically they have had to redesign most of their product lines to meet different NAECA standards. The prospect of several new state standards makes the potential future cumulative burden far more severe.

The need for adequate time to recover capital investments required to meet federal standards was carefully considered by DOE in the clothes washer and all rulemakings. It was well understood by all parties involved in the clothes washer negotiated rule that ample time is needed to recover investments to achieve the 2004 and 2007 federal standards. Any new requirement by California would have serious detrimental effects on manufacturers' investment requirements and investments already made and underway in good faith reliance on the federal standard as the benchmark for the foreseeable future.

A. Financial Effects on Manufacturers

A proposed California maximum water factor of 8.5 in 2007 and 6.0 in 2010 would have the following direct negative effects on manufacturers:

1. Require investment of $150 million in new manufacturing capacity to meet California requirements or diversion of most existing front load manufacturing capacity to California for no net national energy/water savings.

2. Require expenditures for engineering, product development, product introduction and marketing to support the introduction of new models for California consumers

3. Lead to a decline in clothes washer shipments in California as consumers choose to repair current, relatively inefficient washers rather than purchase new ones at much higher prices and less attractive feature sets than current top-load washers.

4. Increase costs for clothes washers with no clear evidence that manufacturers can pass through those costs or earn any additional margin to pay for the capacity investment.

Using the Government Regulatory Impact Model (GRIM) accepted for use in DOE NAECA analyses, an initial California maximum water factor standard of 8.5 in

2007 and 6.0 three years later would lead to a decline in clothes washer industry value of approximately $100 million, or about 16% of total industry value. This assumes that manufacturers can continue to earn the same percentage gross margin on the more expensive front load and non-agitator top load washers that would be sold in California, a very optimistic assumption. If manufacturers have lower margins, then the negative effect on value would be considerably greater. For example, if manufacturers maintain their current gross margin of $71.50 per unit, rather than their current 22% gross margin, the value of the clothes washer industry declines by $641 million, or 103%, i.e. the total industry value becomes negative. The difference between a constant percent gross margin and a constant dollar one amounts to about $8 dollars per unit at the manufacturers level or about $11 to the consumer. This projected difference in price between a basic top load washer and the minimum likely price for a washer that meets even an 8.5 standard is $280, far more than any possible differences that might be overcome through manufacturing efficiencies or other productivity gains.

As always, the highly competitive nature of the clothes washer industry indicates both the difficulty and the necessity of maintaining gross margins in order to avoid substantial negative industry financial impact. Small differences in the ability to recoup the necessary gross margins will have a devastating effect on the major appliance manufacturers. Recent price reductions for front load and non-agitator top load washers demonstrate again the highly competitive nature of the clothes washer industry.

The GRIM analysis is based on specific scenarios and also on certain initiating values for financial analyses. The scenarios are:

1. Base case – Clothes washer shipments grow at 3.3% annually, in line with trend for 1993-2003, national share of clothes washers shifts from 82% top-load agitator washers in 2004 to 75% in 2007; California mix shifts from 78% top-load agitator in 2004 to 69% in 2007 (Appendix 1).

2. California Only Standard Case – California sets a maximum WF standard of 8.5 in 2007 and 6.0 in 2010, shipments of washers decline in California by 10% from 2007 through 2009, by 20% in 2010 through 2012, recovering to 90% of Base Case levels in 2013 and 2014 and reaching base case levels in 2015. Top-load agitator washers disappear from California in 2007. Shipments to California decline as consumers retain and repair older washers rather than bear the significant added expense coupled with less desirable features of washers that meet the California standard (Appendix 2). (It is recognized that with the required minimum 3 year lead-in period the effective date used by CEC are impractical. But, they are used here to correspond to the CEC proffered analysis.)

3. Initiating values are as shown in Appendix 3.

The cash flows from the GRIM analysis are shown in Appendices 4 & 5a&b (5a assumes 22% gross margin, 5b assumes $71.50 per unit gross margin).

These scenarios and results assume that manufacturers create additional capacity to meet the California standards. It could be theoretically possible to meet a California WF standard of 8.5 by diverting virtually all current front-load shipments from the rest of the country to California. This would result in less financial impact on manufacturers. However, it would not create any national energy benefits, as it would simply reallocate current production, which is highly undesirable.

It also would require ignoring market demand for those products. Even under a reallocation approach, there is not sufficient current production of units with WFs below 6.0 to meet the second level proposed by California. Manufacturers would experience the anticipated negative financial effects from such a lowered water factor.

B. The California Standard Would Cause A Burden On Manufacturers To Redesign Their Residential Clothes Washers

Manufacturers have developed and will continue to develop clothes washer products that enhance both energy and water efficiency for the national market. Product development decisions involve many years and tens of millions of dollars in development costs, excluding the costs of tooling a plant. To the extent that a California standard requires separate product lines, it will create the need for additional investment. In the case of possible 8.5 WF standards and 6.0 standards, these proposals would either radically limit product choice in California or place huge burdens on manufacturers or both.

On a simplistic level, there may be capacity in product lines already on the market or coming on the market to supply California with more clothes washers that meet the proposed standards. However, these products have been designed for specialty customers and are not optimized for the vast majority of the market that wishes simple, reliable, low cost washers. The actual difference in price between products that will be on the market without redesign will be significantly higher than those projected in the discussion of effects on consumers. The already dismal payback to consumers will, in actuality, be much worse. There is no capacity nor any designs that will be available at anything near the asymptotic minimum platform price used in the consumer analysis.

