



ENERGY STAR® for Commercial Refrigerators and Freezers

Online Stakeholder Meeting

February 28, 2008

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Presentation Overview



- Welcome and Introductions
- ENERGY STAR Goals and Information
- Background on Version 1.0 Commercial Refrigerator and Freezer Specification
- Specification Revision Rationale and Timeline
- Overview of Draft 1 Version 2.0 Proposed Changes
 - Volume categorization
 - New product categories
 - Updated test procedure
 - Food-grade distinction
- Data Analysis
- Next Steps
- Q&A / Discussion

What is ENERGY STAR?



- A public private partnership to increase sales of energy efficient products and services
- A national government-backed label to designate products that save energy and help the environment
 - Jointly sponsored by the U.S. Environmental Protection Agency and the U.S. Department of Energy

ENERGY STAR

Guiding Principles



EPA considers the following criteria when selecting products to pursue, setting specifications and revising specification

- Significant energy savings can be realized on a national basis
- Product performance is maintained or enhanced with increased energy efficiency
- Purchase of higher efficiency product is cost effective
- Energy efficiency can be achieved through several technology options
- Energy consumption and performance can be measured and verified with testing
- Labeling differentiates products and is visible for purchasers

Success of ENERGY STAR



- More than 70% of Americans recognize the ENERGY STAR label
- More than 1,700 manufacturing partners have qualified over 40,000 ENERGY STAR product models across over 50 product types
- About 500 utilities and 40 and state partners promote ENERGY STAR
- In 2006 alone, Americans purchased more than 300 million ENERGY STAR qualified products
 - Saving \$14 billion on their energy bills
 - Preventing greenhouse gas emissions equivalent to the annual emissions of 25 million vehicles

ENERGY STAR in Commercial Food Service



- Restaurants and commercial kitchens use approximately 2.5 times more energy per square foot than other commercial buildings
 - 20% of the energy consumption in a typical food service facility is used for refrigeration.
- Outfitting an entire kitchen with a suite of ENERGY STAR equipment could save operators about 285 Mbtu/year, or approximately \$2,500 per year
- Replacing all existing commercial solid door refrigerators and freezers in the U.S. with ENERGY STAR qualified models would result in savings of almost \$320 million per year
 - Equivalent of eliminating the emissions from 475,000 cars
- More than 25 utilities/organizations offer incentives on the purchase of ENERGY STAR qualified commercial foodservice equipment
 - 14 of these offer incentives on commercial refrigeration equipment

Background: Version 1.0 Commercial Refrigerator and Freezer Specification



- Currently the types of hinged, solid door, commercial refrigerators, freezers, ice cream freezers (-5°F), and refrigerator-freezers that may qualify are
 - Reach-in Cabinets
 - Undercounter Cabinets
 - Roll-in or Roll-through Cabinets
 - Pass-through Cabinets
- Only applicable to food-grade equipment
- Test procedure: ASHRAE Standard 117-1992, “Method of Testing Closed Refrigerators” with following temperature specifications
 - Refrigerator: 38 degrees \pm 2 degrees F
 - Freezer: 0 degrees \pm 2 degrees F
 - Ice cream: -5 degrees \pm 2 degrees F

Success of Version 1.0 Specification



- 22 Manufacturing Partners
- 1513 Qualified Products
 - 793 Refrigerators
 - 704 Freezers
 - 15 Refrigerator-Freezers
 - 1 Ice Cream Freezer
- Market share of qualified units represent 35-44% of the marketplace

Rationale for Revision



- Current ENERGY STAR specification has been in place since September 2001
- Market share of ENERGY STAR qualified refrigerators and freezers represent 35-44% of the marketplace
- In 2005, Congress passed new Federal minimum efficiency standards that make current ENERGY STAR levels mandatory for all commercial refrigerators and freezers as of January 1, 2010 – Energy Policy Act of 2005 (EPAAct 2005)
- Manufacturers' interest to add new subcategories

Specification Development Cycle



Proposed Timeline for Version 2.0 Specification



February 14, 2008

Distribute Draft 1 Version 2.0

April 10, 2008

Deadline for partners to submit comments and supporting data for Draft 1

May 19, 2008 - NRA

Host stakeholder meeting to discuss Draft 2

June 23, 2008

Distribute Draft 3 Version 2.0

July 31, 2008

Distribute Final Draft Version 2.0

May 1, 2009

Version 2.0 specification effective date

February 28, 2008

Host online stakeholder meeting to collect feedback on Draft 1

May 5, 2008

Distribute Draft 2 Version 2.0

June 9, 2008

Deadline for partners to submit comments on Draft 2

July 14, 2008

Deadline for partners to submit comments on Draft 3

September 1, 2008

Version 2.0 finalized



Draft 1 Version 2.0: Volume Ranges



- Proposed new energy consumption levels based on volume ranges
 - Volume ranges (in cubic feet) for all product types based on section sizes
 - $0 < V < 20$
 - $20 \leq V < 30$
 - $30 \leq V < 70$
 - $70 \leq V$
 - If single line fit to data, 25% of models overall would qualify, but not uniformly across all volume categories
 - With new approach: 25% of models in each volume category would qualify
 - Volume measured using ANSI/AHAM HRF-1-2004 (AHAM volume) is explicit in specification

Draft 1 Version 2.0: Other Proposed Changes



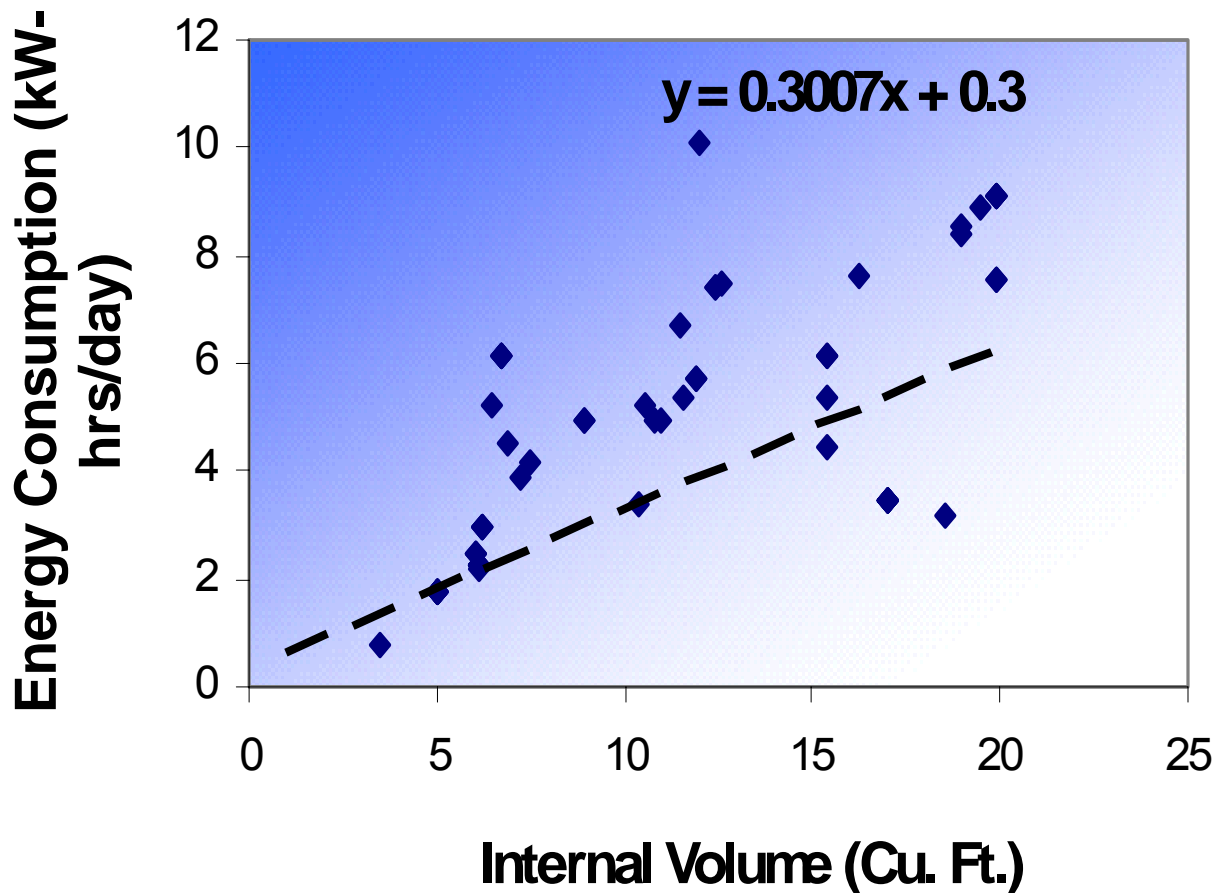
- Inclusion of sliding door units and glass door units
- Drawer units originally included in Draft 1
 - These units will now not be included in this revision due to inapplicability of ANSI/ASHRAE 72 to these units
- Update test procedure to ANSI/ASHRAE 72-2005
- Ice cream freezer integrated average product temperature for testing:
-15 degrees F (correspond to EPL Act 2005)
 - Need data at these test conditions to establish specification
- Draft 1 only applicable to food-grade equipment
 - Food-grade explicit in current definitions
 - Laboratory-grade equipment: energy efficient requirements being developed under a separate effort
 - Once final, lab-grade requirements will be incorporated into this specification

