



ENERGY STAR[®]

Commercial Ovens

V 2.0 Draft 1

Stakeholder Meeting

December 15, 2011

Agenda



- Welcome and Introductions
- Overview of Specification Development Process
- Purpose of Revision
- Scope
- Key Criteria Under Consideration
- Revision Timeline

Guiding Principles for Specification Development



- Significant energy savings can be realized on a national basis
 - ENERGY STAR specifications are created only when the energy savings potential translates into tangible energy savings
 - Ensures ENERGY STAR qualified products deliver promised savings
- Product performance can be maintained or enhanced with increased energy efficiency
 - Label is not only a credible symbol for energy efficiency, but it is also found on products with the features and performance that consumers demand.

Guiding Principles, *cont.*



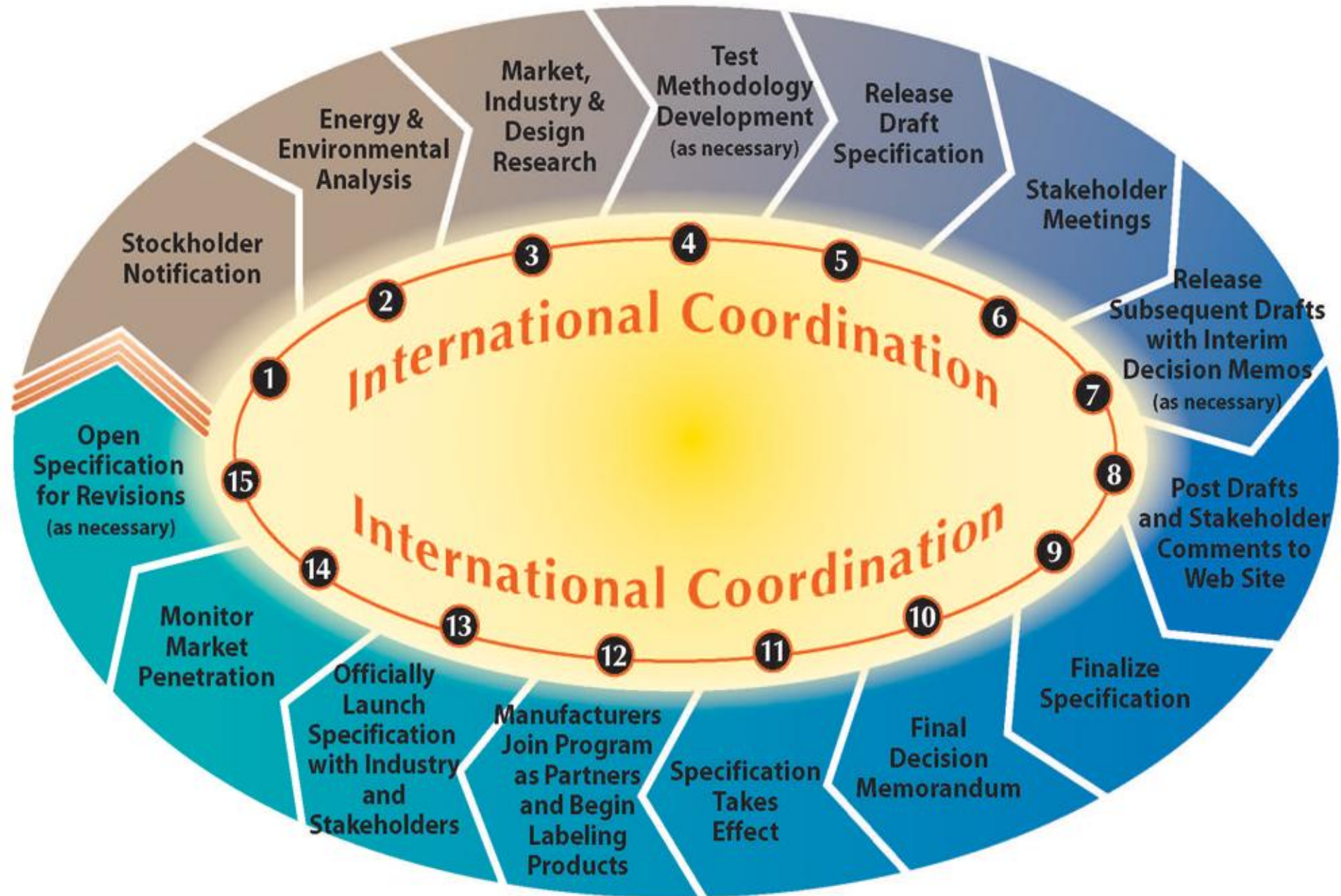
- Purchasers recover their investment in increased energy efficiency within a reasonable period of time
 - Some energy-efficient products may have a price premium while others do not. Maximum ROI is around 5 years
 - Every product has *two* price tags:
 - 1) initial cost of the product at purchase, and
 - 2) cost of energy to operate over products lifetime
- Energy-efficiency can be achieved through several technologies
 - Specifications take a technology neutral approach
 - Do not favor one manufacturer over all others by designating a proprietary technology or unique design approach when establishing or revising the performance attributes of an ENERGY STAR product specification.

Guiding Principles, *cont.*



- Product energy consumption and performance can be measured and verified with testing
 - Available, industry accepted test procedure
 - Several manufacturers and products represented
 - Target top 25% in terms of energy efficiency
- Labeling would effectively differentiate products and be visible for purchasers
 - ENERGY STAR's goal is to provide value to purchasers by enabling them to easily identify energy-efficient products that have earned the label
 - EPA develops and revises specifications so they reflect the performance of products meeting the highest conservation standards.