Redesigning product lines will, in practice, force addition of new product lines on the industry. This will lead to the decline in industry value, as shown in the GRIM analysis of between $100 and $600 million dollars depending on the assumptions about ultimate product margins.

Other costs will increase throughout the distribution channel. Both manufacturers and retailers will incur costs to train sales representatives so that they can explain the new washers to customers who intended to purchase traditional top load agitator machines. Manufacturers and retailers will need to maintain customer service and help functions in order to answer consumer questions about how to operate a low-water use washer successfully. Past experience with innovative products with different cleaning properties indicates that manufacturers and retailers will also face significant consumer discontent and product returns. These will increase total costs throughout the distribution channel.

Such a redesign process also will likely lead to consequences on competition and jobs in the US.

C. Effects on Competition

At the current time, there are six manufacturers of consumer washing machines with manufacturing capacity in the US (Whirlpool, GE, Electrolux, Alliance, Fisher & Paykel, and Bosch) with the just closed purchase of Maytag by Whirlpool. The cost of generating and producing a new washer model, especially if it is focused only on California, may be unsupportable for some manufacturers and could result in further industry concentration.

The engineering, product development and product introduction costs plus capital conversion investments of introducing a new model will exceed $40-50 million for most manufacturers, regardless of actual production volume. Those manufacturers with relatively low market shares may not be able to support this investment for low water-factor washers even to meet a national market. In the case of a California-only regulation, Mr. Shorey's interviews indicate that several manufacturers would choose to sell in California only as long as current products meet the standard. Low volume manufacturers are likely to exit the California market instead of making additional investments in new products.

D. Sourcing Patterns and Effects on Jobs.

To date the majority of clothes washers sold in the US have been assembled in the US, typically with major parts manufactured in the same plants that assemble the washers. Total production employment for clothes washers (excluding dryers) is approximately 7500 full time equivalents.

There is consensus among washer manufacturers that this situation may not be sustainable, that the difference in labor and fringe benefit costs are now substantial enough that manufacturers must consider alternative sources for major parts and/or must

consider assembling clothes washers in lower cost locations. U.S. manufacturers may even decide to source and label a growing portion of their products from foreign manufacturers to reduce investment requirements. Should manufacturers choose to relocate production off-shore, this will result in the loss of manufacturing jobs in the US, particularly in Ohio, Iowa, Kentucky, Illinois and Arkansas.

Absent a major cause for reconsideration, major appliance manufacturers tend not to change manufacturing locations since the savings from lower cost labor and other items will not support the associated capital investment. However, whenever manufacturers face a significant capital investment, the balance of factors changes and the likelihood of relocation increases.

- Several manufacturers have designed, tooled and introduced into the market place high efficiency clothes washer platforms over the past few years that significantly exceed the current federal DOE energy standards. Over a billion dollars have been invested to meet these standards.

- As the federal energy standards have become more stringent, DOE has elevated Energy Star qualifying levels, and utility based programs have increased rebate efficiency tiers to levels that could soon exceed many of the highly efficient washer designs. Meeting the next round of Energy Star levels and utility rebate tiers (although voluntary) may require substantial investment in retooling and replacing recently production plant modifications to produce highly efficient washer designs.

- Any further regulations may force several U.S. manufacturers to source their next high efficiency design washers from outside the U.S. in order to remain competitive in the marketplace, minimize capital outlay, and respond to new federal efficiency standards and voluntary conservation programs.

- States like California requesting exemption from federal standards and imposing their own localized, very stringent energy and water standards, will likely result in manufacturers sourcing even larger numbers of high efficiency washers from outside the U.S.

- This could impact several thousand U.S. jobs. Production line, design, engineering as well as support and supplier jobs are all potentially affected by sourcing decisions.

- The transformation to high efficiency clothes washers needs to take into account R&D and manufacturing capabilities applied over a reasonable period of time to permit manufacturers to design and tool new, more efficient designs of their own.

Abrupt, stringent or inflexible mandates, particular in major markets like California, increase the likelihood of expedient decisions causing U.S. job losses as manufacturers are driven to low-cost solutions.

The trend of recent decisions is already moving towards greater use of non-US manufacturing. Several companies have plants in Mexico or other countries that serve the US market and some are creating alliances for design and manufacturing capacity. As the result of recent NAECA rulemakings for refrigerators and freezers, for example, U.S. plants have closed and production has shifted. Therefore, the probability is high that any regulation that necessitates new capacity decisions for washers will result in further loss of US manufacturing jobs. The recent refrigerator situation provides an example of the potential for washer regulations to impact sourcing decisions:

- All U.S. based manufacturers have designed, tooled and introduced into the marketplace high-efficiency refrigerators of all types (side-by-sides, bottom freezers, and top freezers) that meet or exceed the 2001 DOE Energy Standards. Over a billion dollars has been invested to meet these standards.

- The ramifications of energy standards can be felt several years after the effective date, and may be a significant contributing factor to outsourcing decisions based on costs incurred to remain competitive in a dynamic global market.

- U.S manufacturers have moved significant production to Mexico, and in some cases, the Far East.

- In addition, several manufacturers have been forced to source many purchased components and assemblies from outside of the U.S. to remain cost competitive (compressors, electronic controls, motors, etc.). Several domestic suppliers have closed their U.S.-based manufacturing facilities.

