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Whirlpool Supplemental Comments to AHAM - CEC FDAS RFI and Pre-Rulemaking Draft - Docket 20-FDAS-01

Additional submitted attachment is included below.

November 1, 2021

J. Andrew McAllister, Ph.D.
Commissioner
California Energy Commission
Docket Unit, MS-4
Docket No. 20-FDAS-01
1516 Ninth Street
Sacramento, California 95814-5512

Re: Whirlpool Comments - CEC Request for Information and Pre-Rulemaking Draft on the Flexible Demand Appliance Standards

Dear Commissioner McAllister:

Thank you for the opportunity to comment on the California Energy Commission's (CEC) Request for Information (RFI) and the Pre-Rulemaking Draft of the Proposed Language on the Flexible Demand Appliance Standards (FDAS), published on September 1, 2021, and September 30, 2021, respectively (Docket No. 20-FDAS-01). We appreciate the collaboration that continues to be encouraged by the California Energy Commission (CEC) and shared between its stakeholders. CEC's engagement that they have with stakeholders is an outstanding model for all regulatory agencies.

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Whirlpool Corporation (NYSE: WHR) is the world's leading kitchen and laundry appliance company, with approximately $19 billion in annual sales, 78,000 employees and 57 manufacturing and technology research centers in 2020. The company markets Whirlpool, KitchenAid, Maytag, Consul, Brastemp, Amana, Bauknecht, JennAir, Indesit and other major brand names in nearly every country throughout the world. Additional information about the company can be found at whirlpoolcorp.com.

Whirlpool proudly launched its first connected appliances in 2013. We have since launched new generations of connected appliances, including smart ranges, smart microwaves, smart dishwashers, and smart washers and dryers. We continue to be a leader and innovator of connected technology; finding new ways to let our consumers streamline their daily chores so they can spend more time with those they love.

As a very active member of the Association of Home Appliance Manufacturers (AHAM), Whirlpool Corporation has worked closely with them in the development of the industry comments they submitted (under separate cover) on this staff paper. **Please be advised that we support and echo the AHAM positions, particularly that CEC should revise their definitions as AHAM suggests, the proposed adoption of AHAM's model cybersecurity language, and that connectivity should not be a requirement for appliances. We also continue to strongly agree that a cloud-based utility interconnection is the safest and most practical solution for our home appliances. Additionally, Whirlpool supports AHAM's concerns related to Federal Energy Policy and Conservation Act preemption.** Our positions supplement these AHAM positions.

As Whirlpool has commented in response to the December 2020 staff paper, we strongly believe that a cloud-based utility interconnection is the safest and most practical solution for our appliances. We prioritize the security of our connected appliances during development and after their launch. As such, we believe that our existing communications pathway (Wi-Fi-enabled, cloud-based API interconnection) should be supported, and not

discouraged in this rulemaking. CEC should make no mandatory requirements that disallow or otherwise discourage this preferred and best solution for connected appliances; especially in favor of requirements that mandate or incentivize the use of external, non-manufacturer ports and communications modules.

Below are more specific comments on other topics in the RFI and Pre-Rulemaking Draft, and responses to questions posed by CEC.

General Appliance Information

In Table 2 of the RFI, CEC presents a scoping matrix of appliance types included in Phases 1 through 3 of the rulemaking. Included in Phase 1 are consumer dishwashers and consumer electric clothes dryers. For electric clothes dryers, we agree with CEC's determination that commercial electric clothes dryers would clearly fall out of scope.

We question whether dishwashers should be in scope for Phase 1, if at all. Due to long cycle times resulting largely from increases to the stringency of energy conservation standards over the last 25+ years, consumers are shifting their dishwashing habits. More households are delaying their cycles to run at night and unloading the dishwasher in the morning, or even using the cycle delay options that are prevalent across most models today. This also has another benefit to shift any noise associated with dishwashers to times when consumers aren't typically in the kitchen or living spaces (in open concept homes). In our research, nearly half of consumers use the delay start option with some frequency, and about 20% of consumers use it for 75% or more of their cycles. Of course, all of this is not to say that cycle time and the time a cycle is finished isn't an important factor for some consumers, or that there aren't consumers who prefer to run their dishwashers in the late afternoon or early evening period.

