

The Expansion of the Rating Method to Account for Lighting, Appliances, and On-Site Energy Production

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Analysis Approach

1. **REM/RateTM software**
2. **Four climates: Chicago, Miami, Baltimore, San Diego**
3. **2000 sf home**
4. **80 and 86 point homes (classic HERS score)**

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Analysis Approach

1. Three levels of efficiency

1. Base

1. Proposed HERS reference home values
2. Refrigerator: 775 kWh/yr
3. Dishwasher: 0.46 EF (cycles/kWh)
4. % Fluorescent: 10.0

2. Good

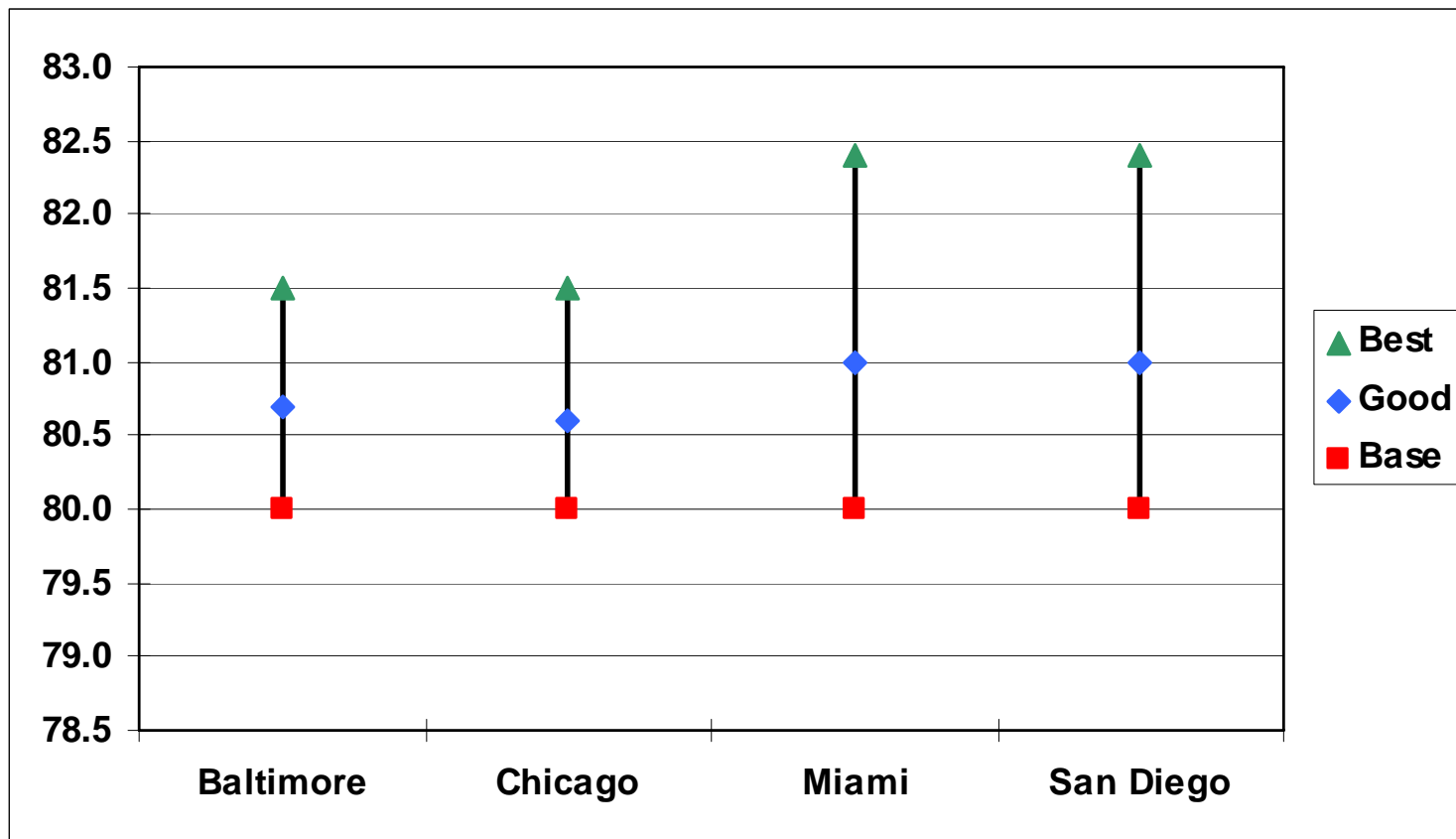
1. Refrigerator: 651 kWh/yr, 16% reduction is average Energy Star
2. Dishwasher: 0.64 EF, 39% increase is average Energy Star
3. % Fluorescent: 50.0