Data Analysis



- Data sources used
 - ENERGY STAR Qualifying Product List
 - California Energy Commission Appliance Efficiency Database
 - Consortium for Energy Efficiency Qualified List
- Data sets cover most solid and glass door refrigerators and freezers
- In every volume category for each product type
 - Proposed ENERGY STAR spec represents 25% of models
 - Ensure that multiple manufacturers were represented within the 25%

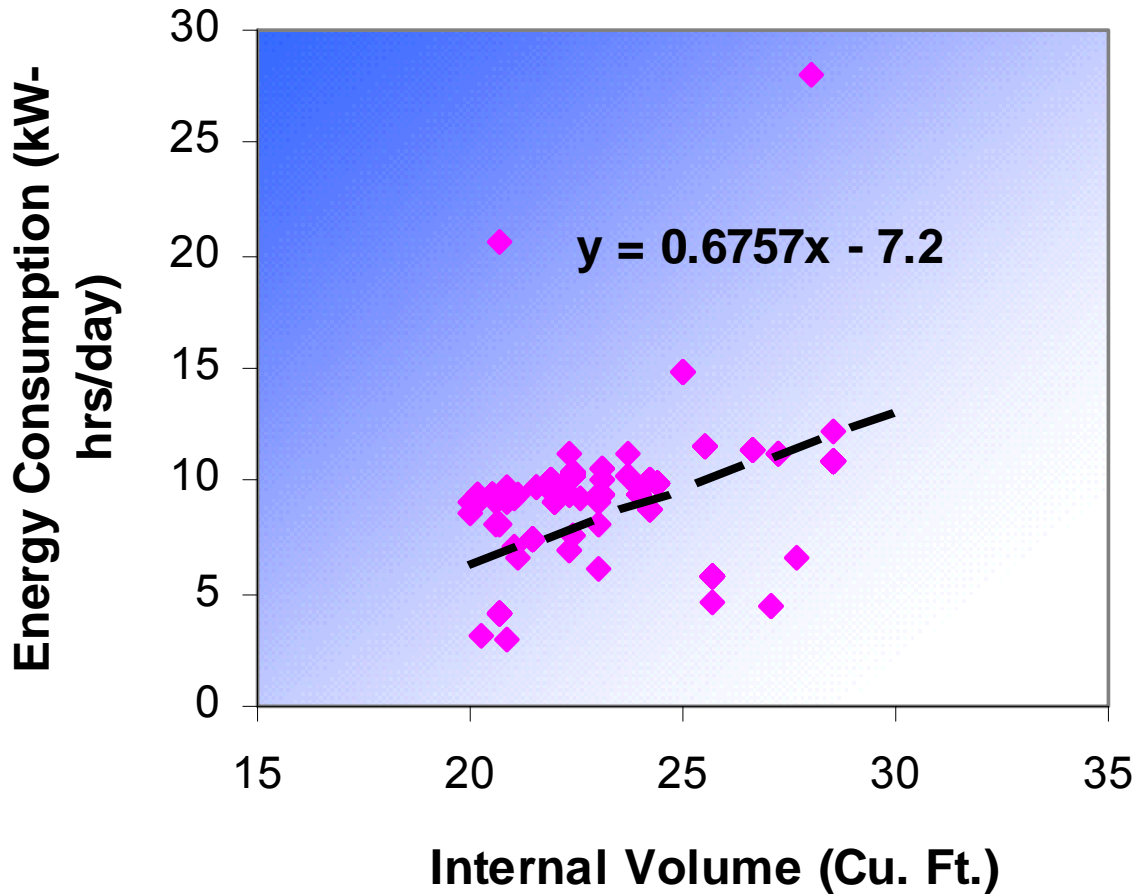
Volume vs. Energy Consumption for Commercial Solid-Door Freezers: 0 - 20 cu ft (n=64)



— — Proposed Tier
2 ENERGY
STAR

| | Not Qualify | Quality |
|-------------|-------------|---------|
| # of models | 47 | 17 |
| % | 73.4% | 26.6% |

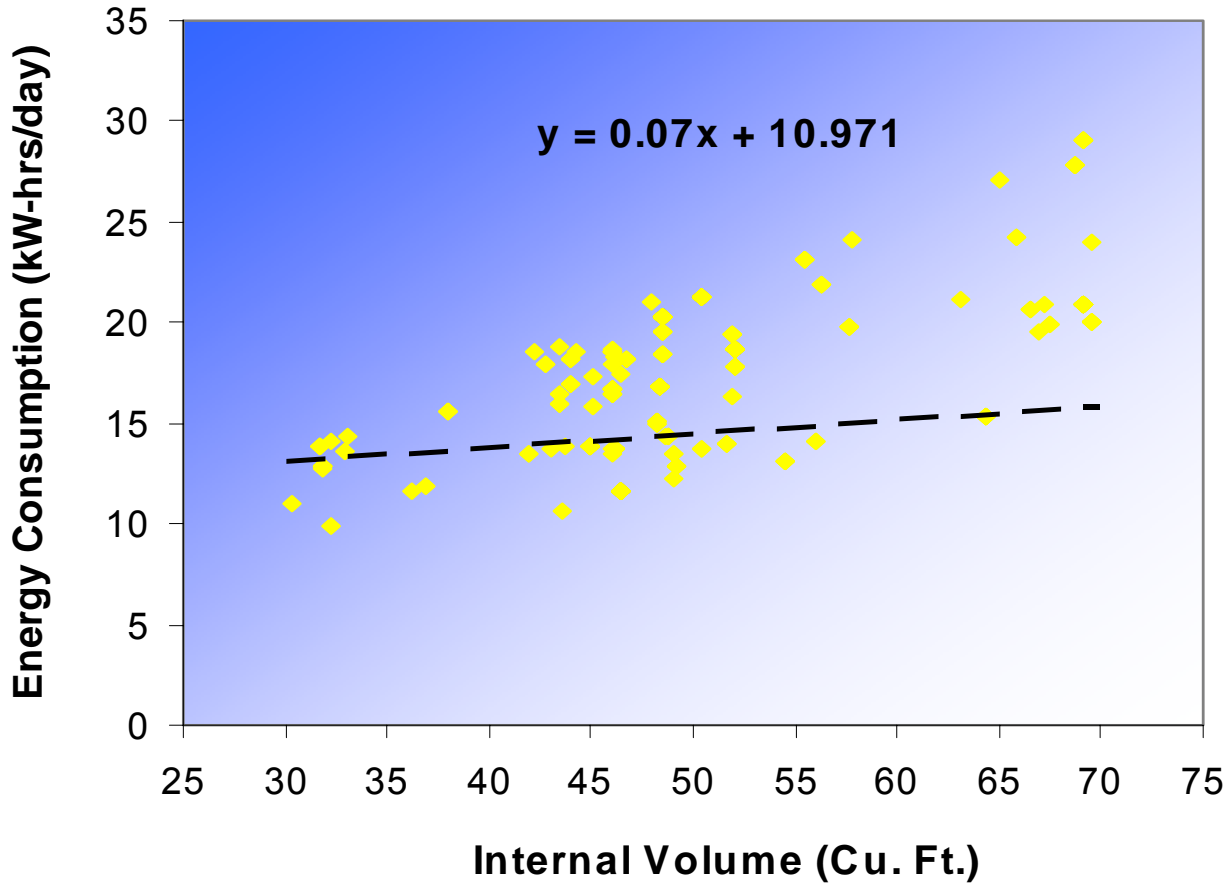
Volume vs. Energy Consumption for Commercial Solid-Door Freezers: 20 - 30 cu ft (n=234)



— Proposed tier
2 ENERGY
STAR

| | Not Qualify | Qualify |
|-------------|-------------|---------|
| # of models | 175 | 59 |
| % | 74.8% | 25.2% |