Specification Development Cycle



Guiding Principles for When to Revise ENERGY STAR Specifications



- Significant increase in market penetration of ENERGY STAR qualified models
- Change in the Federal minimum efficiency standards
- Technological advancements
- Product availability limitations
- Issues with consumers realizing expected energy savings
- Performance or quality issues
- Issues with test procedures

Purpose of Revision



- ENERGY STAR Commercial Oven specification launched in May 2009
 - Covers only convection ovens, potential to expand to other categories when ready
 - Updated in January 2011 (V1.1) to align with 3PC requirements
- ENERGY STAR estimated market penetration is 36%
 - EPA revisits specifications at 30%+ market penetration
- Interest in expanding to include combination ovens
 - EPA conducted an engineering analysis Fall 2011
 - Test procedure available (ASTM F-2861-10), published Dec 2010
 - Initial data set provided by FSTC
 - Significant energy savings potential for combination ovens

V2.0: Scope Expansion

- Existing Scope: Convection Ovens
 - Full-size, half-size
 - Electric and gas units
 - Reference ASTM F-1496-99 (2005) test standard for performance data
- Proposed New Category: Combination Ovens
 - All sizes capable of holding full-size steam table pans
 - Electric and gas units
 - Reference ASTM F-2861-10 test standard for performance data
- Other categories that EPA should consider?
 - Test procedure available, robust data set

Combination Oven: Definition



- EPA is considering the following definition, aligning with ASTM F-2861-10
 - *Combination Oven*: “Device that combines the function of hot air (*convection* mode), saturated and super-heated steam heating (steam mode), and combination of convection/steam mode, to perform steaming, baking, roasting, rethermalizing, and proofing of various food products. In general, the term combination oven is used to describe this type of equipment, which is self-contained. The combination oven is also referred to as a combination oven/steamer, combi or combo.”

Combination Oven Variation: Size



- Shall “mini” or “countertop” combination ovens that cannot hold a full-size steam pan (12 x 20 x 2 ½ - in.) not be included in this category?
- If the combination oven does not accommodate full-size steam pans, then shall GN2/3-size steam pans be used in their place? If so, then a second pan specification must be determined.
 - The current ASTM F-2861-10 test method does not address combination ovens incapable of accommodating full-size steam pans.

Combination Oven Variation: Rack Design



- Is there concern regarding combination ovens designed to hold full-size sheet pans?
- Shall combination ovens that are designed to hold full-size sheet pans be excluded from the category or shall the steam pans be positioned on wire racks?
 - ASTM does not currently address the energy absorbed by the removable wire racks. Shall combination ovens with this design be included or excluded from the scope?
 - Shall consideration be given to allow combination ovens, designed to accommodate full-size sheet pans, to use the convection oven ASTM F-1496 test method for the convection mode cooking-energy efficiency portion of the testing?

Steam Cooking vs. Moisture Assist



- Combination Oven:
 - As per ASTM F-2861-10, the test method is applicable to convection ovens with limited moisture injection
 - What would the minimum water consumption within the oven cavity be to achieve steaming capabilities?
 - Shall convection ovens with moisture assist be excluded in the ENERGY STAR specification?

V2.0: Product Family



- EPA is considering the following definition for both combination and convection ovens:
- Product family
 - Individual models offered within a product line based on the same engineering design, including; pan capacity, fuel type, and method of steam generation, as applicable. Performance results across the models represented in the qualified product line shall be equivalent, including; idle rates, cooking-energy efficiencies, and water consumption rates, as applicable
 - Examples of acceptable differences include:
 - Controls, door-opening orientation, and any topical, aesthetic additions that have no impact on oven performance in any mode
 - Other acceptable differences?



V2.0: Test Method References

- ASTM F-2681-10 Standard Test Method for Enhanced Performance of Combination Oven in Various Modes
 - Convection Mode:
 - Idle rate test;
 - Cooking-energy efficiency test
 - Steam Mode:
 - Idle rate test;
 - Cooking-energy efficiency test
 - Combination Mode:
 - Idle rate test
- Efficiency tests in convection and steam modes will reflect the efficiency in combination mode.

Test Method References, *cont.*



- Proposed changes to the convection oven test method (ASTM F-1496-99(2005)) affecting performance data:
 - Rack spacing to determine the maximum pan load for heavy-load cooking tests
 - Accounting for energy absorbed by the sheet pans during cooking tests
 - Specification update would subject *all* existing ENERGY STAR qualified convection ovens to be retested.