- It is estimated that over 5,000 U.S. jobs related to household refrigerators have already been lost due to relocation or outsourcing within the past 6 years.

- In addition, several manufacturers are considering additional relocation or outsourcing decisions in the near future.

Appendix 1 Base Case GRIM Shipments

Response of the Association of Home Appliance Manufacturers to the California Energy Commission Petition for Exemption from Federal Preemption of California's Water and Energy Conservation Standards for Residential Clothes Washers
Docket EE-RM-PET-100 [April 7, 2006]
April 7, 2006

Base Case	2007 Standards, No Change in EnergyStar														
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
California															
Top Load	623,054	645,738	620,302	592,448	612,226	632,664	653,784	675,610	698,164	721,471	745,555	770,444	796,164	822,743	850,208
Top Load EnergyStar	46,700	53,449	64,757	76,760	79,322	81,970	84,706	87,534	90,456	93,476	96,597	99,821	103,154	106,597	110,156
Top Load Non-Agitator	19,545	22,370	27,102	32,125	33,198	34,306	35,451	36,635	37,858	39,121	40,427	41,777	43,172	44,613	46,102
Front Load	76,630	87,706	106,261	125,956	130,161	134,506	138,996	143,637	148,432	153,387	158,507	163,799	169,267	174,917	180,757
Front Load Advanced	87,570	100,227	121,430	143,937	148,743	153,708	158,839	164,142	169,621	175,284	181,135	187,182	193,431	199,888	206,561
Total	853,498	909,490	939,852	971,227	1,003,649	1,037,154	1,071,778	1,107,557	1,144,531	1,182,739	1,222,222	1,263,024	1,305,187	1,348,759	1,393,784
Balance of Nation															
Top Load	5,631,872	5,805,037	5,601,412	5,377,722	5,557,247	5,742,765	5,934,477	6,132,588	6,337,313	6,548,872	6,767,494	6,993,414	7,226,876	7,468,131	7,717,441
Top Load EnergyStar	321,434	462,613	646,296	841,728	869,828	898,865	928,872	959,881	991,925	1,025,038	1,059,257	1,094,618	1,131,160	1,168,922	1,207,944
Top Load non-Agitator	134,526	235,661	328,425	427,119	441,377	456,112	471,338	487,073	503,333	520,136	537,499	555,443	573,985	593,147	612,948
Front Load	527,447	600,376	782,556	976,229	1,008,819	1,042,496	1,077,298	1,113,261	1,150,426	1,188,830	1,228,517	1,269,529	1,311,910	1,355,705	1,400,963
Front Load Advanced	602,744	587,856	589,623	590,853	610,577	630,960	652,024	673,790	696,283	719,528	743,548	768,370	794,020	820,527	847,919
Total	7,218,023	7,691,544	7,948,311	8,213,651	8,487,848	8,771,199	9,064,009	9,366,593	9,679,279	10,002,404	10,336,315	10,681,373	11,037,951	11,406,432	11,787,214
National															
Top Load	6,254,926	6,450,775	6,221,714	5,970,170	6,169,473	6,375,429	6,588,261	6,808,198	7,035,476	7,270,343	7,513,049	7,763,858	8,023,040	8,290,874	8,567,649
Top Load EnergyStar	368,134	516,062	711,053	918,488	949,150	980,835	1,013,579	1,047,415	1,082,381	1,118,514	1,155,854	1,194,440	1,234,314	1,275,519	1,318,100
Top Load non-Agitator	154,070	258,031	355,527	459,244	474,575	490,418	506,789	523,708	541,190	559,257	577,927	597,220	617,157	637,760	659,050
Front Load	604,078	688,083	888,816	1,102,185	1,138,980	1,177,002	1,216,294	1,256,898	1,298,857	1,342,217	1,387,024	1,433,328	1,481,177	1,530,623	1,581,720
Front Load Advanced	690,314	688,083	711,053	734,790	759,320	784,668	810,863	837,932	865,905	894,811	924,683	955,552	987,451	1,020,415	1,054,480
Total	8,071,522	8,601,034	8,888,163	9,184,877	9,491,497	9,808,353	10,135,786	10,474,150	10,823,810	11,185,142	11,558,537	11,944,397	12,343,138	12,755,191	13,180,999
California															
Top Load	73%	71%	66%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%
Top Load EnergyStar	5%	6%	7%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Top Load Non-Agitator	2%	2%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Front Load	9%	10%	11%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
Front Load Advanced	10%	11%	13%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Percent of National	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Balance of Nation															
Top Load	78%	75%	70%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
Top Load EnergyStar	4%	6%	8%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Top Load non-Agitator	2%	3%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Front Load	7%	8%	10%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Front Load Advanced	8%	8%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Percent of National	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%
National															
Top Load	77%	75%	70%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
Top Load EnergyStar	5%	6%	8%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Top Load non-Agitator	2%	3%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Front Load	7%	8%	10%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Front Load Advanced	9%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Appendix 2 California Only Standard Shipments