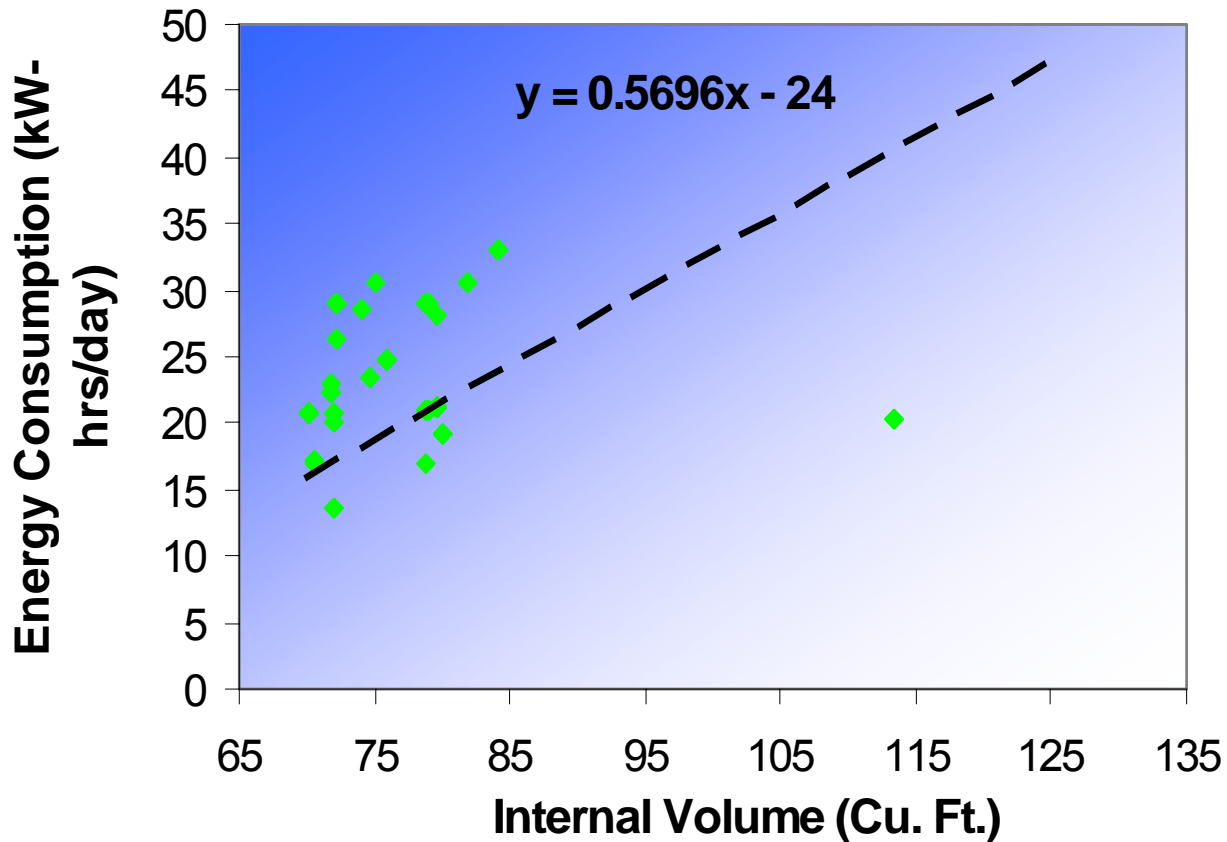
Volume vs. Energy Consumption for Commercial Solid-Door Freezers: 30 - 70 cu ft (n=342)



— — Proposed Tier
2 ENERGY
STAR

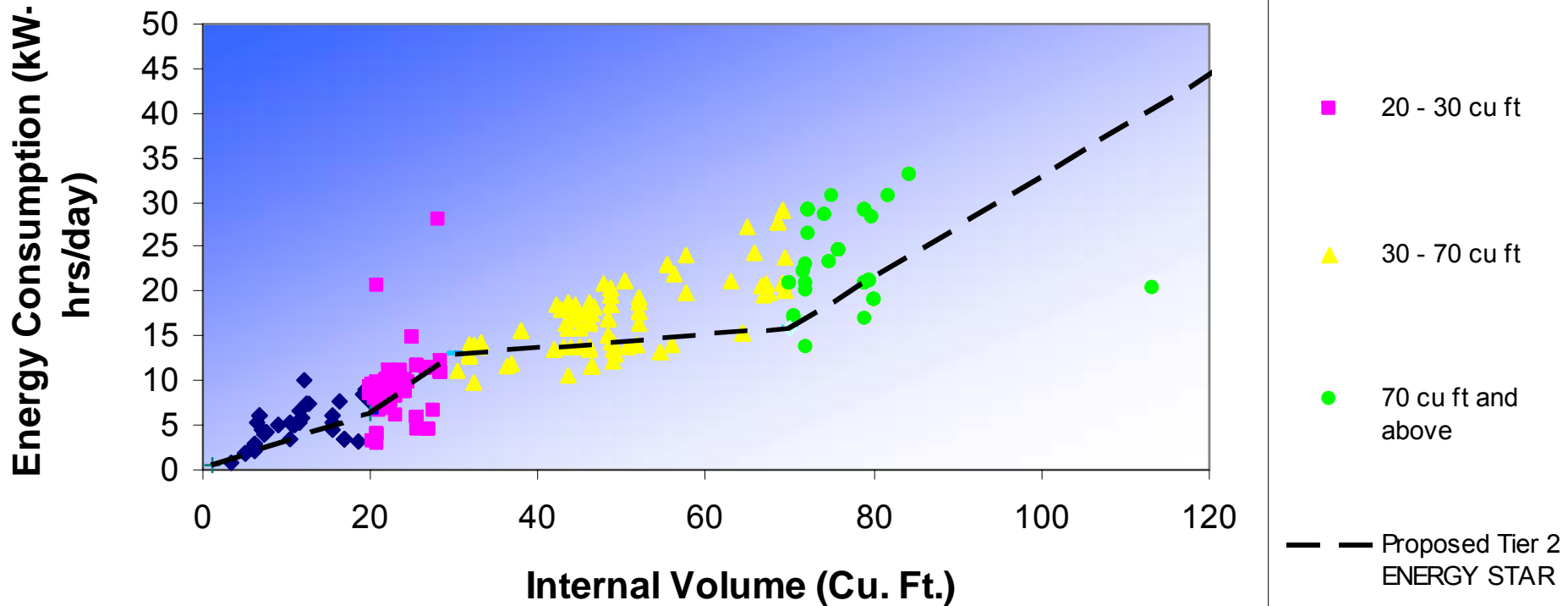
| | Not Qualify | Quality |
|-------------|-------------|---------|
| # of models | 253 | 89 |
| % | 74.0% | 26.0% |

Volume vs. Energy Consumption for Commercial Solid-Door Freezers: 70 and greater cu ft (n=152)



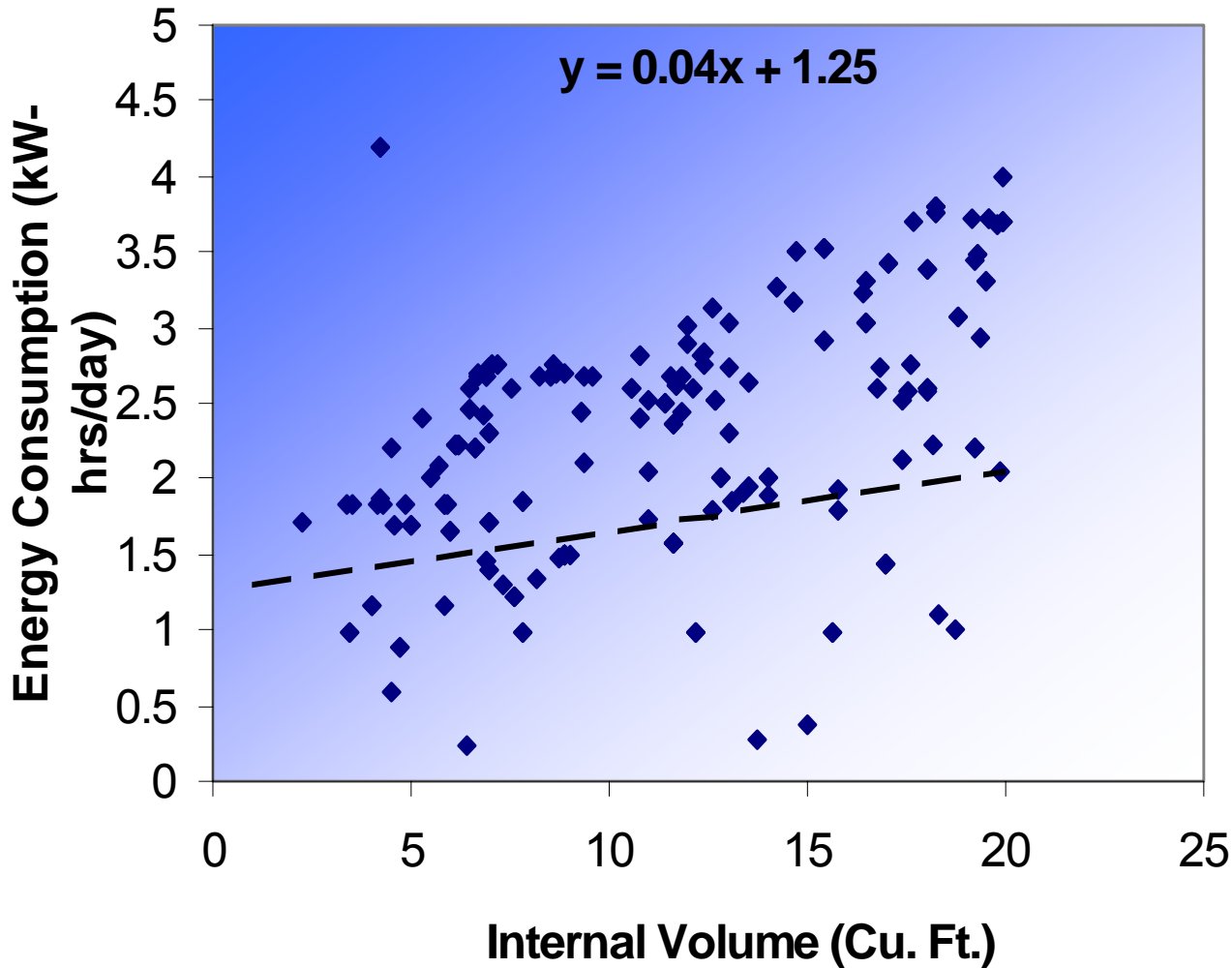
| | Not Qualify | Quality |
|-------------|-------------|---------|
| # of models | 113 | 39 |
| % | 74.3% | 25.7% |