If consumers are already beginning to shift their behavior around dishwashers and delay start is a prevalent option across nearly all dishwashers in the U.S. market, and consumers

are using this option today; then we don't see as much value from CEC developing flexible demand standards for this appliance. Maybe there is more value from CEC improving consumer awareness and education about delay start functionality for dishwashers, for the half of consumers who do not utilize this function already. For example, a campaign to educate California utility customers about how much they could save annually and greenhouse gas emissions reductions if they used the broadly-available delay start to run their dishwasher overnight. We would gladly collaborate on this with CEC and utilities.

Importantly, CEC should also narrow the scope of the FDAS to only models sold in California with connectivity features. CEC should not impose FDAS requirements on entry-level, opening price point appliances. As detailed in the proceeding sections, we believe that there are basic technology and cost barriers to enabling connectivity on these models; and significant customer, product availability, and equity impacts.

Flexible Demand Cost Assumptions

We appreciate that CEC is considering the incremental cost and current market penetration of various flexible demand approaches and technologies. We strongly agree with CEC that documenting these assumptions is critical to ensuring that any standards developed by CEC are cost-effective for both consumers and manufacturers.

These costs again point to the benefits of a cloud-based, API interconnection compared to a direct, on-premise connection through the CTA-2045 port together with an external, non-manufacturer communications module. While we believe that the estimated retail price increase[1] to offer connectivity on our appliances is underestimated by CEC (based on current retail prices of connected and non-connected models), it is a more cost-effective and valuable solution for manufacturers and consumers alike than a direct, on-premise connection pathway.

[1] Retailer alone has sole discretion to determine retail and advertised prices. All retail price references are for discussion purposes only.

This is especially true when factoring in the costs of external, non-manufacturer communications modules that are needed in order to facilitate communication between the utility and appliance through CTA-2045. From our understanding, there are two major companies offering these communications modules and at least one of them can cost anywhere from $180-$250, as priced on the manufacturer's online store. Of course, we would expect this cost to go down at scale, but this is a significant cost to consumers that must be factored into CEC's analysis to the extent this pathway is explored in the future. As with most utility incentive programs, there is no such thing as a free lunch. While consumers may not have to directly purchase these communications modules, the cost of them we assume would be passed on to them through increased electricity rates, or other means, like government subsidies. Our preferred solution doesn't have this additional cost burden to consumers of a non-manufacturer, external communications module.

Further, a cloud-based, API interconnection enables manufacturers to innovate, develop, and offer other real benefits of connectivity to the consumer, such as remote start and stop of cycles, dryer lint sensing, customizable cycles, communication between the washer and dryer, etc. Offering connectivity through a CTA-2045 port only offers demand response benefits to the consumer, at a high cost, and offers no other tangible value to the manufacturer or consumer. Offering connectivity through our preferred cloud-based API interconnection not only offers the same demand response benefits as with using CTA-2045; but it also carries all the other consumer-relevant features and enhancements just described. It's a clear choice and winner for us and our consumers.

If CEC should develop FDAS requirements that include entry-level, opening price point dryers into scope, there is a significant cost to upgrade from electromechanical to electronic controls across many of these models. There is simply no technologically-feasible way to add flexible demand features and connectivity to electromechanical dryers. Electronic controls are needed to receive, interpret, and ultimately act on utility commands, especially as they relate to power demand handling.

There may also need to be consideration of user interface changes that allow consumers to become aware of utility signals and possibly give a way to override such signals. Electronic controls are needed to support such user interface changes. CEC should account for the cost of such upgrades when deciding to narrow the scope of the FDAS to only include models with connectivity features.