California Only Standard	California 8.5/6.0 Standard														
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
California															
Top Load	623,054	645,738	620,302	0	0	0	0	0	0	0	0	0	0	0	0
Top Load EnergyStar	46,700	53,449	64,757	0	0	0	0	0	0	0	0	0	0	0	0
Top Load Non-Agitator	19,545	22,370	27,102	87,410	90,328	93,344	0	0	0	0	0	0	0	0	0
Front Load	76,630	87,706	106,261	611,873	632,299	653,407	600,195	620,232	640,937	745,125	770,000	884,117	913,631	944,131	975,649
Front Load Advanced	87,570	100,227	121,430	174,821	180,657	186,688	257,227	265,814	274,687	319,339	330,000	378,907	391,556	404,628	418,135
Total	853,498	909,490	939,852	874,104	903,284	933,439	857,422	886,046	915,624	1,064,465	1,100,000	1,263,024	1,305,187	1,348,759	1,393,784
Balance of Nation															
Top Load	5,631,872	5,805,037	5,601,412	5,377,722	5,557,247	5,742,765	5,934,477	6,132,588	6,337,313	6,548,872	6,767,494	6,993,414	7,226,876	7,468,131	7,717,441
Top Load EnergyStar	321,434	462,613	646,296	841,728	869,828	898,865	928,872	959,881	991,925	1,025,038	1,059,257	1,094,618	1,131,160	1,168,922	1,207,944
Top Load non-Agitator	134,526	235,661	328,425	427,119	441,377	456,112	471,338	487,073	503,333	520,136	537,499	555,443	573,985	593,147	612,948
Front Load	527,447	600,376	782,556	976,229	1,008,819	1,042,496	1,077,298	1,113,261	1,150,426	1,188,830	1,228,517	1,269,529	1,311,910	1,355,705	1,400,963
Front Load Advanced	602,744	587,856	589,623	590,853	610,577	630,960	652,024	673,790	696,283	719,528	743,548	768,370	794,020	820,527	847,919
Total	7,218,023	7,691,544	7,948,311	8,213,651	8,487,848	8,771,199	9,064,009	9,366,593	9,679,279	10,002,404	10,336,315	10,681,373	11,037,951	11,406,432	11,787,214
National															
Top Load	6,254,926	6,450,775	6,221,714	5,377,722	5,557,247	5,742,765	5,934,477	6,132,588	6,337,313	6,548,872	6,767,494	6,993,414	7,226,876	7,468,131	7,717,441
Top Load EnergyStar	368,134	516,062	711,053	841,728	869,828	898,865	928,872	959,881	991,925	1,025,038	1,059,257	1,094,618	1,131,160	1,168,922	1,207,944
Top Load non-Agitator	154,070	258,031	355,527	514,529	531,706	549,456	471,338	487,073	503,333	520,136	537,499	555,443	573,985	593,147	612,948
Front Load	604,078	688,083	888,816	1,588,102	1,641,118	1,695,903	1,677,493	1,733,493	1,791,363	1,933,956	1,998,517	2,153,646	2,225,541	2,299,836	2,376,612
Front Load Advanced	690,314	688,083	711,053	765,674	791,234	817,648	909,250	939,604	970,971	1,038,867	1,073,548	1,147,277	1,185,576	1,225,155	1,266,054
Total	8,071,522	8,601,034	8,888,163	9,087,755	9,391,132	9,704,637	9,921,431	10,252,639	10,594,904	11,066,869	11,436,315	11,944,397	12,343,138	12,755,191	13,180,999
California															
Top Load	73%	71%	66%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Top Load EnergyStar	5%	6%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Top Load Non-Agitator	2%	2%	3%	10%	10%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Front Load	9%	10%	11%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
Front Load Advanced	10%	11%	13%	20%	20%	20%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Percent of National	11%	11%	11%	10%	10%	10%	9%	9%	9%	10%	10%	11%	11%	11%	11%
Balance of Nation															
Top Load	78%	75%	70%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
Top Load EnergyStar	4%	6%	8%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Top Load non-Agitator	2%	3%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Front Load	7%	8%	10%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Front Load Advanced	8%	8%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Percent of National	89%	89%	89%	90%	90%	90%	91%	91%	91%	90%	90%	89%	89%	89%	89%
National															
Top Load	77%	75%	70%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
Top Load EnergyStar	5%	6%	8%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Top Load non-Agitator	2%	3%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Front Load	7%	8%	10%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Front Load Advanced	9%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Appendix 3 GRIM Initiating Values

Basic Initiating Values for GRIM			
			Source
Retail Gross Margin		24.0%	Retailer financial reports, manufacturer interviews
Cost of Goods Sold			
	Top Load	78.0%	Manufacturer interviews
	Top Load Energy Star	78.0%	Manufacturer interviews
	Top Load Non-Agitator	78.0%	Manufacturer interviews
	Front Load	78.0%	Manufacturer interviews
	Front Load Advanced	78.0%	Manufacturer interviews
Selling, General and Administrative Costs (SG&A)			
	Standard SG&A	16.0%	Manufacturer interviews
	R&D	2.0%	Manufacturer interviews
Income Taxes		43.0%	2000 Washer rulemaking TSD
Cash Flow Items			
	Depreciation	2.0%	
	Change in Working Capital	10.5%	2000 Washer rulemaking TSD
	Ordinary Capital Expenditures	2.5%	Manufacturer interviews
	Asset Life	15	Manufacturer interviews
Cost of Capital		6.65%	2000 Washer rulemaking TSD
Conversion Costs			
	Product (Million) per Company	$15	Manufacturer interviews
Capital Costs			
	Line (Million)	$50	Manufacturer interviews
	Unit	$50	Manufacturer interviews
	Line Capacity (thousand units)	500	Manufacturer interviews
Companies Remaining			
	2007 California Standard	4	TIAX/Shorey estimate
	2010 California Standard	3	TIAX/Shorey estimate