3. Best

1. Refrigerator: 388 kWh/yr, 50% reduction is best Energy Star
2. Dishwasher: 1.29 EF, 181% increase is best Energy Star
3. % Fluorescent: 100.0
4. 2 kW PV system (86 point home only)

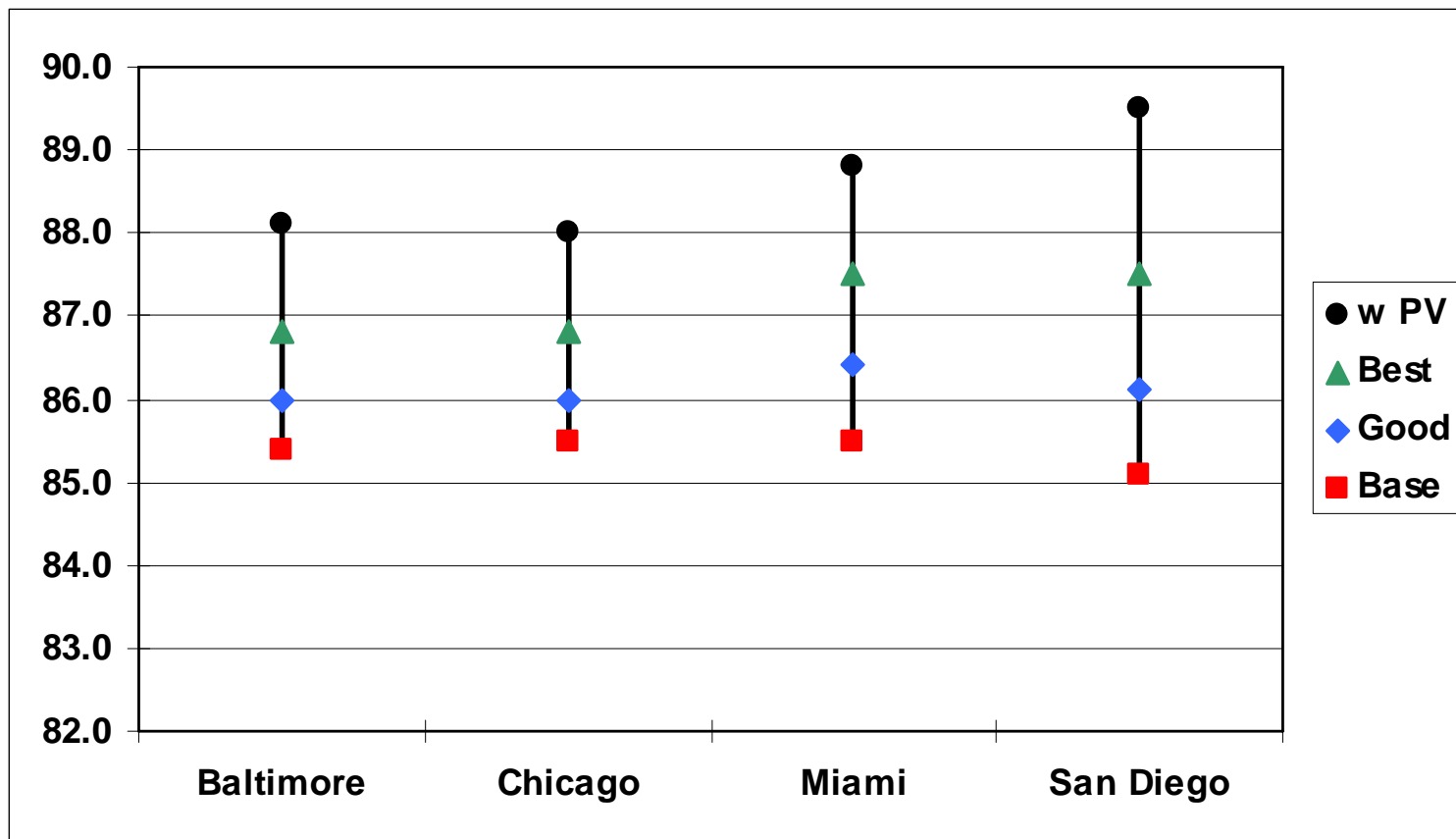
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Expanded Rating Scores for Home w/ Classic Score of 80 Points