Volume vs. Energy Consumption for All Commercial Solid-Door Freezers (n=792)



| | Not Qualify | Qualify |
|---------------------------|-------------|------------|
| 0 - 20 cu ft | 47 | 17 |
| % | 73.4% | 26.6% |
| 20 - 30 cu ft | 175 | 59 |
| % | 74.8% | 25.2% |
| 30 - 70 cu ft | 253 | 89 |
| % | 74.0% | 26.0% |
| 70 cu ft and above | 113 | 39 |
| % | 74.3% | 25.7% |
| Totals | 588 | 204 |
| % | 74.2% | 25.8% |

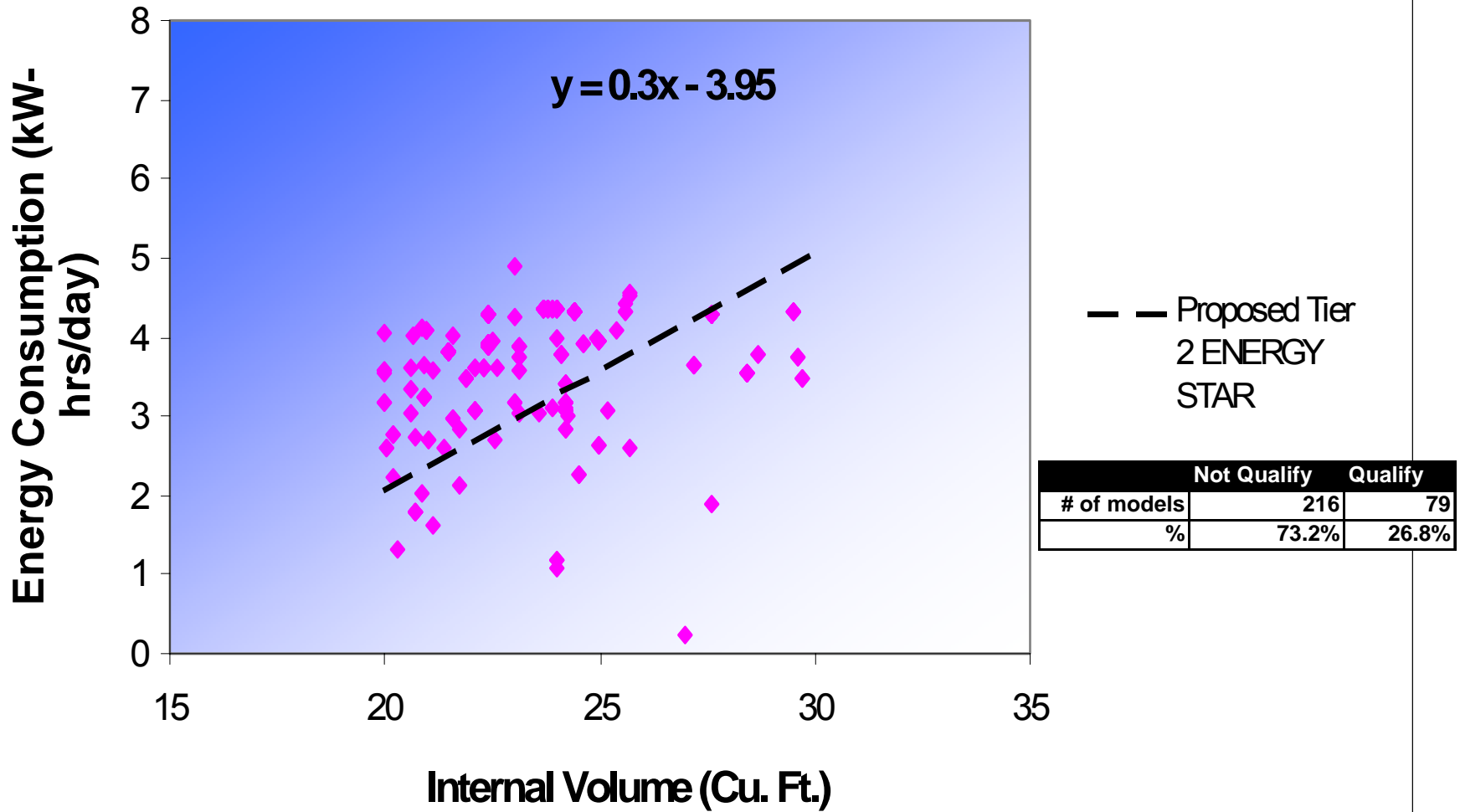
Volume vs. Energy Consumption for Commercial Solid-Door Refrigerators: 0 - 20 cu ft (n=217)



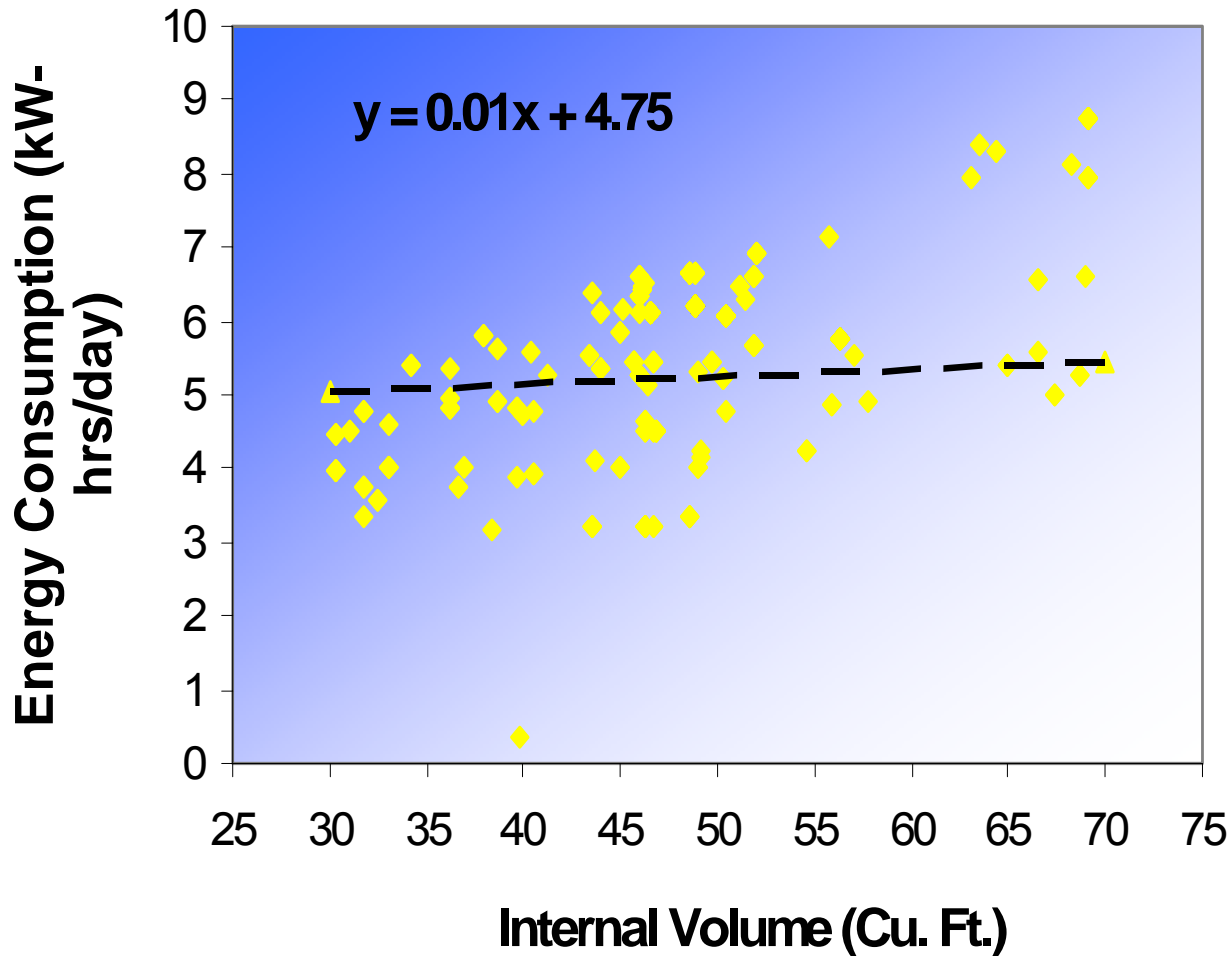
— — Proposed Tier 2
ENERGY STAR

| | Not Qualify | Qualify |
|-------------|-------------|---------|
| # of models | 165 | 52 |
| % | 76.0% | 24.0% |

Volume vs. Energy Consumption for Commercial Solid-Door Refrigerators: 20 - 30 cu ft (n=295)