Response of the Association of Home Appliance Manufacturers to the California Energy Commission Petition for Exemption from Federal Preemption of California's Water and Energy Conservation Standards for Residential Clothes Washers
Docket EE-RM-PET-100 [April 7, 2006]
April 7, 2006

Appendix 4 Base Case GRIM Cash Flows

Base Case		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Shipments (000)															
Top Load		6,255	6,451	6,222	5,970	6,169	6,375	6,588	6,808	7,035	7,270	7,513	7,764	8,023	8,291
Top Load EnergStar		368	516	711	918	949	981	1,014	1,047	1,082	1,119	1,156	1,194	1,234	1,276
Top Load Non-Agitator		154	258	356	459	475	490	507	524	541	559	578	597	617	638
Front Load		604	688	889	1,102	1,139	1,177	1,216	1,257	1,299	1,342	1,387	1,433	1,481	1,531
Front Load Advanced		690	688	711	735	759	785	811	838	866	895	925	956	987	1,020
Total		8,072	8,601	8,888	9,185	9,491	9,808	10,136	10,474	10,824	11,185	11,559	11,944	12,343	12,755
Retail Price															
Top Load		325	325	325	350	350	350	350	350	350	350	350	350	350	350
Top Load EnergStar		400	400	425	450	450	450	450	450	450	450	450	450	450	450
Top Load Non-Agitator		825	820	815	800	800	800	800	800	800	800	800	800	800	800
Front Load		750	700	650	600	600	600	600	600	600	600	600	600	600	600
Front Load Advanced		1,000	900	850	800	800	800	800	800	800	800	800	800	800	800
Weighted Average		428	420	427	449	449	449	449	449	449	449	449	449	449	449
Manufacturer Revenue ($MM)															
Top Load		1,545	1,593	1,537	1,588	1,641	1,696	1,752	1,811	1,871	1,934	1,998	2,065	2,134	2,205
Top Load EnergStar		112	157	230	314	325	335	347	358	370	383	395	408	422	436
Top Load Non-Agitator		97	161	220	279	289	298	308	318	329	340	351	363	375	388
Front Load		344	366	439	503	519	537	555	573	592	612	632	654	675	698
Front Load Advanced		525	471	459	447	462	477	493	509	526	544	562	581	600	620
Total		2,622	2,748	2,885	3,131	3,235	3,343	3,455	3,570	3,689	3,813	3,940	4,071	4,207	4,348
COGS															
Top Load	78%	1,205	1,243	1,199	1,239	1,280	1,323	1,367	1,413	1,460	1,508	1,559	1,611	1,665	1,720
Top Load EnergStar	78%	87	122	179	245	253	262	270	279	289	298	308	319	329	340
Top Load Non-Agitator	78%	75	125	172	218	225	233	240	248	257	265	274	283	293	302
Front Load	78%	269	286	342	392	405	419	433	447	462	477	493	510	527	544
Front Load Advanced	78%	409	367	358	348	360	372	385	397	411	424	439	453	468	484
Total		2,046	2,143	2,250	2,442	2,524	2,608	2,695	2,785	2,878	2,974	3,073	3,176	3,282	3,391
Gross Margin															
Top Load		340	351	338	349	361	373	386	398	412	425	440	454	470	485
Top Load EnergStar		25	35	51	69	71	74	76	79	81	84	87	90	93	96
Top Load Non-Agitator		21	35	48	61	63	66	68	70	72	75	77	80	83	85
Front Load		76	81	97	111	114	118	122	126	130	135	139	144	149	154
Front Load Advanced		115	104	101	98	102	105	108	112	116	120	124	128	132	136
Total		577	605	635	689	712	736	760	785	812	839	867	896	926	957
SG&A															
Standard SG&A	16%	420	440	462	501	518	535	553	571	590	610	630	651	673	696
R&D	2%	52	55	58	63	65	67	69	71	74	76	79	81	84	87
Product Conversion Expenses															
Total		472	495	519	564	582	602	622	643	664	686	709	733	757	783
Profit Before Taxes & Finanicng		105	110	115	125	129	134	138	143	148	153	158	163	168	174
Taxes	43%	45	47	50	54	56	58	59	61	63	66	68	70	72	75
Net Income Before Financing		60	63	66	71	74	76	79	81	84	87	90	93	96	99
Cash Flow															
Operations															
Net Income		60	63	66	71	74	76	79	81	84	87	90	93	96	99
Depreciation	2%	52	43	45	49	50	52	54	56	58	59	61	64	66	68
New Depreciation															
Change in Working Capital	11%		(10)	(11)	(20)	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(11)	(11)	(12)
Cash Flows from Operations		112	95	100	100	116	120	124	128	132	136	141	146	150	155
Capital Expenditures															
Ordinary Capital Expenditures	3%	(66)	(69)	(72)	(78)	(81)	(84)	(86)	(89)	(92)	(95)	(98)	(102)	(105)	(109)
Conversion Capital Expenditures															
Cash Used In Investment		(66)	(69)	(72)	(78)	(81)	(84)	(86)	(89)	(92)	(95)	(98)	(102)	(105)	(109)
Net Cash Flow		47	27	27	22	35	36	37	38	40	41	42	44	45	47
NPV	7%	$623.28													

