1. Methodology for Comparing EUI between two sets of buildings

Our general approach to comparing the site energy, source energy, and greenhouse gas emission of LEED buildings in a particular city to those of non-LEED buildings in the same city is similar to what we have used before [1-3]. The relevant comparison for these intensities is between the area-weighted mean SiteEUI, SourceEUI, and GHGintensity. This issue has been discussed extensively elsewhere [3]. The statistical significance of differences in the area-weighted means of two building subsets depends on their uncertainties (i.e., the standard deviations of these means) and the numbers of samples (i.e., properties) in each of the two building subsets. For this study we have adopted a slightly different and more robust methodology for testing the differences in these means from that employed in earlier studies.

1.1 Site and source energy

Building energy use will vary month to month owing to seasonal changes in weather and usage. These variations are mostly avoided by considering a building's annual energy use. Building **site energy** (energy consumed on site) is determined by totaling purchased fuels (electricity, natural gas, etc.) for 12 consecutive months, first converting each to a common energy unit – *Joules* in most of the developed world or *British thermal units* (Btu) in the U.S. It is self-evident that large buildings use more energy than smaller buildings. To compare the energy use of two buildings one must adjust for building size. Most of this variation is removed by dividing the annual energy used by the gross floor area of the building, measured in square meters (m^2) in most of the developed world or square feet (sf or ft^2) in the U.S. The ratio $e = E/A$ of annual energy (E) to floor area (A) is called the *Energy Use Index* or *Energy Use Intensity* (EUI). EUI are reported in most of the developed world in units of millions of Joules per square meter (MJ/m^2) or in the U.S. in thousands of Btu per square foot ($kBtu/ft^2$).

While site energy is easy to calculate, it does not account for off-site energy losses associated with the generation and transportation of energy to the building. This is particularly important for electric energy where, typically, three units of primary energy are consumed (at the power plant) in order to deliver one unit of electric energy to end users. The U.S. *Environmental Protection Agency* (EPA) has defined building **source energy** to account for these off-site energy losses [4]. The energy used on site for each fuel is multiplied by a fuel-dependent, site-to-source energy conversion factor to account for this off-site energy usage. In the case of natural gas this factor is 1.05. For U.S. electric energy this factor is currently 2.80. (For the 2016 benchmarking data used in this study the electric factor was 3.14.) For an all-electric U.S. building in 2016 the source energy is exactly 3.14 times its site energy. If a building uses both natural gas and electric energy then, in 2016, its source energy is given by (3.14)*ElectricEnergy + (1.05)*NatGasEnergy. The result is readily generalized to include other fuels [4].

One of the complaints about source energy is that the site-to-source conversion factors represent national averages and, as such, they do not account for local or even regional variations in the

electric supply. These shortcomings will become more problematic as the grid becomes more renewable. This has been discussed extensively elsewhere [5].

1.2 Gross EUI and area-weighted mean EUI

Before describing the new methodology we review the old methodology [3]. Let the floor areas and annual energy used by each of N buildings be given by $\{A_1, A_2, ..., A_N\}$ and $\{E_1, E_2, ..., E_N\}$. Here E_j can represent annual site, source, electric, or non-electric energy or even the annual GHG emission of the j-th building in the set. The EUI for the j-th building is then given by $e_j \equiv E_j / A_j$. Let $A_{Tot} \equiv \sum A_j$ and $E_{Tot} \equiv \sum E_j$ be the total floor area and total annual energy used by the set of buildings. Here the "weight" that the j-th building contributes to calculated averages is the fraction of the total area of the set contained in this one building, namely, $w_j \equiv A_j / A_{Tot}$. With this definition the area-weighted mean EUI is identical to the gross EUI, namely,

$$\tilde{e} = \sum w_j e_j = E_{Tot} / A_{Tot} \equiv e_{Tot} . \tag{S1}$$

The area-weighted variance of the distribution of e's given by

$$\widetilde{\delta e^2} \equiv \sum w_j \left(e_j - \tilde{e}\right)^2 . \tag{S2}$$

In previous studies [1-3] we have taken the standard deviation of the weighted mean to be

$$\tilde{s} \equiv \sqrt{\widetilde{\delta e^2} / N} . \tag{S3}$$

The reader will note that the above expressions for $\tilde{e}$, $\widetilde{\delta e^2}$, and $\tilde{s}$ reduce to the traditional expressions for the mean, variance $\left(\sigma^2 \equiv \overline{\delta e^2}\right)$, and standard deviation of the mean $\left(\overline{s} = \sqrt{\sigma^2 / N}\right)$ for the un-weighted case (i.e., $w_j = 1/N$).