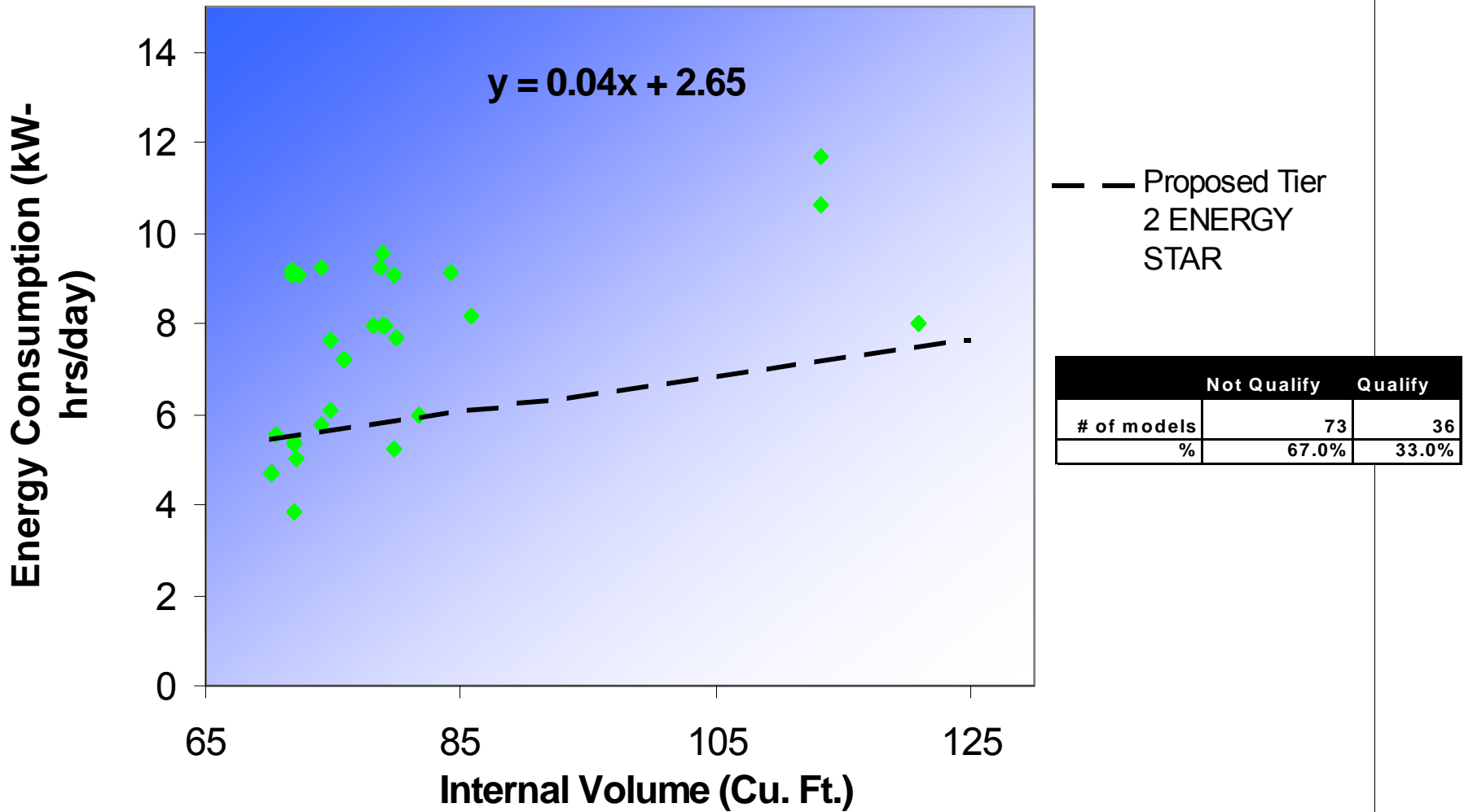
Volume vs. Energy Consumption for Commercial Solid-Door Refrigerators: 30 - 70 cu ft (n=336)



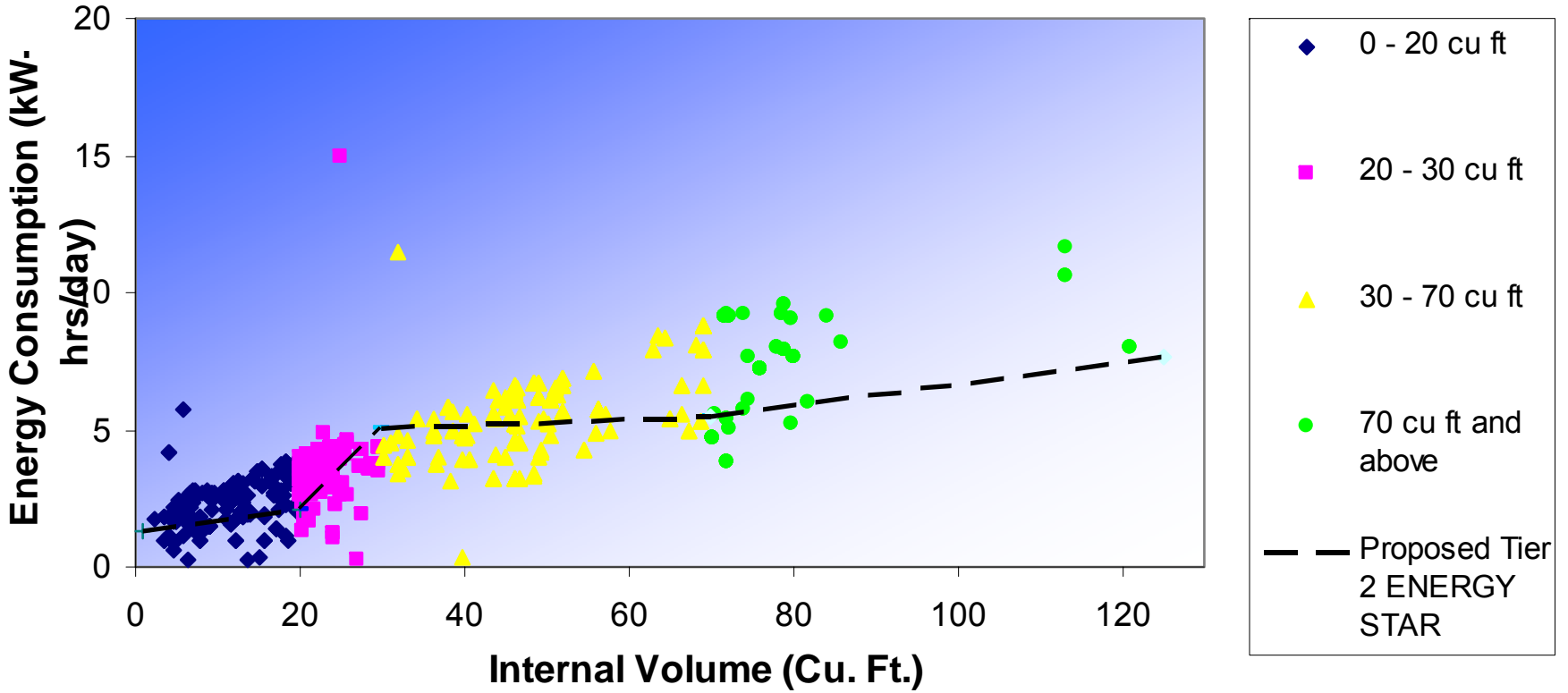
--- Proposed Tier
2 ENERGY
STAR

| | Not Qualify | Qualify |
|-------------|-------------|---------|
| # of models | 250 | 86 |
| % | 74.4% | 25.6% |

Volume vs. Energy Consumption for Commercial Solid-Door Refrigerators: 70 and greater cu ft (n=109)