Appendix 5a California Standards Case GRIM Cash Flows – 22% Gross Margin

CA Only Standard - 2 Levels, One for 2007, One for 2010

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Shipments (000)															
Top Load		6,255	6,451	6,222	5,378	5,557	5,743	5,934	6,133	6,337	6,549	6,767	6,993	7,227	7,468
Top Load EnergStar		368	516	711	842	870	899	929	960	992	1,025	1,059	1,095	1,131	1,169
Top Load Non-Agitator		154	258	356	515	532	549	471	487	503	520	537	555	574	593
Front Load		604	688	889	1,588	1,641	1,696	1,677	1,733	1,791	1,934	1,999	2,154	2,226	2,300
Front Load Advanced		690	688	711	766	791	818	909	940	971	1,039	1,074	1,147	1,186	1,225
Total		8,072	8,601	8,888	9,088	9,391	9,705	9,921	10,253	10,595	11,067	11,436	11,944	12,343	12,755
Retail Price															
Top Load		325	325	325	350	350	350	350	350	350	350	350	350	350	350
Top Load EnergStar		400	400	425	450	450	450	450	450	450	450	450	450	450	450
Top Load Non-Agitator		825	820	815	800	800	800	800	800	800	800	800	800	800	800
Front Load		750	700	650	600	600	600	600	600	600	600	600	600	600	600
Front Load Advanced		1,000	900	850	800	800	800	800	800	800	800	800	800	800	800
Weighted Average		428	420	427	466	466	466	464	464	464	466	466	468	468	468
Manufacturer Revenue ($MM)															
Top Load		1,545	1,593	1,537	1,430	1,478	1,528	1,579	1,631	1,686	1,742	1,800	1,860	1,922	1,987
Top Load EnergStar		112	157	230	288	297	307	318	328	339	351	362	374	387	400
Top Load Non-Agitator		97	161	220	313	323	334	287	296	306	316	327	338	349	361
Front Load		344	366	439	724	748	773	765	790	817	882	911	982	1,015	1,049
Front Load Advanced		525	471	459	466	481	497	553	571	590	632	653	698	721	745
Total		2,622	2,748	2,885	3,221	3,328	3,440	3,501	3,617	3,738	3,922	4,053	4,252	4,394	4,541
COGS															
Top Load	78%	1,205	1,243	1,199	1,116	1,153	1,192	1,231	1,272	1,315	1,359	1,404	1,451	1,499	1,549
Top Load EnergStar	78%	87	122	179	225	232	240	248	256	265	273	283	292	302	312
Top Load Non-Agitator	78%	75	125	172	244	252	261	224	231	239	247	255	263	272	281
Front Load	78%	269	286	342	565	584	603	597	617	637	688	711	766	792	818
Front Load Advanced	78%	409	367	358	363	375	388	431	446	460	493	509	544	562	581
New Depreciation		0	3	5	7	8	10	10	10	10	10	10	10	10	10
Total		2,046	2,146	2,255	2,519	2,604	2,693	2,740	2,832	2,926	3,069	3,172	3,327	3,437	3,552
Gross Margin															
Top Load		340	351	338	315	325	336	347	359	371	383	396	409	423	437
Top Load EnergStar		25	35	51	63	65	68	70	72	75	77	80	82	85	88
Top Load Non-Agitator		21	35	48	69	71	73	63	65	67	70	72	74	77	79
Front Load		76	81	97	159	165	170	168	174	180	194	200	216	223	231
Front Load Advanced		115	104	101	102	106	109	122	126	130	139	144	153	159	164
New Depreciation		0	(3)	(5)	(7)	(8)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
Total		577	602	630	702	724	747	760	786	812	853	882	925	957	989
SG&A															
Standard SG&A	16%	420	440	462	515	533	550	560	579	598	628	649	680	703	726
R&D	2%	52	55	58	64	67	69	70	72	75	78	81	85	88	91
Product Conversion Expenses		20	20	20	15	15	15								
Total		492	515	539	595	614	634	630	651	673	706	730	765	791	817
Profit Before Taxes & Finanicng		85	87	90	107	110	113	130	135	140	147	152	160	166	172
Taxes	43%	37	38	39	46	47	48	56	58	60	63	65	69	71	74
Net Income Before Financing		48	50	52	61	63	64	74	77	80	84	87	91	94	98
Cash Flow															
Operations															
Net Income		48	50	52	61	63	64	74	77	80	84	87	91	94	98
Depreciation	2%	52	43	45	50	52	54	55	57	59	61	63	67	69	71
New Depreciation			3	5	7	8	10	10	10	10	10	10	10	10	10
Change in Working Capital	11%		(11)	(12)	(28)	(9)	(9)	(5)	(10)	(10)	(15)	(11)	(16)	(12)	(12)
Cash Flows from Operations		101	85	90	90	114	119	134	134	138	140	149	152	162	167
Capital Expenditures															
Ordinary Capital Expenditures	3%	(66)	(69)	(72)	(81)	(83)	(86)	(88)	(90)	(93)	(98)	(101)	(106)	(110)	(114)
Conversion Capital Expenditures			(38)	(38)	(25)	(25)	(25)								
Cash Used In Investment		(66)	(106)	(110)	(106)	(108)	(111)	(88)	(90)	(93)	(98)	(101)	(106)	(110)	(114)
Net Cash Flow		35	(21)	(19)	(15)	6	8	46	43	45	42	48	45	52	53
NPV	7%	$523.42													
Delta		($99.86)													
Percent of Base Case Value		-16%													