V2.0: Potential Combi Criteria

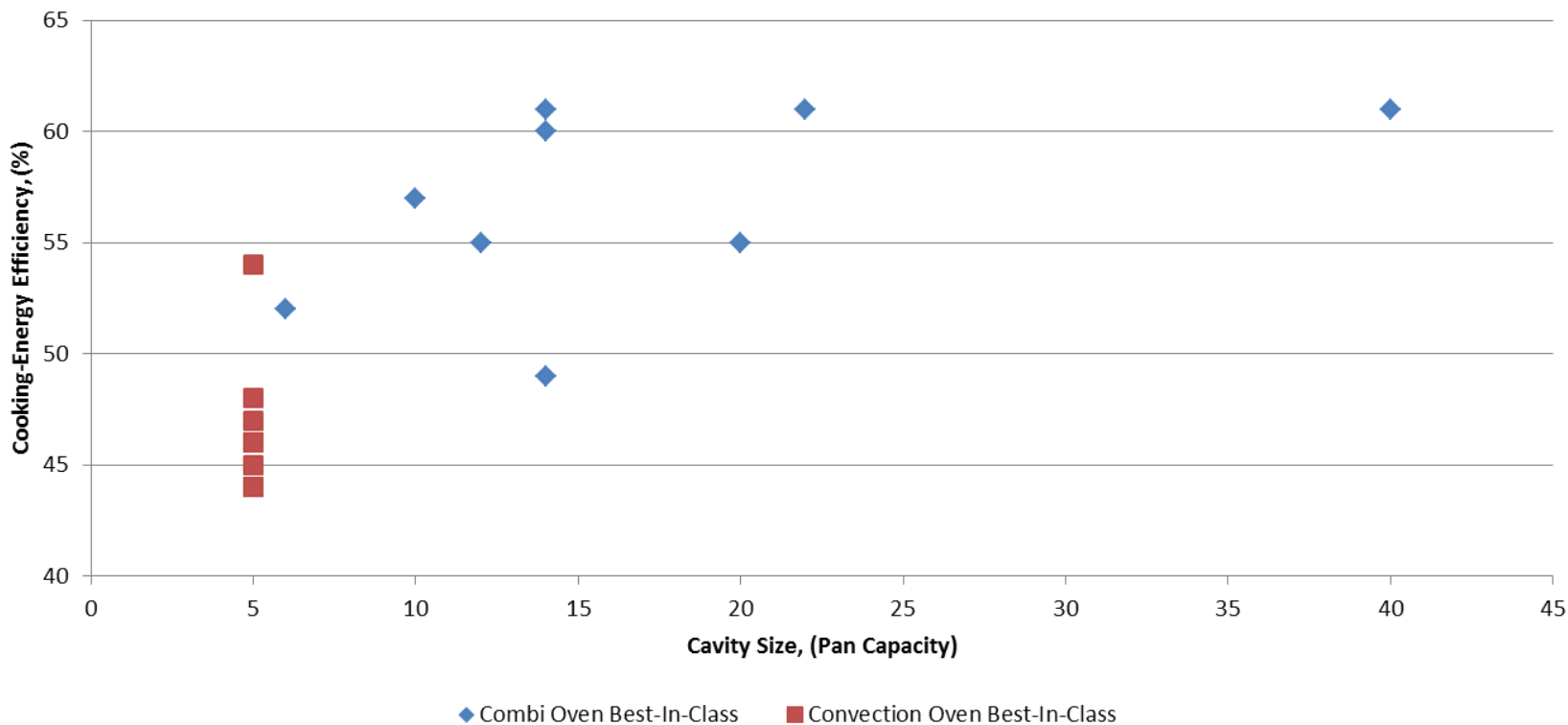


- To what extent do combination and convection ovens/ steamers compete?
 - Is it important that combination oven *convection mode* levels be the same as a convection idle and efficiency levels?
 - Is it important that combination oven *steam mode* levels be the same as a steam cooker idle and efficiency levels?
- Preliminary data suggests different levels but more data is needed
 - Based on preliminary data received from the FSTC, EPA is expecting alternative criteria levels; however, additional manufacturer's data is necessary before determining the efficiency and idle criteria.

Convection Mode Graph A (Best-In-Class)



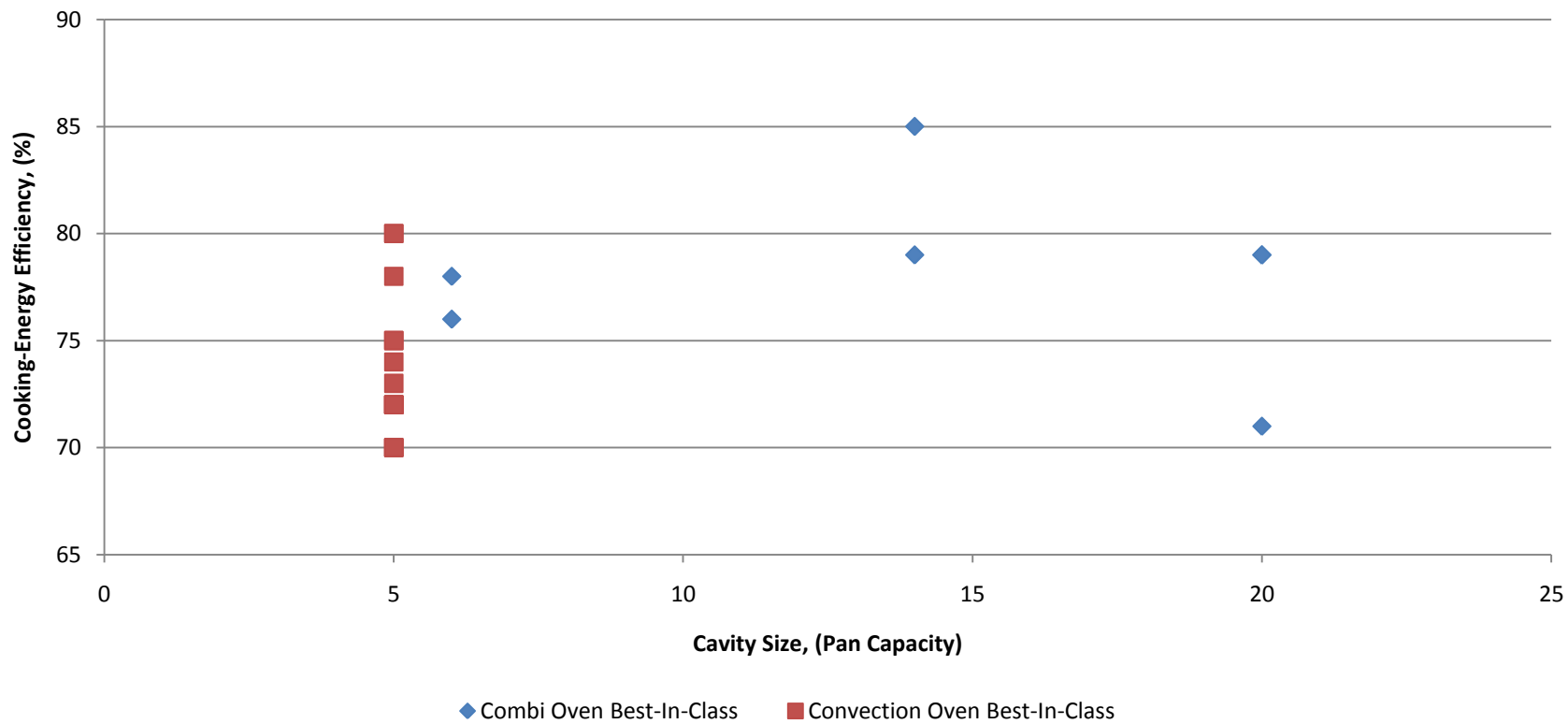
Combination Oven in Convection Mode vs. Convection Oven Cooking-Energy Efficiencies (Gas)



Convection Mode Graph B (Best-In-Class)



