APPENDIX 12A. MANUFACTURER IMPACT ANALYSIS INTERVIEW GUIDES

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Manufacturer Impact Analysis Interview Guide: Microwave Ovens

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1 KEY ISSUES

The U.S. Department of Energy (DOE) is currently reviewing a set of efficiency levels for Microwave Ovens (MWOs). The efficiency levels are presented below as they apply to the single product class. In responding to this questionnaire, please refer to the energy factor (EF) values described below.

Table 1.1 Efficiency Levels (EF %)

Product Class	Baseline	Efficiency Level 1	Efficiency Level 2	Efficiency Level 3	Efficiency Level 4
Microwave Ovens	55.70	58.60	58.80	59.70	60.20

1.1 What are the key issues for your company regarding MWOs related to energy conservation standards and this rulemaking?
1.2 For the issues identified, how significant are they for each efficiency level?
1.3 How can we most effectively incorporate these issues in the Manufacturer Impact Analysis (MIA)?

2 SHIPMENT PROJECTION AND MARKET SHARE

2.1 Would you expect your market share to change once standards become effective? Does your outlook change with higher efficiency levels?
2.2 How would you expect shipments to change for the industry as a whole as a function of standards and why?

3 CONVERSION COSTS

An increase in energy conservation standards may cause your company to incur one-time capital and product conversion costs. DOE calls these conversion costs because they are the costs of changing your business to comply with new energy conservation standards.

3.1 What level of conversion costs do you anticipate incurring under the different efficiency levels? Refer to the tables below to provide your company's estimates. Please provide additional qualitative information to help us understand the nature of your investments.

Table 3.1 MWO Conversion Costs

Standard Level	Conversion Capital Expenditures	Product Conversion Expenses	Stranded Assets
Baseline (55.70)			
Level 1 (58.60)			
Level 2 (58.80)			
Level 3 (59.70)			
Level 4 (60.20)			

4 PROFITABILITY AND MANUFACTURING CAPACITY

One of the primary objectives of the MIA is to assess the impact of efficiency levels on industry profitability and changes in manufacturing capacity.

4.1 Does your company have any MWO manufacturing facilities located in the United States? How would you expect shipments to change for the industry as a whole as a function of standards and why?
4.2 Do you expect any changes in your estimated profitability following the new energy conservation standard? If so, please explain why.
4.3 How would the imposition of new energy conservation standards affect your manufacturing capacity at your production facilities? Would any facilities be closed, downsized, added, or upgraded?

5 CUMULATIVE REGULATORY BURDEN

Cumulative regulatory burden refers to the burden that industry faces from overlapping effects of new or revised DOE standards and/or other regulatory actions affecting the same products or industry.

5.1 Are there other recent or impending regulations that MWO manufacturers face (from DOE or otherwise)? What level of investment are you expecting to incur as a result of these regulations?
5.2 Under what circumstances would you be able to coordinate any expenditures related to other regulations thereby lessening the cumulative burden?

6 DIRECT EMPLOYMENT IMPACT ASSESSMENT

The impact of new energy conservation standards on employment is an important consideration in the rulemaking process. This section of the interview guide seeks to explore current trends in MWO production employment and solicit manufacturer views on how domestic employment patterns might be affected by new energy conservation standards.

6.1 Would your domestic employment levels change under new energy conservation standards? If so, please explain how they would change.
6.2 Would the workforce skills necessary under new energy conservation standards require extensive retraining or replacement of employees?

7 CONSOLIDATION

New energy conservation standards can alter the competitive dynamics of the market. This can include prompting companies to enter or exit the market, or to merge. DOE and the Justice Department are both interested in any potential reduction in competition that would result from a new energy conservation standard.

7.1 In the absence of new standards, do you expect any industry consolidation? Please describe your expectations.
7.2 How would new standards affect your ability to compete?
7.3 Could new standards disproportionately advance or harm the competitive positions of some firms (*e.g.*, small businesses)?

12A.2 MICROWAVE OVENS (STANDBY POWER STANDARDS)

Cooking Products Rulemaking
Standby Power Interview Guide: Microwave Ovens

INTRODUCTION:

The U.S. Department of Energy (DOE) is currently reviewing energy efficiency standards for cooking products. Of high interest are the standby power requirements of microwave ovens. As a result, the Department invites manufacturers to participate in this questionnaire to help the Department better understand the issues regarding standby power, as well as any potential impacts on consumers that standby power legislation could have.

The Department tested 32 microwave ovens for sale in the United States within the past year. The sample included a wide range of input powers and cavity sizes to investigate cooking efficiency and standby power requirements. DOE subsequently published its findings at the December 17, 2007 Advance Notice of Proposed Rulemaking (ANOPR) meeting in Washington DC. Due to comments submitted to DOE during and after this meeting, the Department would like to solicit additional feedback from manufacturers.

During testing, DOE noted that microwave ovens with cooking sensors tend to consume more standby power than those without cooking sensors. DOE also noted how display size and technology and the associated controller could influence standby power requirements. At the end of the testing cycle, every microwave oven was completely disassembled. DOE noted a wide variety of display types and cooking sensors, even if most other aspects of microwave construction have been largely standardized. This questionnaire will thus focus on the controllers, displays, and power supplies.