Load Shift Calculation Methodology

While we agree that there is value to load shifting for dryers, we question the possible implications of large-scale load shifting of a significant number of dryers across a state or a utility territory. For example, the load shapes show a fairly even distribution of dryer loads during a 5:00 to 8:00 pm peak period. If instead of spreading those loads out across 3 hours, they all instead start at 8:00 pm, then does that create a new peak period when potentially thousands or millions of dryers suddenly turn on 5,000 Watt or greater dryer heaters all around the same time? Does this create new issues for utilities when that electrical load isn't spread across several hours but instead creates a new and possibly even larger peak to manage? There may be ways for utilities to manage this, but we ask given the power demand and scale of the installed base of our dryers.

Cybersecurity

We are glad to see that CEC views cybersecurity as a critical need and consideration in the FDAS. As we mentioned in our comments to the December 2020 staff paper, we believe that our current solution of a Wi-Fi-enabled, cloud-based API interconnection with a manufacturer communications module is a very secure pathway to connect individual home appliances to the utility. This is the preferred solution to manage the cybersecurity risks of a connected appliance. Consumer trust in the security of their connected appliance is critical to their ultimate success or failure in the market. If consumers don't have or lose trust in a connected appliance, then they may not be willing to purchase or use them in their home again in the future. This hurts not only our efforts in the marketplace with

connected appliances, but also utilities trying to design and implement flexible demand programs.

To that end, we agree with CEC that minimum cybersecurity requirements are needed in the FDAS. Because the cybersecurity standards development space is still growing and evolving, there are risks to specifying a single standard in the FDAS. Specifying just one or a couple risks that if and when they change, the FDAS would then need to be updated to reflect the cybersecurity standard change. Again, because the cybersecurity standard space is growing and developing, this could mean updating the FDAS frequently. Further, we don't know what new standards will be developed in the future. There may be new standards not even under development yet that become the best-in-class standard. As a global company, we may also choose to comply with multiple cybersecurity standards from various regions or international standards.

We recommend that CEC follow the proposal from AHAM, which is future-proof to updates to existing standards or development of new standards, and enables manufacturers the flexibility to decide on which standards make sense for their global footprint. This would allow manufacturers the option to comply with any number of consensus standards in effect at the time of product manufacture.

Customer Consent

CEC is considering the mechanisms that could be used to inform customers of their appliances' flexible demand capabilities, and maximize their use of these capabilities. We do note that any efforts to inform consumers of flexible demand capabilities, receive their consent, see real-time utility pricing, and opt-out of some functionality or override certain utility signals are greatly facilitated through connectivity offered through a Wi-Fi, cloud-based API interconnection. It enables manufacturers to allow consumers to easily control, manage, and consent to features and data collection through an app interface on their smart device (e.g., phone, tablet, computer, smart display, etc.).

There are limitations to on-device notifications, alerts, signals, etc. through an electronic display or interface on the product. The app gives another way for the consumer to be informed and control their product, and thus electronic consent functions should not be limited to on-device. The CTA-2045 pathway to connect an appliance doesn't offer those opportunities alone. It would need to be used in conjunction with a cloud-based API interconnection with a consumer app, which again renders the CTA-2045 port unnecessary and not an ideal solution for manufacturers or consumers.

We also are concerned about the degree to which the burden for obtaining a customer's consent for participating in a flexible demand program would fall on a manufacturer. We are not best positioned to inform customers across multiple states and utilities what the terms and conditions of their local utility's flexible demand program are. We shouldn't unnecessarily blur the line between appliance, appliance manufacturer, and utility. This communication and receipt of consent for participating in a utility program would have to be the responsibility of the utility.

Finally, we are concerned about possible packaging or point-of-purchase (POP) materials requirements to inform customers of flexible demand capabilities. Most customers never see the packaging on a major appliance like a dryer or dishwasher, as it is not displayed at retail and often removed by the installer in the truck prior to even coming into the customer's home. Even if POP materials were the preferred choice, there are costs and other implications with that. Each piece of POP is an additional cost to the manufacturer, but it also raises the problem of complexity. We don't manufacture specific models for California, so our POP is generally used nationally. It would be complex to maintain it at the state level. We also don't want to distract from the main selling features of the appliance described in other POP, where we differentiate our products from competitors. If CEC accounts for this in their analysis, there should be consideration of the cost and burden.