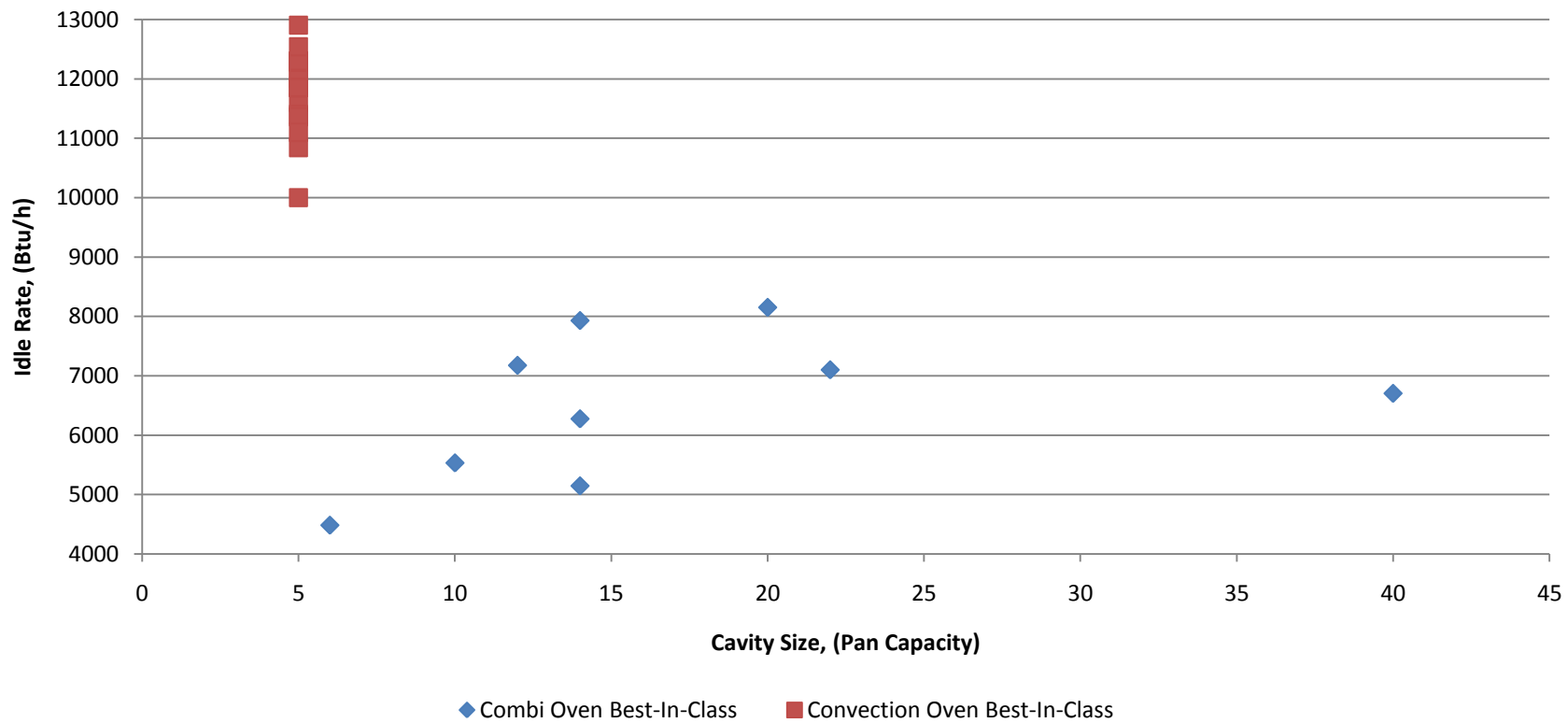
Combination Oven in Convection Mode vs. Convection Oven Cooking-Energy Efficiencies (Electric)



Convection Mode Graph C (Best-In-Class)



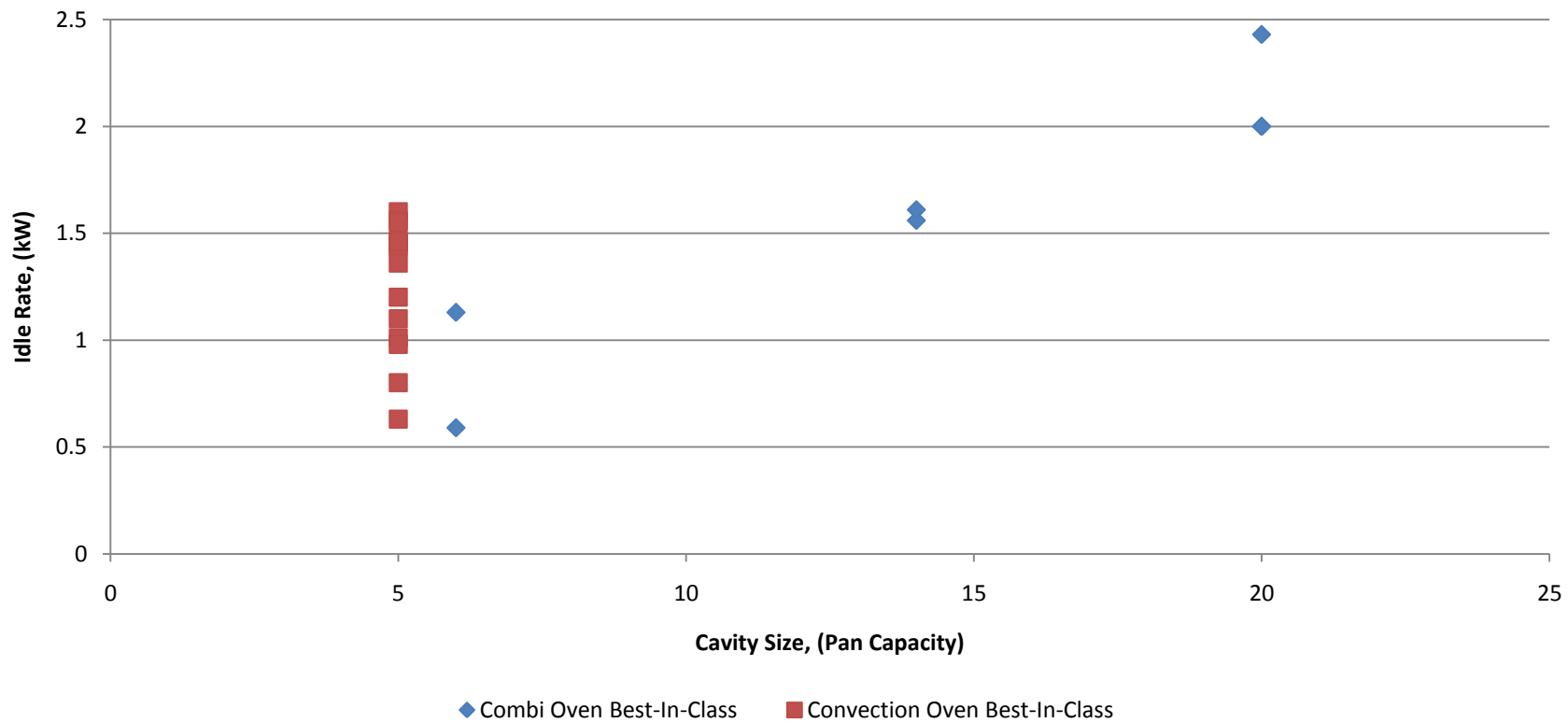
Combination Oven in Convection Mode vs. Convection Oven Idle Rates (Gas)