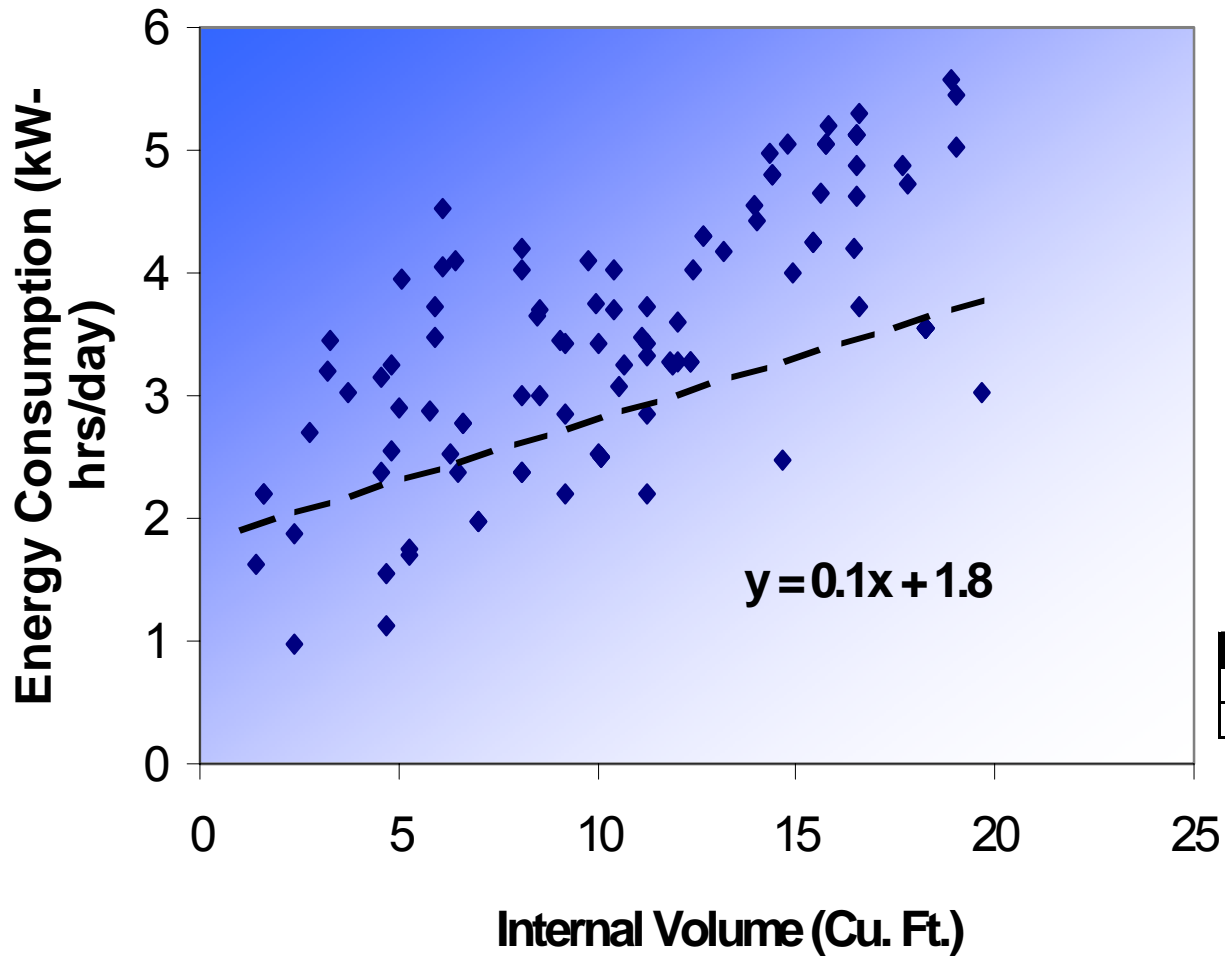


Volume vs. Energy Consumption for All Commercial Solid-Door Refrigerators (n=902)



| | Not Qualify | Qualify |
|---------------------------|-------------|------------|
| 0 - 20 cu ft | 165 | 52 |
| % | 76.0% | 24.0% |
| 20 - 30 cu ft | 216 | 79 |
| % | 73.2% | 26.8% |
| 30 - 70 cu ft | 250 | 86 |
| % | 74.4% | 25.6% |
| 70 cu ft and above | 73 | 36 |
| % | 67.0% | 33.0% |
| Totals | 704 | 253 |
| % | 73.6% | 26.4% |

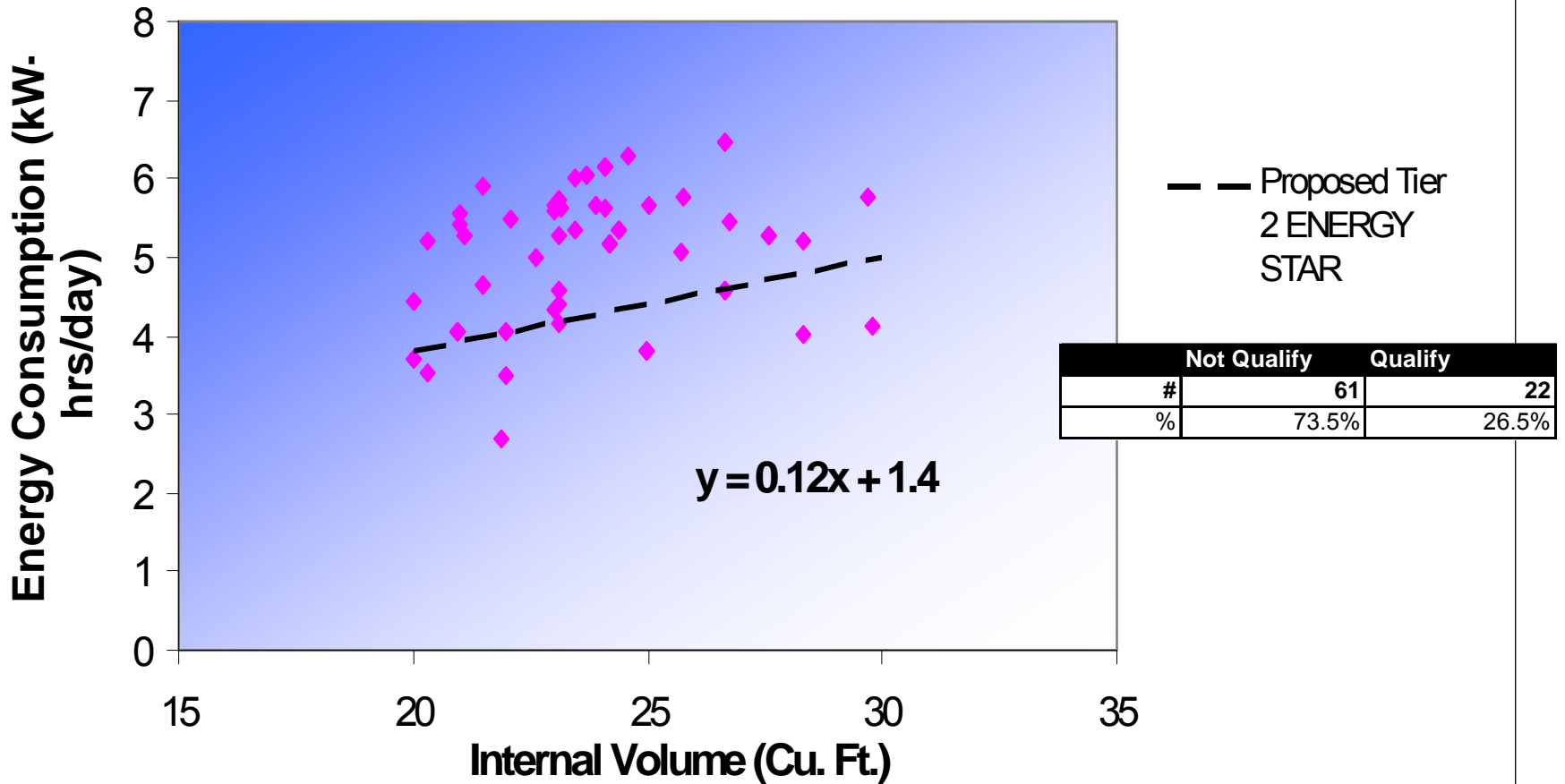
Volume vs. Energy Consumption for Commercial Glass-Door Refrigerators: 0-20 cu ft (n=102)