Cooking Sensors
DOE would like to understand why manufacturers incorporate cooking sensors into their microwave ovens, and factors influencing the choice of a specific sensor type from among the range of available technologies.

1.1 On a unit shipment-basis, what percentage of microwave ovens that you sell into the United States market feature cooking sensors?

1.2 Do you have any data on the percentage of consumers that use the sensor function? Is there any data available quantifying the energy savings associated with the use of a cooking sensor?

1.3 What sensor technologies do you use for microwave ovens sold in the United States? What are the standby requirements of these sensors? Are there sensor technologies available that require less power in standby that can be applied in microwave ovens?

Displays

DOE also noted a wide range of standby power consumption based on the display technology. For example, displays based on vacuum-fluorescent displays tended to consume more power than comparable-sized displays based on light emitting diodes. DOE noted three display types in its market sample, consisting of light-emitting diodes (LEDs), liquid crystal displays (with or without LED backlighting), and vacuum-fluorescent displays.

1.4 What is the consumer utility associated with each type of display? Do consumers demand displays with specific technologies?

1.5 What are the power requirements for each type of display assuming a comparable size and general capability (complexity of the characters that a display can show)? What are the relative costs associated with each type of display?

Controllers and Power Supplies

While cooking sensors and displays consumed the most standby power, DOE also noted that controllers and the control boards also consume standby power. The Department recognizes that there may be tradeoffs between standby power consumption and the ability of control systems to tackle complex tasks.

1.6 What consumer utility is associated with microwave oven controllers? Could controller attributes or functionalities be impacted by reducing microwave oven standby requirements? If so, how?

1.7 Are lower-power versions of these controllers available? What control board design options are available for reducing standby power? At what cost?

1.8 What is the range of efficiencies for controller power supplies? Can higher efficiency power supplies be implemented? At what cost?

Potential Standby Power Standard Levels

DOE surveyed foreign regulatory and non-regulatory programs, identifying Korea's e-standby program, Australia's standby program, and Japan's Top Runner Program as pursuing reductions in standby power consumption through support for the International Energy Agency's One-Watt

program to lower standby power consumption below 1 watt (W) for microwave ovens[a], among others. DOE is also aware of zero-watt-standby microwave ovens in Japan that feature cooking sensors.

1.9 What design changes from current US products would be required if the following standby standard level were established?

- 4 W/h
- 2 W/h
- 1.5 W/h
- 1 W/h
- 0 W/h

- What would be the manufacturing cost impacts of these changes?

- Are there any impacts on consumer utility as standby power levels are lowered? If so, what are they, and at what standby power levels do they occur?

Standby Power Standards Manufacturer Impacts

DOE understands that by establishing standby power standards, manufacturer could potentially incur one-time capital and product conversion costs.[b] DOE calls these conversion costs because they are the costs of changing your business to comply with new standby power standards. In addition, DOE would like to understand possible effects of new standby power standards on industry shipments, profitability, and manufacturing capacity.

What level of conversion costs do you anticipate incurring under different standby power standard level? Refer to the tables below to provide your company's estimates. Please provide additional qualitative information to help us understand the nature of your investments.

[a] IEA Energy Information Centre, Standby Power Use and the IEA "1-Watt Plan" http://www.iea.org/textbase/subjectqueries/standby.asp

[b] Capital and product conversion costs include capital conversion expenditures, product conversion expenditures and stranded assets. Capital Conversion Expenditures – One time investments in plant, property, and equipment (PPE) necessitated by an energy conservation standard. These may be completely incremental to existing PPE or they could involve replacement of existing PPE. Product Conversion Expenditures – One-time expenses in research, product development, testing, and marketing necessitated by an appliance energy conservation standard. Stranded Assets – Investments such as equipment or tooling that become obsolete as a result of new regulation.

Table 1.1 MWO Conversion Costs

Standard Level	Conversion Capital Expenditures	Product Conversion Expenses	Stranded Assets
4 W/h			
2 W/h			
1.5 W/h			
1 W/h			
0 W/h			

1.10 How would you expect shipments to change for the industry as a whole as a function of standby power standards and why?

1.11 Do you expect any changes in your estimated profitability following new standby power standard? If so, please explain why.

1.12 How would the imposition of new standby power standards affect your manufacturing capacity at your production facilities? Would any facilities be closed, downsized, added, or upgraded?

Standby Test Procedure

As part of the analysis, DOE reviewed the existing DOE cooking efficiency test procedure and possible standby test procedures that could be incorporated. For standby testing, DOE is considering adopting by reference the IEC 62301 standby test procedure[c].

1.13 Do you currently conduct microwave oven standby power testing? If so, which test procedure do you use?

1.14 How do you feel about the incorporation of IEC 62301 to measure standby with the provision that a 12-hour (or possibly 24-hour) test be performed with the clock set to a specific starting time?

[c] See http://iec.org for further details