Convection Mode Graph D (Best-In-Class)



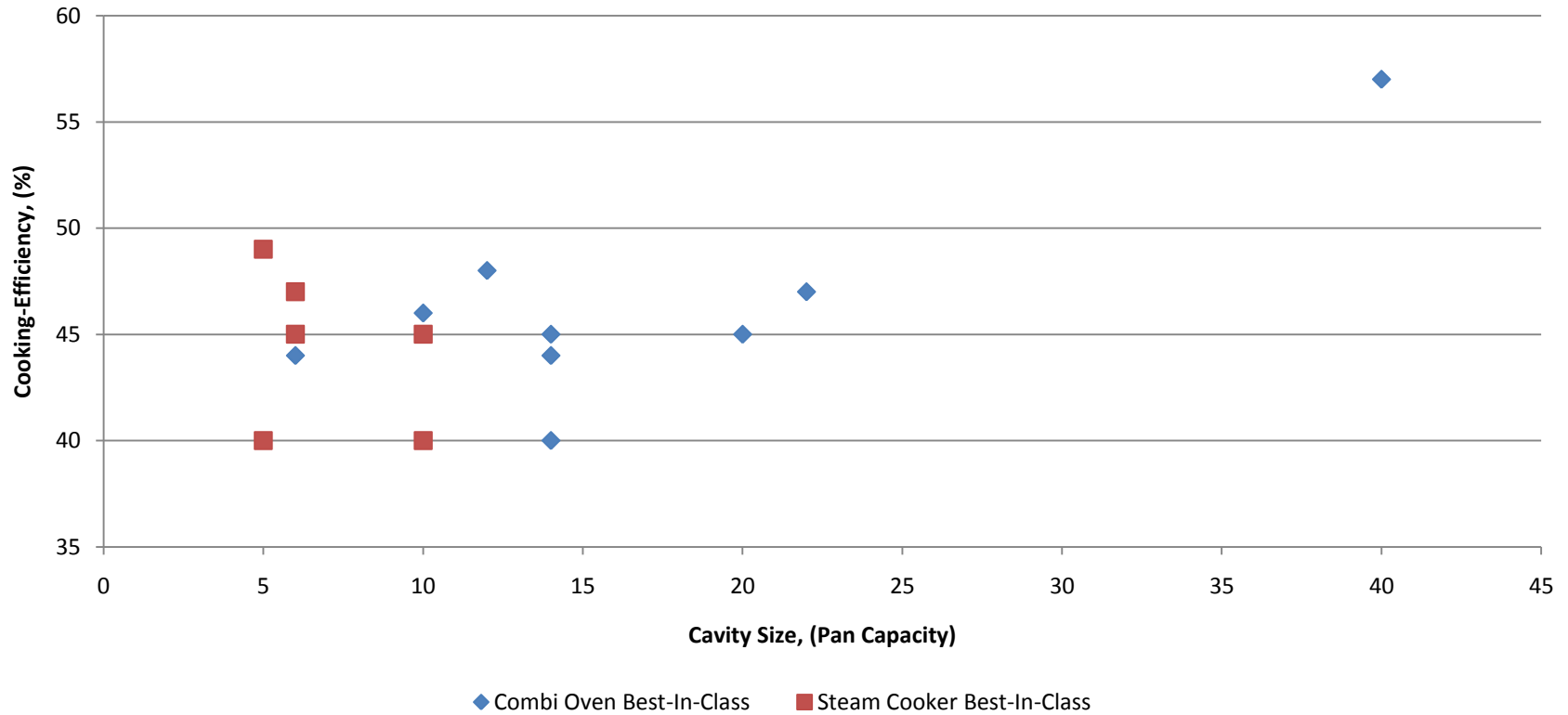
Combination Oven in Convection Mode vs. Convection Oven Idle Rates (Electric)



Steam Mode Graph A (Best-In-Class)



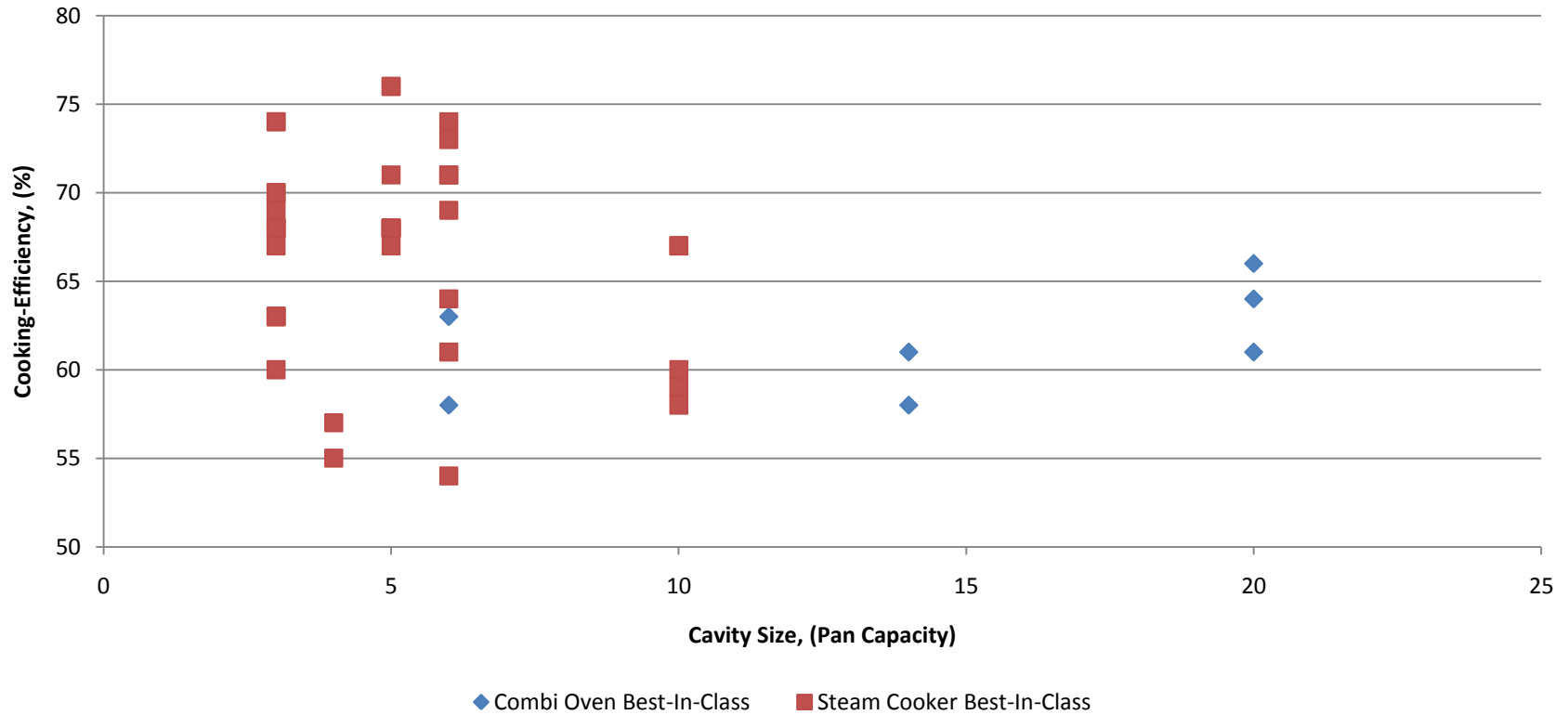
Combination Oven in Steam Mode vs. Steam Cooker Cooking-Energy Efficiencies (Gas)