We have seen utilities develop their own POP in the past and have displayed that at appliance retailers. This could be another area where utilities could help promote customer and retailer understanding of appliance flexible demand capabilities.

Equity

We strongly support CEC's consideration of the potential impacts and benefits that any proposed FDAS may have on low-income households and disadvantaged communities. The majority of consumers with incomes of $35,000 or less purchase washers and dryers that are at opening price points. Relative to their income, the price of a washer or dryer is 2.5 times as impactful to the finances of a low-income consumer than it is to a consumer making over $100,000. Often, these purchases are unplanned after their old unit is no longer functional, and therefore these customers simply may only have the funds available to consider a purchase of an opening price point appliance. These consumers usually do not have more than $400 in their checking account and are less likely to have access to credit to make large purchases.

Of course, it should be no surprise that these consumers come from disadvantaged communities. CEC should closely examine the possible hardship and financial burden imposed by FDAS on these consumers and the communities they represent. The proportion of opening price point appliance purchases is even higher for low-income non-white consumers than it is for low-income white consumers. We believe that making FDAS apply across all in-scope appliances sold or leased in California will have a significant negative impact on these consumers. They may be forced to pay more for appliances offering demand response and connectivity features (that they may not ultimately want) if all dryers were in scope of FDAS. This is why we had previously discussed that only appliances with connectivity offered on them should be in scope of FDAS.

For a dryer, FDAS applying across all dryers sold in California leaves two unappealing options to manufacturers and both options ultimately harm low-income and disadvantaged

consumers. First, a manufacturer may decide to continue with the same broad assortment of models today in California, as in other states, with demand response functionality added to them. This raises the overall cost of the appliance; so an opening price point appliance today may be more expensive in the future after the FDAS takes effect. This is an additional cost burden for these consumers to bear and it could create hardship to disadvantaged communities.

Second, a manufacturer could decide to only offer a limited number of models for sale and distribution in California, while preserving the ability to sell non-connected opening price point models in other states. This has a similar effect for these low-income consumers, as they would no longer have opening price point models today even available for purchase in the state of California. Again, this is a cost burden that disproportionately falls on these disadvantaged people to bear.

Further, as manufacturers make product design and launch decisions on washers and dryers together, since most are purchased as a pair, CEC needs to also consider the implications of the FDAS on a laundry pair. If product design, model availability, and other decisions were made to a dryer, we would have to consider similar changes to the matching washer. This could double the burden and availability issues highlighted above.

CEC must limit the impact of the FDAS on these low-income consumers and disadvantaged communities by narrowing the scope of the rulemaking to requirements that apply only to connected appliances sold in the state. This ultimately preserves the ability for these consumers to purchase non-connected, opening price point appliances.

Other Issues - Effective Date

The December 2020 staff paper indicated a one year lead-in period from the adoption hearing of the initial FDAS to the effective date. The Pre-Rulemaking Draft proposed a January 1, 2024, compliance date for phase one appliances. Depending on what CEC adopts

in the final FDAS in 2022, a one or 1.5 year lead-in compliance period from the final standards adoption could be wholly inadequate for the scale of activity needed to comply with the FDAS. This includes time needed for activity on the manufacturer side (e.g., research, redesign, software development, retooling at the factory, finding new suppliers, testing, certifications, etc.), coordination with retailers, and other associated activities to launch any new or updated models (e.g., reflooring, preparing the website(s), marking down and selling through inventory of old models, etc.). Manufacturers need a several year lead-in period for any mandatory regulatory changes that drive product redesign decisions and new model launches. Typically, we make decisions on new or updated models several years in advance of the launch of the model. Of course, we prefer to redesign and relaunch for multiple future regulations at once to save precious resources and reduce burden.

Three years is the bare minimum for this and aligns with the DOE lead-in compliance period for any amended standards. DOE uses this lead-in period to allow manufacturers an appropriate amount of time to complete all the activities highlighted above. Even then, we often find that even three years is not adequate. So depending on the scale of what DOE proposes in the FDAS, more time could be required.