1.3 Two-sample t-test previously adopted for EUI

A standard statistical approach to comparing mean values of a variable within across two groups is the 2-sample t test. In such a procedure, the test statistic against the null value $\mu_C - \mu_B = 0$ is taken to be

$$\frac{\overline{x}_C - \overline{x}_B}{\sqrt{\overline{s}_B^2 + \overline{s}_C^2}} \tag{S4}$$

Here, $\overline{x}_B$ and $\overline{x}_C$ represent the sample means in the base and case groups and $\overline{s}_B$ and $\overline{s}_A$ are the standard deviations of these means. The quantity $\sqrt{\overline{s}_B^2 + \overline{s}_C^2}$ serves as an unbiased estimator of the standard error for the difference, $\overline{x}_B - \overline{x}_C$, when the samples B and C are independent. A p-value is computed by locating the position of this test statistic on a t-distribution whose degrees of freedom (df) are tailored to the sizes of the two samples using the Welch-Satterthwaite equation,

$$df = \frac{\left(\overline{s}_C^2 + \overline{s}_B^2\right)^2}{\frac{\left(\overline{s}_C^2\right)^2}{N_C - 1} + \frac{\left(\overline{s}_B^2\right)^2}{N_B - 1}}, \tag{S5}$$

where N_C and N_B are the number of samples included in the **Case** and **Base** building sets. Note that when df >> 1 the p-values are not sensitive to the exact value of df.

We have argued [3] that gross EUI, equivalent to the area-weighted mean EUI, is the appropriate metric for comparing energy use between case and base sets of buildings. Earlier we adapted the above test statistic to be

$$\frac{\tilde{e}_C - \tilde{e}_B}{\sqrt{\tilde{s}_B^2 + \tilde{s}_C^2}}, \tag{S6}$$

where e = E/A is the energy intensity (energy E per area A) for a building and the tilde notation denotes weighted measures (either weighted means or weighted standard deviations), as given in Eqns. (S1)-(S3) above. Earlier [1-3] we assumed that df was given by Eqn. (S5) with the standard deviations of the mean replaced by their weighted counterparts.

While Eqn. (S3) and (S6) seem plausible we are unable to produce any mathematical justification for their validity. Indeed, Madansky and Alexander [6] have suggested that the standard deviation of a weighted mean is not given by Eqn. (S3), but instead is given by

$$\tilde{s} \equiv \sigma \Big/ \sqrt{N_{eff}}, \tag{S7}$$

where σ^2 is the un-weighted variance and the "effective N" is given by

$$N_{eff} \equiv \frac{\left(\sum_j w_j\right)^2}{\sum_j w_j^2} = \frac{A_{Tot}^2}{\sum_j A_j^2}. \tag{S8}$$

This last expression is evaluated with $w_j = A_j/A_{Tot}$. Hence our previous methodology for calculating the standard deviation of the weighted mean and p-values is suspect [1-3].

1.4 Permutation testing methodology

Modern statistical methods use resampling techniques for calculating standard deviations of the means and associated p-values [7]. To elaborate, one forms the numerator $\tilde{e}_C - \tilde{e}_B$ as before, calculating the weighted energy means $\tilde{e}_C$ and $\tilde{e}_B$ for the case and base groups. In place of a formula for the denominator, we use resampling to estimate the spread of the sampling distribution for $\tilde{e}_C - \tilde{e}_B$ under the (null) hypothesis that the true difference in weighted means for the true groups is 0. A good model for understanding how this is done is to imagine having a bag containing slips of paper, one for each building in the entire (joint) collection of buildings (those of both base and case groups), with slip j having the quantities e_j, A_j written on it. Knowing the number of buildings N_C in the case group, we draw from this bag N_C times without replacement, using the numbers on these slips to compute a resampled weighted mean $\tilde{e}_C$ – the sort of value one might get when the buildings are different in name only (i.e., the name is randomly assigned), not in the actual fact of energy use. The remaining slips in the bag have been randomly assigned the "base" label, and are used to compute the resampled weighted mean $\tilde{e}_B$. At this point, the bag has been emptied, and we have one resampled statistic $\tilde{e}_C - \tilde{e}_B$. We can use a computer for this process, not just once, but many (about 10000, in our case) times, then compute the standard deviation $s_{\tilde{e}_C - \tilde{e}_B}$ of these 10000 numbers. The result is used as the denominator of the test statistic

$$\frac{\tilde{e}_C - \tilde{e}_B}{s_{\tilde{e}_C - \tilde{e}_B}}. \tag{S9}$$

Furthermore, the 10000 values of $\tilde{e}_C - \tilde{e}_B$ obtained by resampling also provide an approximate null distribution (thereby eliminating the need to determine degrees of freedom and impose a t-distribution); a p-value is found through positioning our test statistic among these obtained via resampling.