Steam Mode Graph B (Best-In-Class)



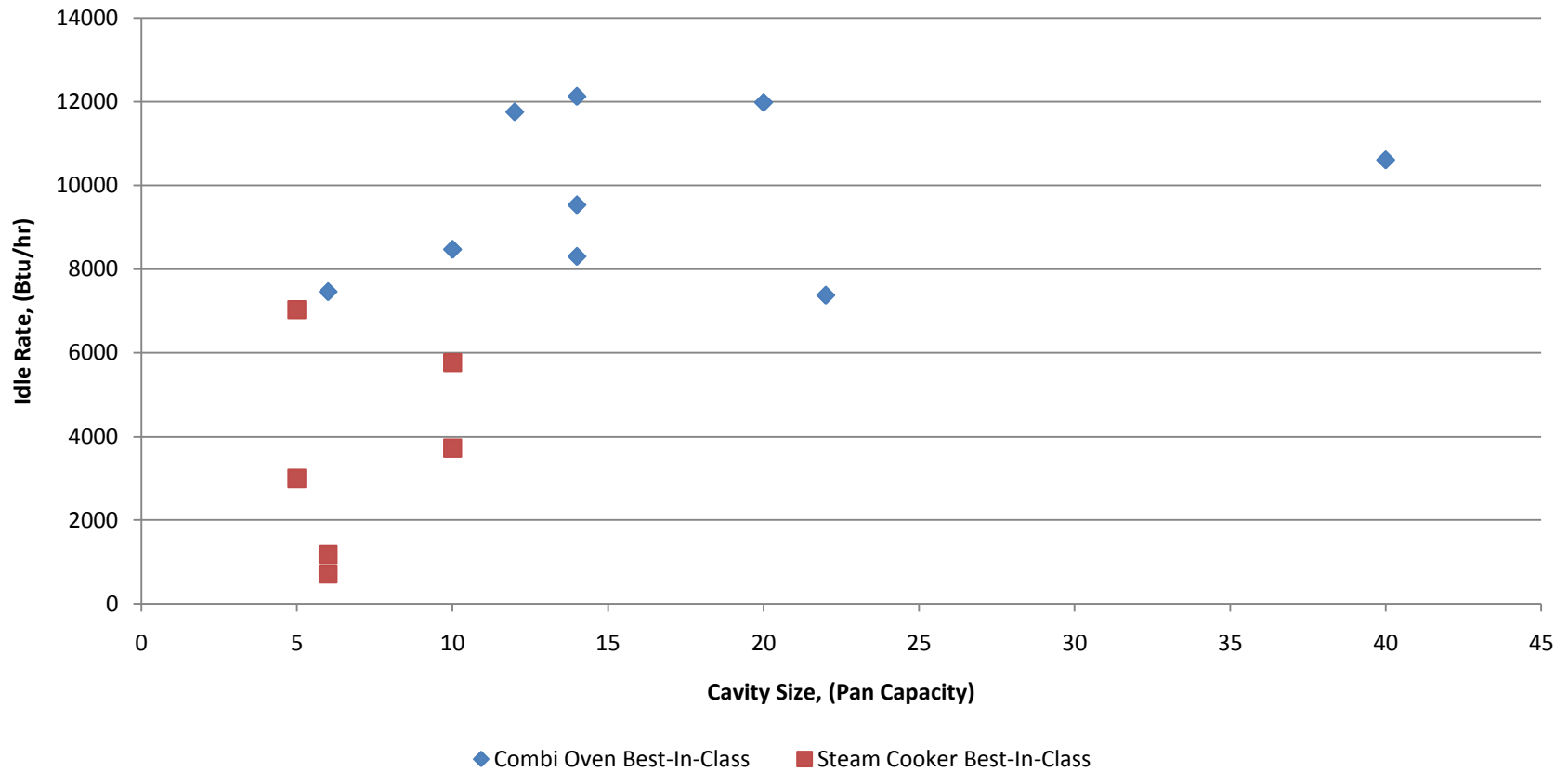
Combination Oven in Steam Mode vs. Steam Cooker Cooking-Energy Efficiencies (Electric)



Steam Mode Graph C (Best-In-Class)