We recommend to CEC that they harmonize timing of the FDAS to the next round of DOE appliance standards, which could be in effect as early as late 2025 or 2026. Not only would this give the necessary lead-in period, but it would allow us and other manufacturers to focus on a single redesign and launch for CEC and DOE together, instead of staggering these over several years, which takes resources away from delivering other consumer-relevant innovations. This would significantly reduce regulatory burden on manufacturers and retailers, and ultimately benefits consumers.

Other Issues - Consumer Impacts

Beyond the concerns that are already mentioned, especially for low-income households, there are other consumer-relevant issues that should be considered by CEC. First, we

generally know that consumers like to finish their laundry before going to bed, and that many consumers like to do multiple loads on weeknights (worknights). Very few cycles are continue after the user goes to bed, and the majority of laundry is still being done on weeknights. This implies that consumers need the ability to finish their laundry, including multiple loads, on weeknights. It is very important that consumers ultimately retain the ability to control their appliance to start it when they want. Otherwise, they may lose the ability to complete multiple loads on a weeknight, or even possibly a single load before they go to bed. If CEC were to propose FDAS for our appliances, the ability of the consumer to override any utility signal is paramount for our consumers.

Second, most washer loads are transferred to the dryer immediately upon the completion of the wash cycle. Consumers do not like clothes sitting in the washer for extended periods of time. Many washer models offer features to keep the clothes fresh with a fan and periodic tumbling to help when the user can't transfer the load over to the dryer immediately. Dryers, on the other hand, don't typically offer such a functionality. When a consumer attends to the washer to unload it and then transfers the load to the dryer, they prefer for the dryer to start immediately. There is no consumer benefit in letting wet clothes sit longer without being dried. If the clothes sit too long, the consumer may perceive a mildew smell in the clothes that lingers even after drying, so they may just rewash and redry the clothes again. This is additional, unnecessary energy consumption and effort from the consumer. Again, the ability of a consumer to override a utility signal is needed. We also believe that for any delay period, some energy use should be allowed to keep the load fresh, as we discuss in a proceeding section.

Third, there are a significant number of consumers who simply prefer electromechanical controls with knobs on their dryer. A majority of entry-level units sold are electromechanical controls with all knobs. We believe that there is a perception of these consumers that these models are more familiar to them (e.g., designed and operated like they've always been), that they are easier to use, and that they feel more in control of the

appliance. If the FDAS essentially force a phaseout of electromechanical controls, this would be a significant detriment to these consumers. They wouldn't be able to purchase their preferred type of dryer.

Other Issues - CTA-2045

As we have already commented extensively here and in response to the December 2020 staff paper, we do not view CTA-2045 as a viable solution to enable flexible demand in our appliances. Beyond our broad security concerns with adding an on-premise, external utility connection to our appliances, we also are concerned about the level of product redesign such a port would necessitate. The data type used through CTA-2045 is not one that we use today and would require a new appliance control unit (ACU) to support this new data type. This involves significant investment to develop new components and retooling at our factories.

There are also more practical concerns with using a CTA-2045 port on our appliances. As we mentioned in response to the December 2020 staff paper, we are unsure where a CTA-2045 port could be added to an appliance like a dishwasher that is built into the cabinetry of the kitchen. It is not practical to have consumers pulling out their dishwasher to plug in a communications module to a CTA-2045 port. There is simply nowhere on the front or inside to put such a port and the bottom-front of the dishwasher is already very space constrained.

Without studying CTA-2045 and the associated external communications modules in market today further, we also have questions about the electronic noise created by such external communications modules, and whether it may interfere with the appliance operation at all. Of course, we would expect these modules to receive appropriate certification from the Federal Communications Commission, but it's something that would need to be evaluated.