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Expanded Rating Scores for Home w/ Classic Score of 86 Points



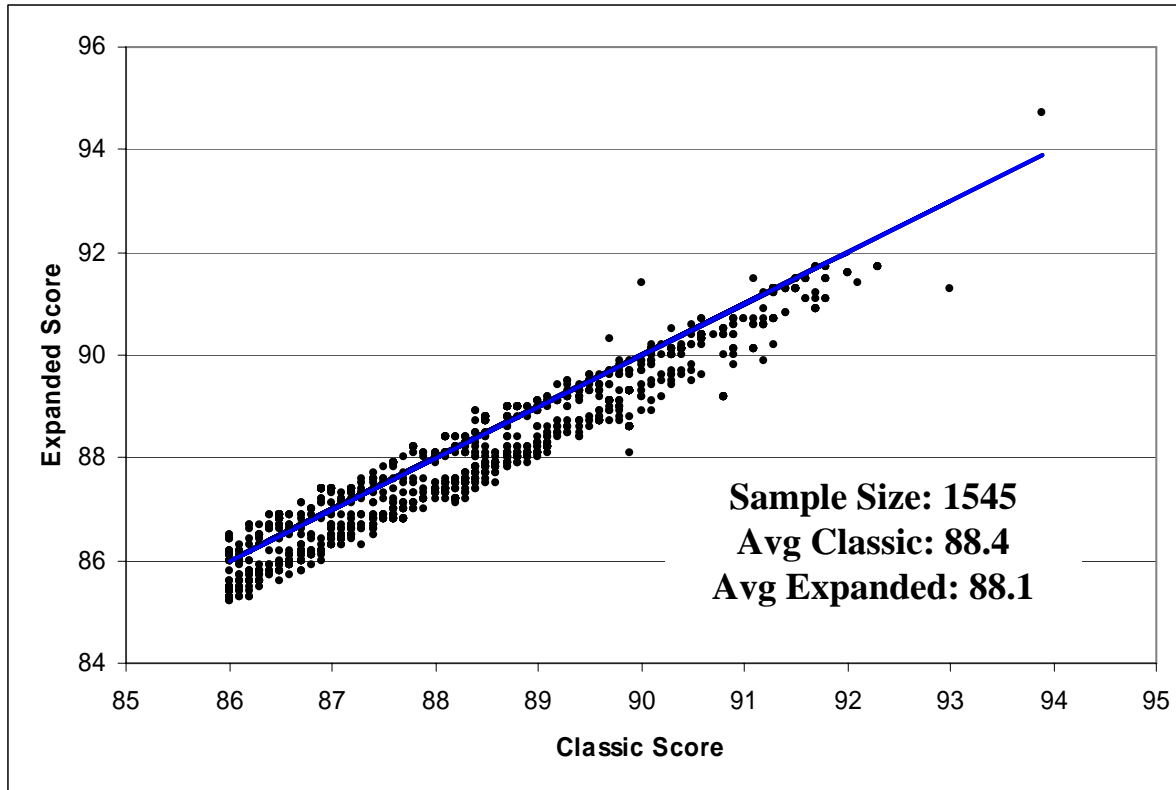
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Massachusetts Pilot Project 2004 Data