Appendix 5b California Standards Case GRIM Cash Flows – $71.50 per unit Gross Margin

CA Only Standard - 2 Levels, One for 2007, One for 2010

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Shipments (000)															
Top Load		6,255	6,451	6,222	5,378	5,557	5,743	5,934	6,133	6,337	6,549	6,767	6,993	7,227	7,468
Top Load EnergyStar		368	516	711	842	870	899	929	960	992	1,025	1,059	1,095	1,131	1,169
Top Load Non-Agitator		154	258	356	515	532	549	471	487	503	520	537	555	574	593
Front Load		604	688	889	1,588	1,641	1,696	1,677	1,733	1,791	1,934	1,999	2,154	2,226	2,300
Front Load Advanced		690	688	711	766	791	818	909	940	971	1,039	1,074	1,147	1,186	1,225
Total		8,072	8,601	8,888	9,088	9,391	9,705	9,921	10,253	10,595	11,067	11,436	11,944	12,343	12,755
Retail Price															
Top Load		325	325	325	350	350	350	350	350	350	350	350	350	350	350
Top Load EnergyStar		400	400	425	450	450	450	450	450	450	450	450	450	450	450
Top Load Non-Agitator		825	820	815	800	800	800	800	800	800	800	800	800	800	800
Front Load		750	700	650	600	600	600	600	600	600	600	600	600	600	600
Front Load Advanced		1,000	900	850	800	800	800	800	800	800	800	800	800	800	800
Weighted Average		428	420	427	466	466	466	464	464	464	466	466	468	468	468
Manufacturer Revenue ($MM)															
Top Load		1,545	1,593	1,537	1,430	1,478	1,528	1,579	1,631	1,686	1,742	1,800	1,860	1,922	1,987
Top Load EnergyStar		112	157	230	288	297	307	318	328	339	351	362	374	387	400
Top Load Non-Agitator		97	161	220	313	323	334	287	296	306	316	327	338	349	361
Front Load		344	366	439	724	748	773	765	790	817	882	911	982	1,015	1,049
Front Load Advanced		525	471	459	466	481	497	553	571	590	632	653	698	721	745
Total		2,622	2,748	2,885	3,221	3,328	3,440	3,501	3,617	3,738	3,922	4,053	4,252	4,394	4,541
COGS															
Top Load	71%	1,098	1,132	1,092	1,046	1,081	1,117	1,154	1,193	1,233	1,274	1,316	1,360	1,406	1,453
Top Load EnergyStar	76%	86	120	179	228	235	243	251	260	268	277	287	296	306	316
Top Load Non-Agitator	89%	86	142	195	276	285	295	253	261	270	279	288	298	308	318
Front Load	87%	301	317	376	611	631	652	645	667	689	744	768	828	856	884
Front Load Advanced	91%	475	421	408	411	424	439	488	504	521	557	576	616	636	657
New Depreciation		0	3	5	7	8	10	10	10	10	10	10	10	10	10
Total		2,045	2,135	2,255	2,578	2,665	2,756	2,801	2,894	2,991	3,141	3,246	3,408	3,521	3,639
Gross Margin															
Top Load	71.50	447	461	445	385	397	411	424	438	453	468	484	500	517	534
Top Load EnergyStar	71.50	26	37	51	60	62	64	66	69	71	73	76	78	81	84
Top Load Non-Agitator	71.50	11	18	25	37	38	39	34	35	36	37	38	40	41	42
Front Load	71.50	43	49	64	114	117	121	120	124	128	138	143	154	159	164
Front Load Advanced	71.50	49	49	51	55	57	58	65	67	69	74	77	82	85	88
New Depreciation		0	(3)	(5)	(7)	(8)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
Total		577	612	631	643	663	684	699	723	748	781	808	844	873	902
SG&A															
Standard SG&A	16%	420	440	462	515	533	550	560	579	598	628	649	680	703	726
R&D	2%	52	55	58	64	67	69	70	72	75	78	81	85	88	91
Product Conversion Expenses		20	20	20	15	15	15								
Total		492	515	539	595	614	634	630	651	673	706	730	765	791	817
Profit Before Taxes & Financing		85	98	91	48	49	50	69	72	75	75	78	79	82	85
Taxes	43%	37	42	39	21	21	21	30	31	32	32	34	34	35	36
Net Income Before Financing		48	56	52	28	28	28	39	41	43	43	45	45	47	48
Cash Flow															
Operations															
Net Income		48	56	52	28	28	28	39	41	43	43	45	45	47	48
Depreciation	2%	52	43	45	52	53	55	56	58	60	63	65	68	70	73
New Depreciation			3	5	7	8	10	10	10	10	10	10	10	10	10
Change in Working Capital	11%		(9)	(13)	(34)	(9)	(9)	(5)	(10)	(10)	(16)	(11)	(17)	(12)	(12)
Cash Flows from Operations		101	92	90	52	80	84	101	99	102	100	108	106	115	119
Capital Expenditures															
Ordinary Capital Expenditures	3%	(66)	(69)	(72)	(81)	(83)	(86)	(88)	(90)	(93)	(98)	(101)	(106)	(110)	(114)
Conversion Capital Expenditures			(38)	(38)	(25)	(25)	(25)								
Cash Used In Investment		(66)	(106)	(110)	(106)	(108)	(111)	(88)	(90)	(93)	(98)	(101)	(106)	(110)	(114)
Net Cash Flow		35	(15)	(20)	(54)	(28)	(27)	13	9	9	2	7	(0)	5	5
NPV	6.7%	($18.33)													
Delta		($641.60)													
Percent of Base Case Value		-103%													

VIII. CONCLUSION

AHAM concludes these comments by summarizing the information presented above through responses to the specific questions asked in the Federal Register notice.