Other Issues - Delay Timer

The Pre-Rulemaking Draft indicates that dishwashers and electric dryers shall have a delay timer in the FDAS. As we have mentioned in a previous section, the vast majority of dishwasher models already incorporate delay timer or delay start features, and consumers are using them. Half of consumers are already using them, and about 20% are using it for the vast majority of their cycles. Thus, we see little value from CEC developing FDAS for dishwashers. The technology is already broadly deployed in the market to enable consumers to shift their dishwasher loads to off-peak periods. Given this, it doesn't make sense to require connectivity for these appliances. Instead, we again recommend that CEC work with us and utilities to improve consumer awareness and education about delay start functionality for the remaining half of consumers who do not use them as often today.

For dryers, we again urge CEC to narrow the scope of the rulemaking to requirements that apply only to connected appliances sold in the state. However, if CEC were to move forward with FDAS, as proposed in the Pre-Rulemaking Draft, we strongly recommend that Section 1690 is written such that dryers have an option to meet FDAS with either a delay timer or by being a connected device. This gives flexibility to manufacturers to decide which is the appropriate solution for their consumers, while still enabling the goals of CEC to shift dryer loads to off-peak periods.

Given the lack of delay start functionality on most dryer models today, this would still be a significant requirement for all manufacturers to either add in delay start functionality or to enable connectivity. Adding either is a product redesign and possible relaunch for nearly every model in the market today. This comes with transition costs to markdown and sell through old inventory and refloor new models across thousands of retail locations. Even for a delay timer, this would require a redesign of the console and other associated product changes to add this functionality. These are changes and costs on the scale of what is often needed for a major federal energy standard amendment. Further, we may have to consider adding delay timers to gas dryers. While not in scope of the FDAS, we like to keep

the same product console, components, and feature sets the same across gas and electric variants of a model. CEC should also account for this possible burden for gas dryers not in scope of this rulemaking. This is all to say that this should not be viewed as a proposal to skirt any major impacts from this rulemaking. Even changing the FDAS in Section 1690 of the Pre-Rulemaking Draft to add an “or” for having a delay timer or being a connected device still carries a significant manufacturer burden for CEC to consider.

Finally, we recommend that if CEC were to move forward with any delay timer requirement, that some clarity be provided beyond the definition in the existing Pre-Rulemaking Draft. For example, this does not indicate if some energy use during a delay period is acceptable. In dryers, some energy would be needed to tumble the clothes with air circulation in order to keep clothes fresh during the delay period. Of course, this would be significantly less energy than normal drying operation since the heating element is not engaged, and still deliver on CEC’s load reduction goals. Further, we question the appropriate maximum time interval for delay start. 24 hours seems extreme for a dryer. A load may even be fully or partially dry (depending on the load size and composition) in that delay period if the dryer were able to tumble and air dry the clothes. The downside is that clothes may come out wrinkled and need attention from the consumer; whether that is rewashing/redrying, using steam to relax wrinkles, or ironing. There are also other downsides to drying without heat, including the inability to fully dry some types of loads, less pet hair removal, and inability to reach temperature thresholds for sanitization. CEC needs to put a more consumer-realistic maximum time limit on delay timer functionality, and we are happy to work with the agency to develop one.

CEC should also reconsider the requirement to offer a delay start in increments no larger than 1 hour. For dishwashers and dryers with this functionality, this would mean having up to 24 hours of delay start show up in 1-hour increments on the product console, for those units without delay start functionality displayed on an LED or LCD screen. This is not practical. For example, a dryer with just knobs would need to have increments from 1 hour,

2 hours, 3 hours… all the way up to 24 hours show up on the product console around the knob for consumers to select in those increments. For a product with LED indicators, we would need 24 separate indicators from 1 hour to 24 hours. That is not practical. If CEC's intent is truly for 1 hour delay start increments, then the maximum of 24 hours needs to definitely be reconsidered.

Closing Remarks

We again thank the CEC for the opportunity to comment on the RFI and Pre-Rulemaking Draft of the FDAS, and for their open dialogue during this rulemaking. We still share the common goal with CEC to achieve a broad deployment of appliances with flexible demand capabilities in California, and we hope that these efforts in the FDAS are ultimately fruitful towards that goal. Thank you for your consideration and we look forward to continued discussion on this rulemaking.

Best regards,

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