- 1. Number of participating homes: 1,855**
- 2. Number of Energy Star refrigerators: 935 (50%)**
- 3. Number of Energy Star dishwashers: 1258 (68%)**
- 4. Number of Energy Star light fixtures: 6262 (3.4)**

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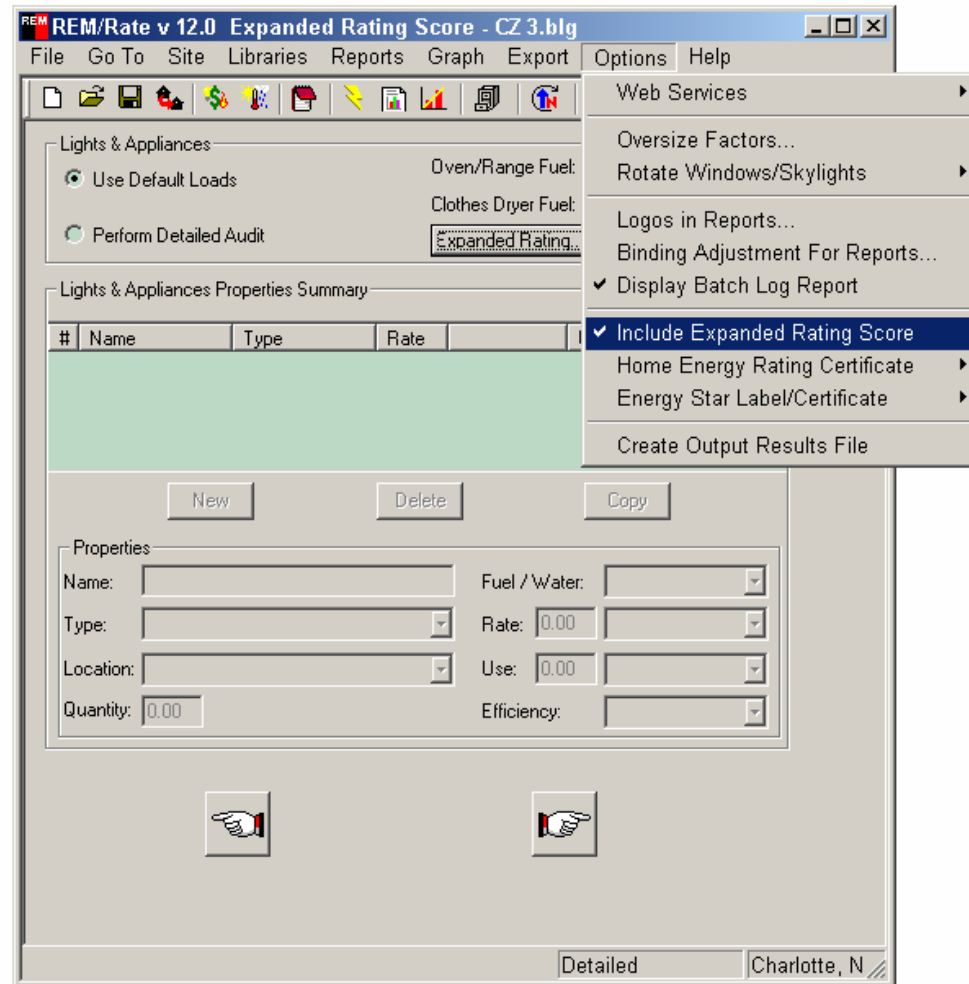
Massachusetts Pilot Project Expanded vs Classic Rating Scores