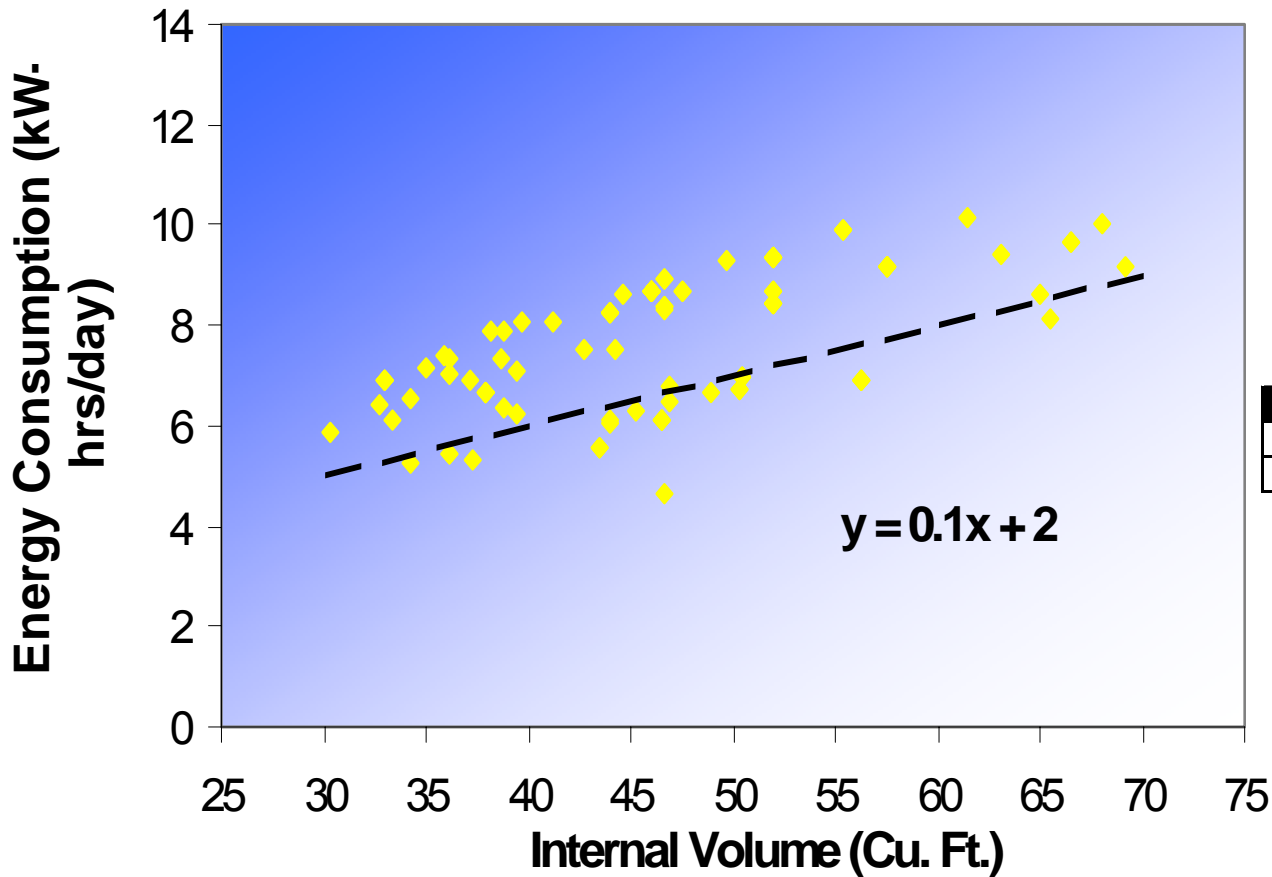
— Proposed Tier
2 ENERGY
STAR

| | Not Qualify | Qualify |
|---|-------------|---------|
| # | 77 | 27 |
| % | 74.0% | 26.0% |

Volume vs. Energy Consumption for Commercial Glass-Door Refrigerators: 20 - 30 cu ft (n=83)



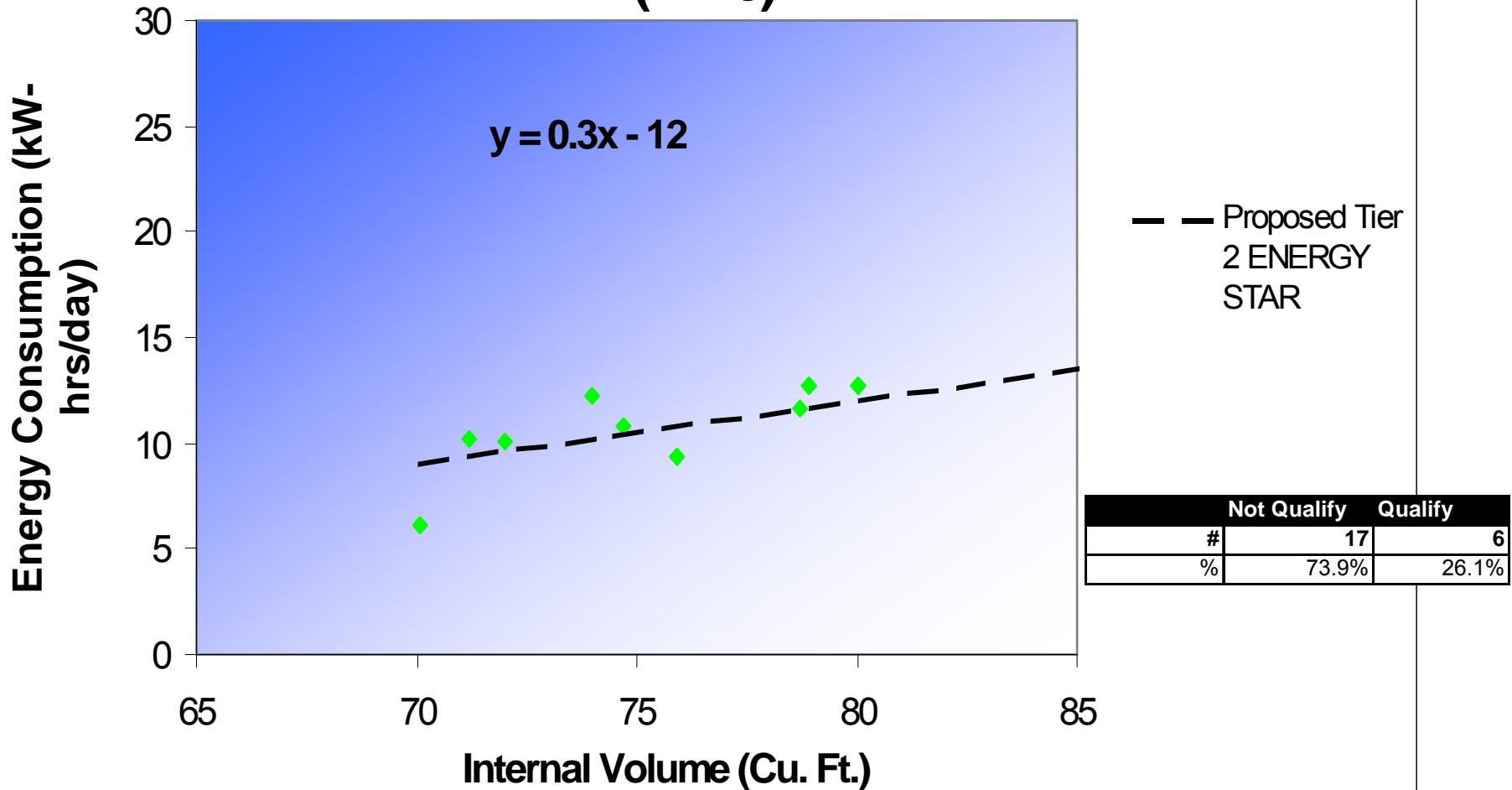
Volume vs. Energy Consumption for Commercial Glass-Door Refrigerators: 30 - 70 cu ft (n=99)



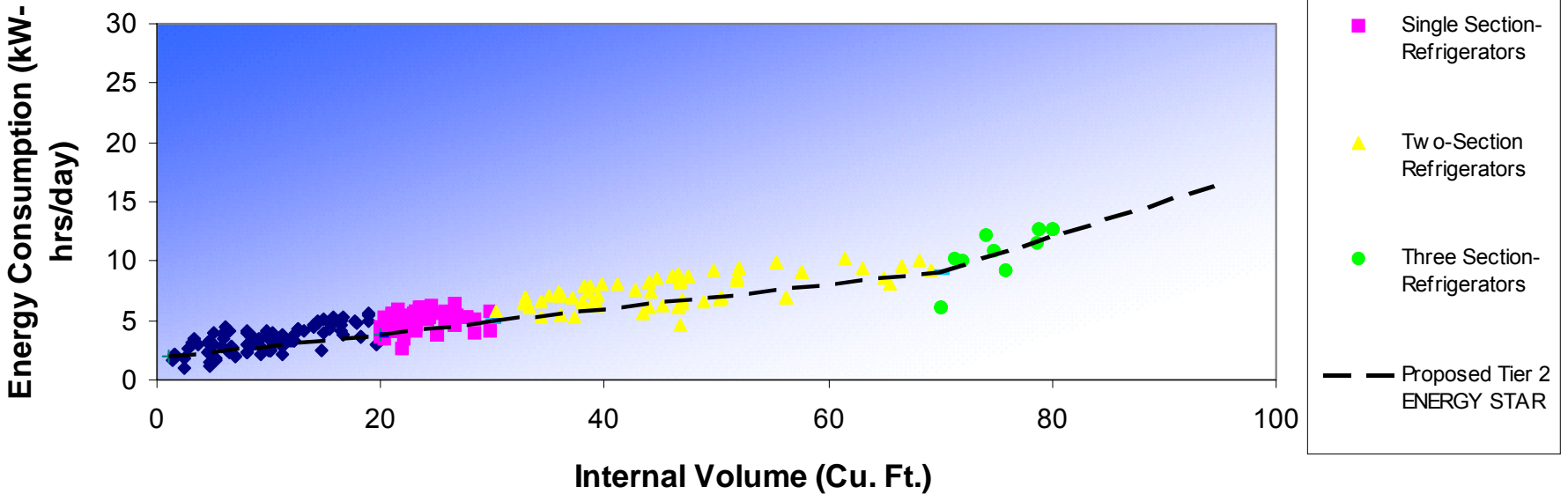
--- Proposed Tier
2 ENERGY
STAR

| | Not Qualify | Qualify |
|---|-------------|---------|
| # | 75 | 24 |
| % | 75.8% | 24.2% |

Volume vs. Energy Consumption for Commercial Glass-Door Refrigerators: 70 and greater cu ft (n=23)

