

**Subject** State of Wisconsin, Public Service Commission of Wisconsin,  
Focus on Energy Evaluation

Analysis of Delta Watts Values for CFLs Rewarded through the  
Residential Lighting Program during FY07

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## Summary

The evaluation team analyzed the types of CFLs installed during FY07 to assess if the current estimate of *Delta Watts*—a key input to calculating verified gross energy and demand savings for CFLs rewarded through the Residential Lighting Program (RLP)—is still appropriate. Based on the assessment, we recommend revising the *Delta Watts* estimate from 51.9 W to 53.3 W for CFLs purchased via instant rewards and 55.0 W for CFLs purchased via mail-in rewards.

## Introduction

This memorandum presents the evaluation team's analysis of *Delta Watts*, one of the key inputs to calculating verified gross energy and demand savings for CFLs rewarded through the Residential Lighting Program (RLP). *Delta Watts* is the difference in connected load between the rewarded CFL and the lamp it would typically replace. The baseline assumption is, and has historically been, that a rewarded CFL would typically replace an incandescent lamp. During FY07, the vast majority of rewarded CFLs replaced an incandescent lamp (94% of CFLs purchased via instant rewards and 96% purchased via mail-in rewards according to the 2007 Installation Rate Study), though the prevalence of CFLs replacing another CFL has increased. Because the effects from CFL-to-CFL replacements are accounted for in the net-to-gross analysis, we do not make any further adjustments for CFL-to-CFL replacements in the *Delta Watts* analysis.

We discuss the results of our analysis in the next section.



**focus on energy**<sup>sm</sup>

*The power is within you.*

## Results

The first step in estimating *Delta Watts* for CFLs rewarded through FY07 is to assign an equivalent incandescent lamp Wattage for each type of CFL (in terms of Wattage level) purchased through RLP. Table 1 shows the assignments we used for this analysis. The assignments are based on standard assumptions about the Wattage of the incandescent lamp that each type of CFL typically would replace.<sup>1</sup> For example, a CFL in the 13–17 W range would typically replace a 60 W incandescent lamp.

**Table 1. CFL-Incandescent Lamp Equivalent Wattage**

CFL Wattage Level	Equivalent Incandescent Lamp Wattage
4-6	15
7-8	25
9-12	40
13-17	60
18-22	75
23-29	100
30-32	120
34-36	130
38-45	150

The next step is to determine the distribution of the types of CFLs rewarded during FY07. The results are shown in Table 2. For example, 66 percent of CFLs purchased via instant rewards and 55 percent purchased via mail-in rewards are comprised of CFLs which typically replace 60 W incandescent lamps. The *Delta Watts* estimates for 13 W and 15 W CFLs, the two most commonly rewarded CFLs, are 47 W and 45 W, respectively.

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<sup>1</sup> These assumptions are consistent with the manufacturer-specified wattage equivalencies we have found during our on-site visits to CFL retailers and consistent with those used in a recent CFL study in California (CFL Metering Study Final Report. Prepared for Pacific Gas & Electric Company, San Diego Gas & Electric Company, and Southern California Edison. Prepared by KEMA Inc., Oakland California. February 25, 2005). We also reviewed a number of other studies to investigate the extent to which CFL purchasers follow the manufacturer-specified wattage equivalency between CFLs and incandescent lamps (e.g., 13 W CFLs replacing 60 W incandescent lamps, 20 W CFLs replacing 75 W incandescent lamps, 26 W CFLs replacing 100 W incandescent lamp.). Our review produced no studies that have addressed this issue. We conducted this review because the estimate of *Delta Watts* would be affected if a significant percentage of CFL purchasers is deviating from these guidelines. We recommend that this issue continue to be given consideration in future evaluation activities.

Table 2. Weighted Average Delta Watts

CFL Wattage	Equivalent Incandescent Wattage	Delta Watts	Percent of CFLs Rewarded in FY07	
			Instant Rewards	Mail-In Rewards
5	15	10	> 1%	> 1%
6	15	9	> 1%	0%
7	25	18	0%	> 1%
9	40	31	0%	4%
10	40	30	0%	> 1%
11	40	29	> 1%	4%
12	40	28	0%	> 1%
13	60	47	34%	29%
14	60	46	10%	11%
15	60	45	22%	15%
16	60	44	0%	> 1%
18	75	57	0%	2%
19	75	56	0%	1%
20	75	55	10%	1%
21	75	54	0%	> 1%
23	100	77	> 1%	21%
25	100	75	> 1%	> 1%
26	100	74	14%	6%
27	100	73	7%	1%
28	100	72	0%	> 1%
29	100	71	> 1%	> 1%
30	120	90	> 1%	> 1%
32	120	88	> 1%	> 1%
34	130	96	0%	> 1%
36	130	94	0%	> 1%
40	150	110	0%	> 1%
42	150	108	0%	> 1%
45	150	105	> 1%	> 1%
<b>Weighted Average Delta Watts</b>			<b>53.3</b>	<b>55.0</b>

The final step is to calculate an overall estimate of *Delta Watts* by weighting the *Delta Watts* of each type of CFL by its share of all CFLs rewarded. The result, which is presented in the last row of Table 2, is a *Delta Watts* estimate of 53.3 W for CFLs purchased via instant rewards and 55.0 W for CFLs purchased via mail-in rewards.

## **Conclusion**

Based on the assessment, we recommend revising the *Delta Watts* estimate from 51.9 W to 53.3 W for CFLs purchased via instant rewards and 55.0 W for CFLs purchased via mail-in rewards.