1. Are California's water interest "unusual and compelling" and how do they compare to those in the nation and of other states?

California's water interests are not "unusual and compelling." In fact, they are not significantly different than that of many regions and states even if they are above average. Nor is there a significant nexus between clothes washer water use and these water interests since residential clothes washer use and related energy use is a small fraction (about 1 percent) of total California water use. This explains why a clothes washer water energy standard is not contained in the state's water plan.

2. Are there other factors and information, in addition to the California petition, that the Department should consider in determining whether California's water interests are "unusual and compelling"?

Experts disagree markedly with the conclusion that California is in dire water situation and there certainly is no record in California that clothes washer water use reduction through stringent standards is a key component of a plan.

3. Are the water use issues "substantially different in nature and magnitude from those prevailing in the United States generally"? Should the phrase "in the United States generally" be interpreted to include comparison of different regions as well as national averages? Are the water use issues in California substantially different in nature or magnitude than those prevailing in other Western states?"

The record is clear that the California situation is not much different than that in other Western States, as well as other regions, and that, therefore, California has no more of a case than Nevada, Colorado or Oregon, for example. This means that a decision to grant the California standard opens up the federal standards program to proliferation of state standards and their devastating cumulative effect. Since some parts of California are above the national averages for water prices and some are below, it makes sense also to compare regions as well as states in other parts of the United States. We also have shown that the national average clothes washer water usage data presented by CEC from the American Water Association is dated and inconsistent with more recent analysis undertaken in California

4. Are there "alternative approaches to … [clothes washer] water savings," "water savings or production", or "alternative policies or programs" that could achieve the same water savings in California as could be achieved by the California clothes washer standards?

Relatively minor improvements in the agricultural and other water use efficiencies would far outweigh anything that could be done on clothes washers. Even in the residential sector, significant movement towards metering and reductions in outdoor landscaping water use will have dramatic effects. With respect to clothes washers, the combination of the federal standards, Energy Star and aggressive California incentive programs already underway will provide significant water and energy savings.

5. Are there estimates of market-induced improvements in efficiency of all products subject to the California regulation?

We have shown that the CEC underestimates the accomplishments already occurring in California and that are likely to occur in the future due to market-induced improvements.

6. Is the analysis used in the California petition accurate? For example, are the state savings estimates correct? How valid are the states assumptions?

AHAM's response is replete with challenges to the faulty nature of the CEC's assumptions including its gross exaggerations of the savings which will be attained.

7. Is California's petition statement that the water supplies are not "fungible" and it is very difficult transferring these waters from one section of the state, accurate? Are the ways California can transfer water more easily?

Water transfers occur and are being promoted in California. There is extensive fungibility of water supplies and multi-purpose use of water supplies for both agricultural and residential purposes.

8. What impacts would the state standards have on manufacturing, marketing, distribution, sale or servicing covered products on a national basis?

The loss of conventional top load product in California in and of itself has a significant negative effect on the national market. Second, the burden of attempting to convert a large amount of production to the needed front loaders and equally expensive non-conventional top loaders will have a significant impact on manufacturers' cash flow, profitability and likelihood of maintaining their domestic employment base.

9. Will the California clothes washer standard disadvantage smaller manufacturers or dealers or lessen competition in California?

Please see the comments of Alliance Laundry particularly with respect to smaller manufacturers. California distributors and dealers will suffer from a radical decrease in the type and breadth of their product lines, losing sales to other states.

10. To what extent would the California standard cause a burden to manufacturers to redesign the residential clothes washers?

In order to sell in California, manufacturers will have to turn over the vast majority of their model line. Since this is impractical within some existing facilities and platforms, California's action will provide a great impetus to further movements of manufacturing from the United States and direct sourcing from foreign firms, particularly in Asia.

11. Would the California standard result in the reduction of product availability or sales volume?

The California standard will result in the total absence of the basic $300-$400 top mount conventional clothes washer. Californians will be required to pay upwards of double the price for even an entry level clothes washer.

12. To what extent is a California regulation likely to contribute significantly to proliferation of state appliance efficiency standards? What cumulative impact would such requirements have?

Because California's interest is not materially different from that of several states and regions there will be few barriers for other states to follow-on with similar waiver requests. States are now considering legislation that facilitates waiver requests without any need for legislative action. See, e.g., Maine LD 2041. Each state program adds to the administrative, logistical and cost burden for manufacturers.

13. Will the California regulation impact the availability in the state of any covered product, type (class or performance characteristics), including reliability, features, sizes, capacities and volumes that are substantially the same as those generally available in the state?

It is hard to envision a state regulation that will have more of an impact in wiping out the availability of a standard American product on which hundreds of millions of consumers have relied for 50 years. The consumer benefits of easily accessible, top-load machines, with desired cycle times, wholly reliable rinseability and cleanability, and all

available at $300 entry-level prices will be eliminated from California if the Department grants this petition.

Respectfully submitted,

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