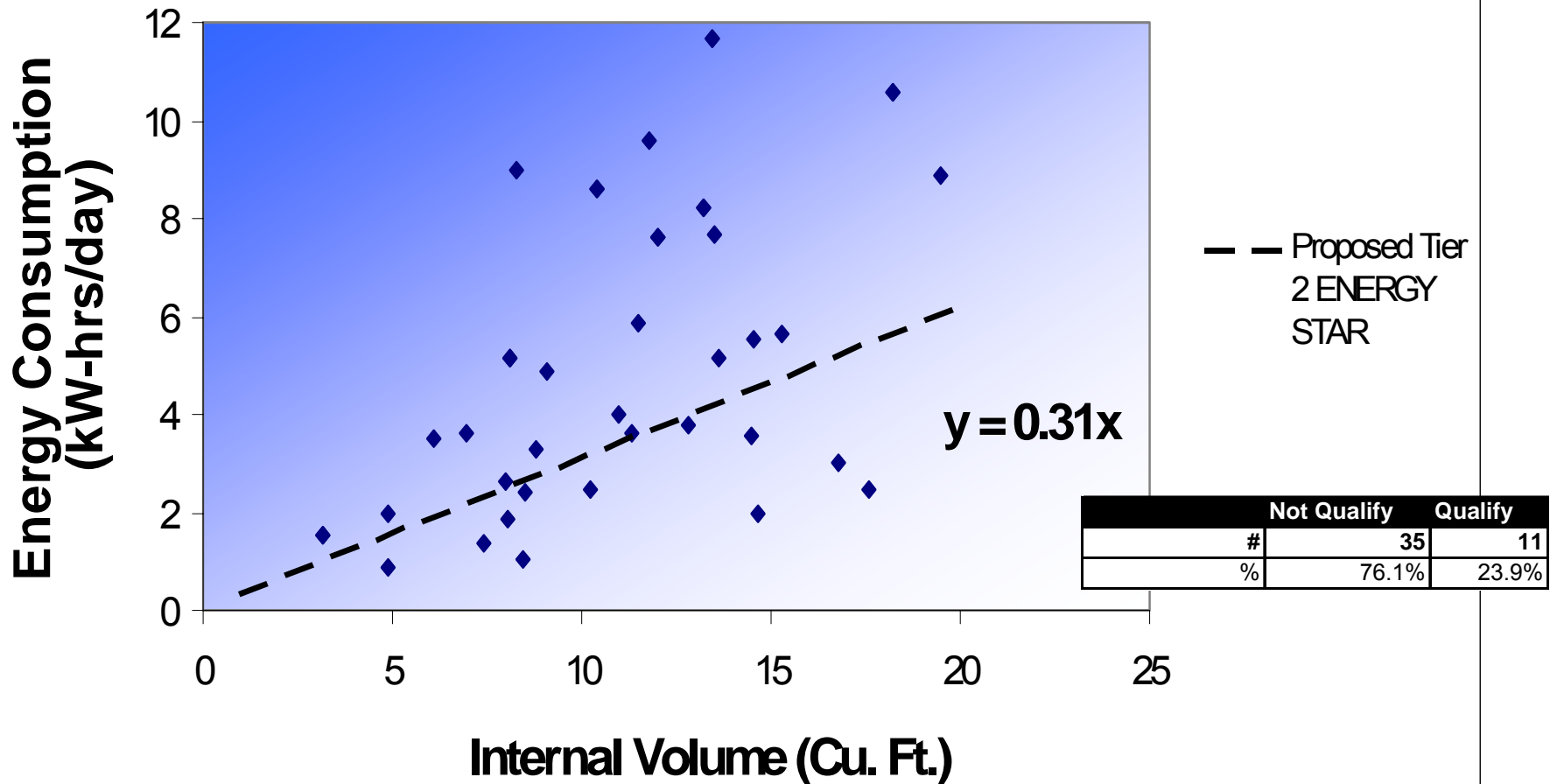


Volume vs. Energy Consumption for All Commercial Glass-Door Refrigerators (n=306)

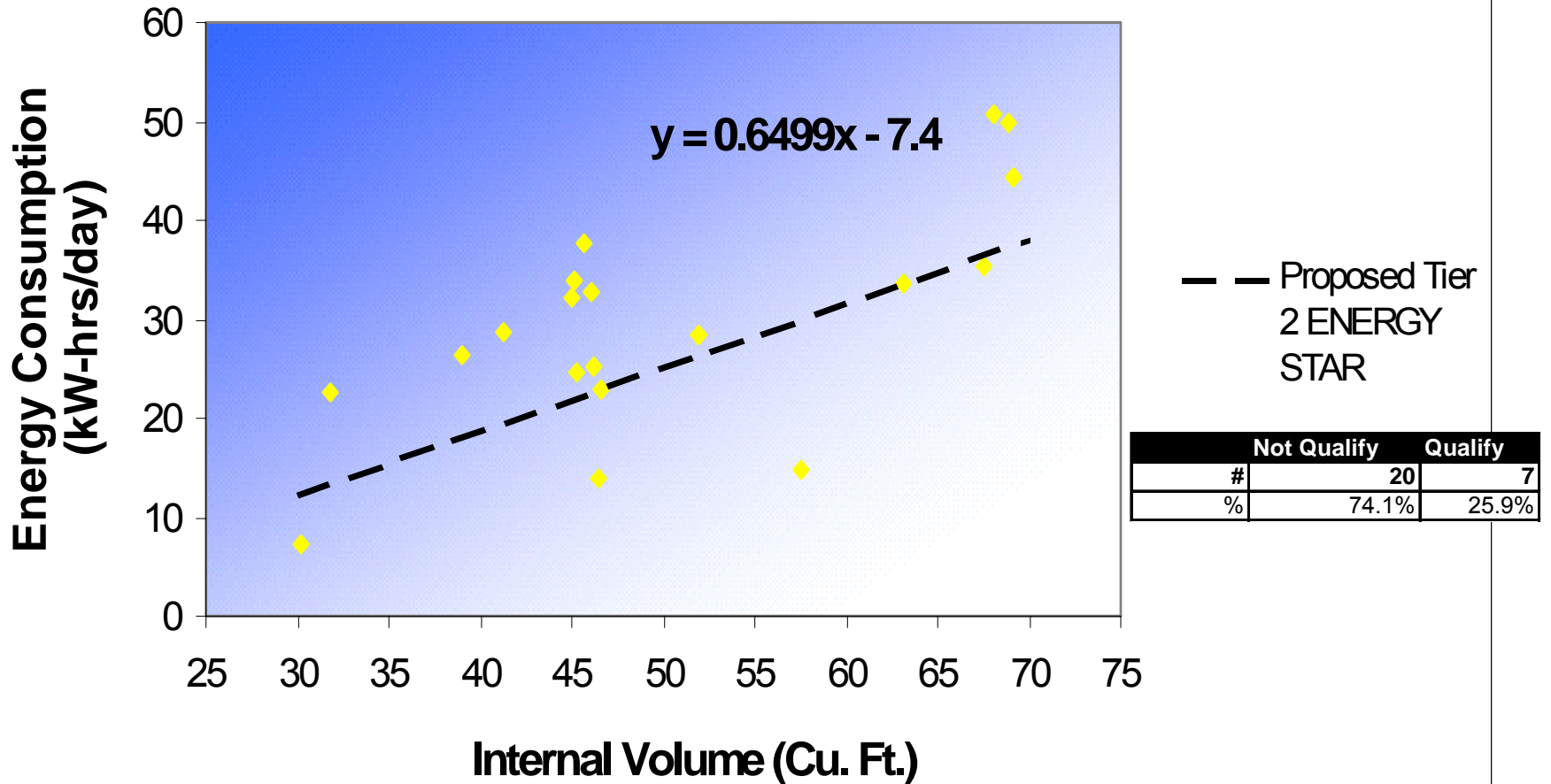


| | Not Qualify | Qualify |
|---------------------------|-------------|-----------|
| 0 - 20 cu ft | 77 | 27 |
| % | 74.0% | 26.0% |
| 20 - 30 cu ft | 61 | 22 |
| % | 73.5% | 26.5% |
| 30 - 70 cu ft | 75 | 24 |
| % | 75.8% | 24.2% |
| 70 cu ft and above | 17 | 6 |
| % | 73.9% | 26.1% |
| Totals | 230 | 79 |
| % | 74.4% | 25.6% |

Volume vs. Energy Consumption for Commercial Glass-Door Freezers: 0 -20 cu ft (n=46)



Volume vs. Energy Consumption for Commercial Glass-Door Freezers: 30 - 70 cu ft (n=27)



Next Steps: Data Collection



- Data request from manufacturers
 - Ice cream freezers
 - Refrigerator-Freezer units
 - Glass door freezers
- Data collection form distributed with Draft 1 and available on the Web site
 - Please use this form to submit data
- Deadline for submitting data: April 10, 2008
 - Difficult to extend deadline due to meeting at NRA (May 19, 2008)

Next Steps: Comments



- Stakeholders are strongly encouraged to provide comments on Draft 1 by April 10. Comments on
 - Definitions
 - Volume categories
 - Temperature parameters
 - Effective date
 - Any other aspect of spec
- EPA would appreciate feedback on areas of spec where stakeholders agree
- EPA will collect comments/feedback to create Draft 2
 - All comments will be posted on the ENERGY STAR Web site unless commenter requests otherwise
- EPA's target to distribute Draft 2: May 5
 - Stakeholder meeting at NRA: May 19
 - Stakeholder comments due on Draft 2 : June 9

Stakeholder Discussion



QUESTIONS?

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Adjournment



THANK YOU!