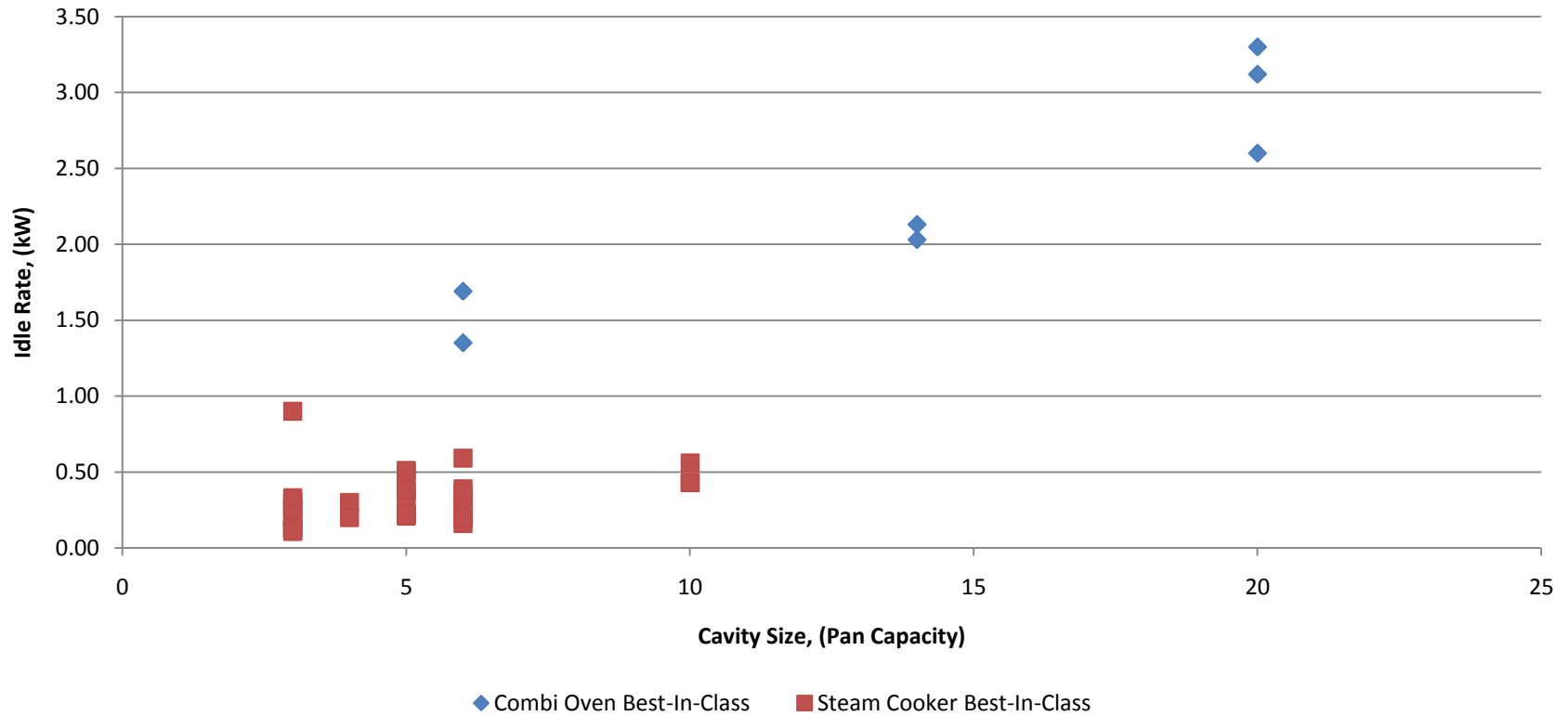
Combination Oven in Steam Mode vs. Steam Cooker Idle Rates (Gas)



Steam Mode Graph D (Best-In-Class)



Combination Oven in Steam Mode vs. Steam Cooker Idle Rates (Electric)





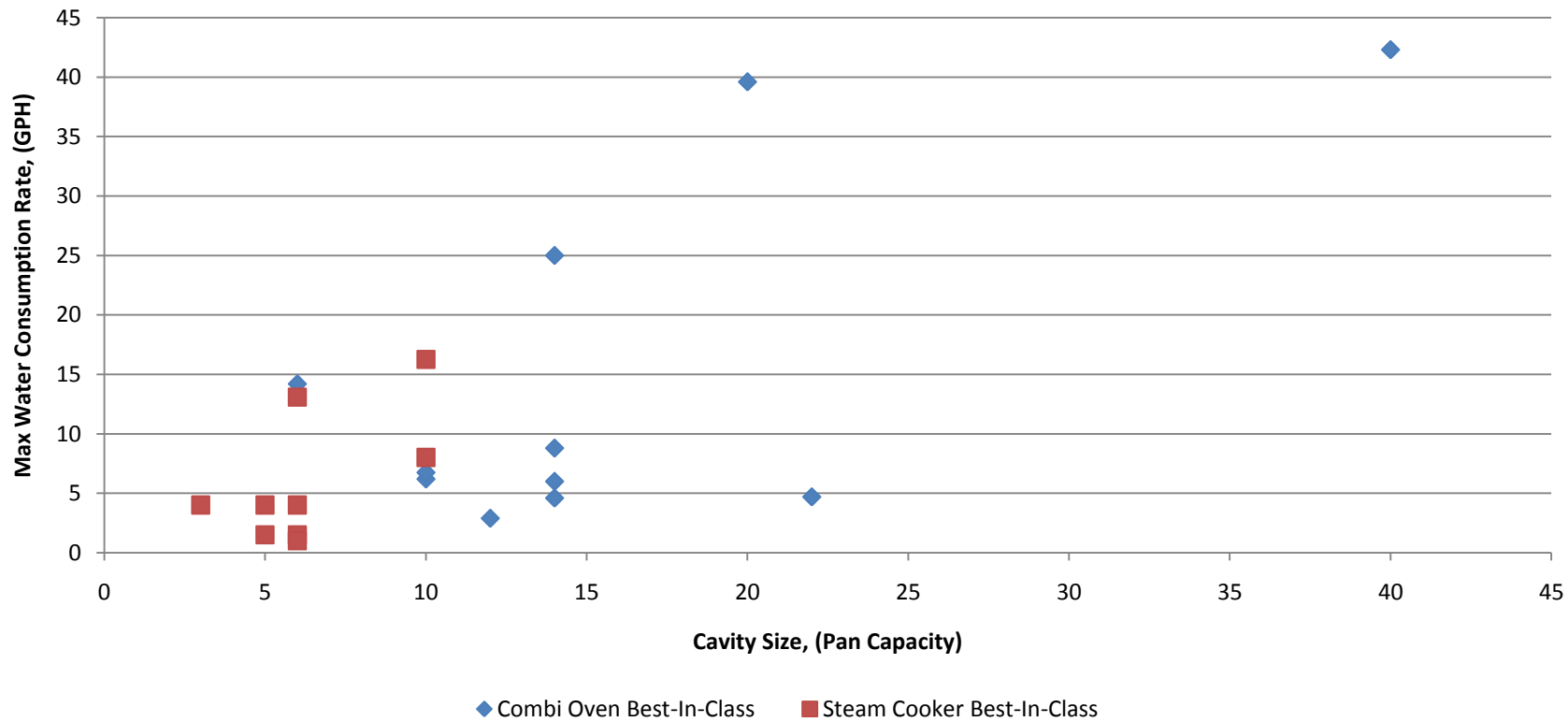
Combination Oven: Water Metric

- EPA proposes to measure the cooking cavity water consumption and the condensate cooling water separately to confirm that minimum water required for steaming capabilities is delivered
 - EPA proposes to list the worst case scenario, maximum total water consumption rate of the unit
- Water Consumption Metric
 - Water rate by cavity
 - Total GPH
 - Water rate by pan
 - GPH per pan