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REM/Rate Implementation



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REM/Rate Implementation

Expanded Rating Values [X]

Refrigerator EnergyGuide kWh:	651
Dishwasher Energy Factor:	0.64
Percent Fluorescent Lighting:	50.0

OK Cancel Defaults Help

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REM/Rate Implementation

Quick Analysis

Energy | Surface Area | **Compliance**

Codes

IECC 2004 Performance:	<input type="text" value="Passes"/>
IECC 2003 Performance:	<input type="text" value="Passes"/>
IECC 2001 Performance:	<input type="text" value="Passes"/>
IECC 2000 Performance:	<input type="text" value="Passes"/>
IECC 1998 Performance:	<input type="text" value="Passes"/>
ECC of New York State:	<input type="text" value="Passes"/>
MEC 1995 Performance:	<input type="text" value="Passes"/>
MEC 1993 Performance:	<input type="text" value="Passes"/>
MEC 1992 Performance:	<input type="text" value="Passes"/>
ASHRAE 90.2 Performance:	<input type="text" value="Passes"/>

EPA

Energy Star:

HERS

Classic Score:

Expanded Score:

Warnings!

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REM/Rate Implementation

Home Energy Rating Certificate

4 Stars Plus

Uniform Energy Rating System

1 Star	1 Star Plus	2 Stars	2 Stars Plus	3 Stars	3 Stars Plus	4 Stars	4 Stars Plus	5 Stars	5 Stars Plus
9-19	20-39	40-49	50-59	60-69	70-79	80-82	83-85	86-89	90-100

Energy Efficient

4 Stars	4 Stars Plus	5 Stars	5 Stars Plus
80-82	83-85	86-89	90-100

Classic HERS Score: 85.2 / Expanded HERS Score: 85.3

General Information

Conditioned Area: 2000 sq. ft. House Type: Single-family detached
 Conditioned Volume: 16000 cubic ft. Foundation: Enclosed crawl space
 Bedrooms: 3

Mechanical Systems Features

Heating: Fuel-fired air distribution, Natural gas, 80.0 AFUE.
 Cooling: Air conditioner, Electric, 14.0 SEER.
 Water Heating: Conventional, Natural gas, 0.60 EF.
 Duct Leakage: Supply And Return: 40.00, 40.00 CFM @ 25 Pascals.
 Ventilation System: None
 Programmable Thermostat: Heating: No Cooling: No

Building Shell Features

Ceiling Flat: R-28 Exposed Floor: R-19
 Vaulted Ceiling: NA Window Type: U 0.40, SHGC 0.40
 Above Grade Walls: R-11 **Infiltration:**
 Foundation Walls: R-0.0 Rate: Htg: 0.35 Clg: 0.35 ACHnat
 Slab: None Method: Blower door test

Lights and Appliance Features

Interior Incandescent Fixtures: NA Clothes Dryer Fuel: Electric
 Interior Energy Efficient Fixtures: NA Range/Oven Fuel: Electric
 Exterior Incandescent Fixtures: NA Refrigerator Efficiency: NA
 Exterior Energy Efficient Fixtures: NA

REM/Rate - Residential Energy Analysis and Rating Software v12.0 Expanded Rating Score

This information does not constitute any warranty of energy cost or savings.
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Rating Number:
 Certified Energy Rater:
 Date:
 Rating Ordered For:

Estimated Annual Energy Cost

Use	MMBtu	Cost	Percent
Heating	33.4	\$201	15%
Cooling	8.0	\$259	19%
Hot Water	17.1	\$85	6%
Lights/Appliances		\$646	47%
Photovoltaics		\$0	0%
Service Charges		\$195	14%
Total		\$1387	100%

This home meets the minimum criteria for all of the following:

TITLE
Company
 Address
 City, State, Zip
 Phone #
 Fax #

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