Maximum Water Consumption Rate Graph A (Best-In-Class)



Combi Oven vs. Steam Cooker Water Consumption Rates (Gas)

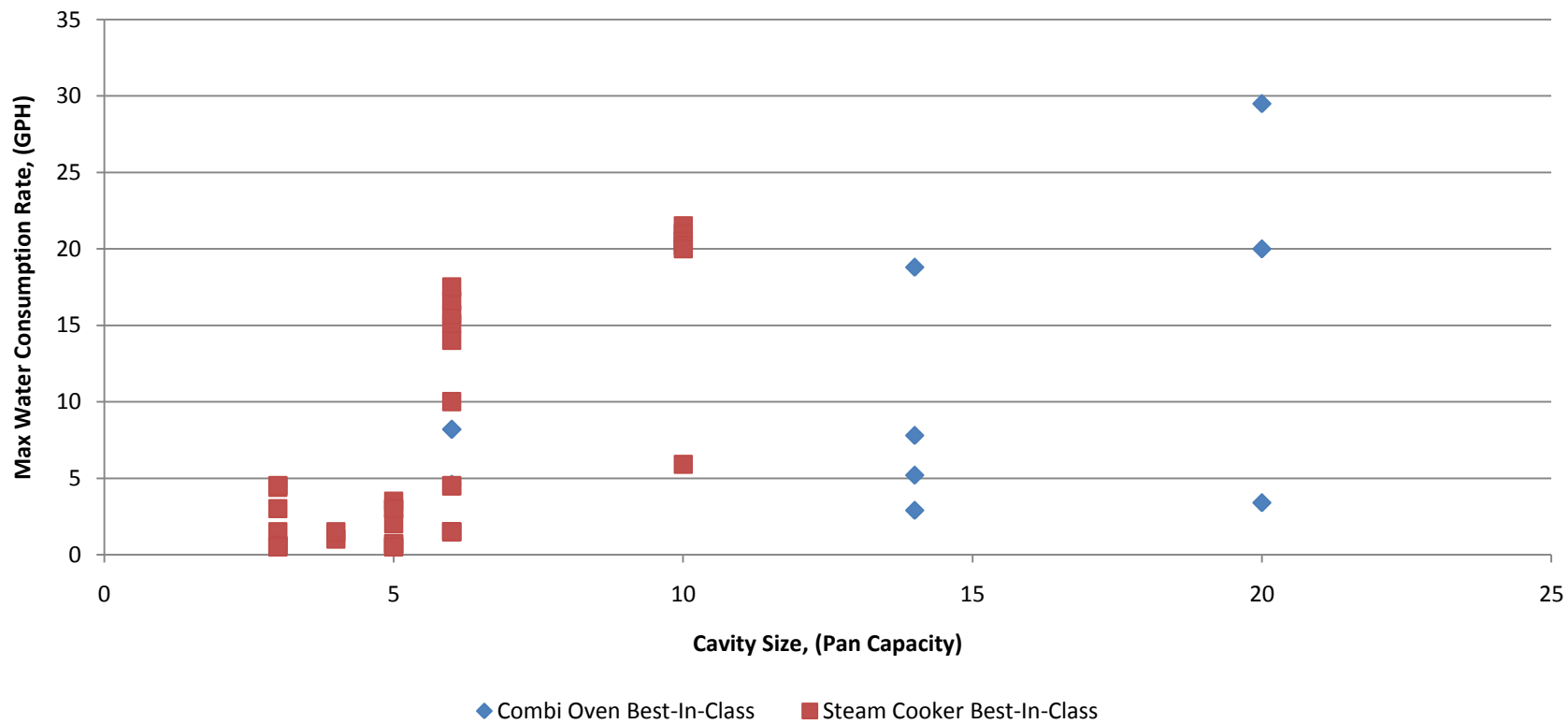


Maximum Water Consumption Rate

Graph B (Best-In-Class)



Combination Oven vs. Steam Cooker Water Consumption Rates (Electric)



Data Call



- EPA encourages manufacturers to submit performance data on currently available models
 - EPA will consider all data shared
 - A data set representative of models across all capacity sizes will help EPA set appropriate requirements that reflect the overall market
 - All of EPA's current data has been provided by the FSTC and may only represent the best-in-class models
 - EPA is targeting the top 25% of all performers it receives data on, so standard model data points are crucial to achieve accurate representation of the range of combination oven performance.

V2.0: Effective Date and Qualification



- Requirements for combination ovens can take effective immediately upon finalization
 - Required to be certified by an EPA recognized Certification Body
- Convection ovens will need to be retested, certified to Version 2.0
 - May be provided additional time to comply with 3PC

ENERGY STAR's Third-Party Certification Process



Entities apply to become EPA-recognized laboratories, certification bodies, or accreditation bodies



Manufacturers test products with EPA-recognized laboratory or manufacturer lab (W/SMTL)



EPA-recognized certification body reviews data & certifies performance



EPA lists qualified models on website and partners market as ENERGY STAR qualified

Effective January 1, 2011

Details available at www.energystar.gov/3rdpartycert





Revision Timeline

- **January 20, 2012** - Deadline to submit performance test data and comments for consideration
- **Mid-February 2012** - Draft 1 of the revision released
 - Early March 2012 - Comments due to EPA
 - Late February 2012 – Stakeholder webinar
- **Late March 2012** - Draft 2 released
 - Mid April 2012 - Comments due to EPA
 - May 2012 – Stakeholder meeting (NRA)
- **June 2012** - Draft Final released
- **July 2012** - Final V2.0 released

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