We also use resampling or bootstrap methods to determine the standard deviation of the weighted mean. Consider a set of N buildings and with floor areas $\{A_1, A_2, ..., A_N\}$ and EUI $\{e_1, e_2, ..., e_N\}$. A replicate of our building set is obtained by randomly selecting N, EUI from $\{e_1, e_2, ..., e_N\}$ and their associated $\{A_1, A_2, ..., A_N\}$ with replacement. The weighted mean EUI $(\tilde{e})$ is calculated for this replicate. This process is repeated for a total of 10,000 replicates, obtaining a set of 10,000 different weighted means. The (un-weighted) standard deviation of this distribution of weighted means is taken to be the standard deviation of the weighted mean.

1.5 Comparing results from two methods with 2015 Chicago office data

Here we apply the permutation methodology to 2015 Chicago office data reported and analyzed earlier [2]. In our earlier analysis we used the weighted generalization of the 2-sample t-test

described above. Here we put the 2015 data into the format required for this paper and calculated statistics using both the new and old methodology. Filters applied to the data, described in this paper, were slightly different from those used in [2] but resulted in very similar Case (LEED) and Base (non-LEED) subsets.

The statistics of these two sets are shown in Table S1. The mean ($\bar{e}$) and wt.mean ($\tilde{e}$) were calculated using Eqn.(S2), the mean with $w_j = 1/N$ and the wt.mean with $w_j = A_j/A_{Tot}$. Similarly, the sd and wt.sd were calculated using Eqn.(S3) with the first un-weighted and the second using area weighting. The last three columns for both Case and Base buildings contain the standard error in the weighted mean calculated using the three methods described above. The first (JHS) was calculated using Eqn. (S3) as we have done previously [1-3], the second (M&A) using Eqn. (S7), and the last (sdm) using the resampling method employed in our present study.

	Case Buildings							Base Buildings						
N	83							209						
Neff	57							75						
A	80,588,071				standard dev of weighted mean			70,950,521				standard dev of weighted mean		
mean YB	1973				JHS	M&A	resample	1941				JHS	M&A	resample
	mean	wt.mean	sd	wt.sd	$\sqrt{\widetilde{\delta e^2}/N}$	$\sigma/\sqrt{N_{eff}}$	sdm	mean	wt.mean	sd	wt.sd	$\sqrt{\widetilde{\delta e^2}/N}$	$\sigma/\sqrt{N_{eff}}$	sdm
Site	72.4	74.0	19.1	18.7	2.1	2.5	2.4	86.6	83.1	26.8	22.9	1.6	3.1	2.0
Source	194.8	200.9	47.9	45.0	4.9	6.3	5.4	204.5	204.2	64.4	54.2	3.8	7.5	5.8
Electric	56.8	59.0	17.3	16.3	1.8	2.3	2.0	54.4	56.0	23.1	19.6	1.4	2.7	2.3
non-Electric	15.6	15.0	19.9	19.8	2.2	2.6	2.8	32.2	27.2	27.9	24.4	1.7	3.2	2.6
GHG	12.26	12.68	3.11	2.92	0.32	0.41	0.35	12.65	12.70	4.16	3.51	0.24	0.48	0.39

Table S1. Statistics for 2015 Chicago Office data after filtering using methods described in this paper. See text for explanations of various columns.

Electric and non-Electric EUI were not provided in the previous paper. Weighted and un-weighted mean site EUI, source EUI, and GHGI are in agreement with those published earlier [2]. The difference or delta in the two weighted means ($\tilde{e}_C - \tilde{e}_B$), the standard error or sigma in this difference ($s_{\tilde{e}_C - \tilde{e}_B}$), t-value, degrees of freedom (df), and p-value for both the old and new method are shown in Table S2. Note that the permutation method does not produce a t-value or df. The t-value listed in gray is simply the ratio of delta/sigma. Quantities associated with the 2-sample weighted t-test are calculated as described in Supplement section 1.2.

	permutation testing					2-sample t-test (weighted)				
	delta	sigma	t-value	df	p-value	delta	sigma	t-value	df	p-value
Site	-9.1	3.6	-2.50	na	0.011	-9.1	2.6	-3.52	183	0.001
Source	-3.3	8.9	-0.37	na	0.712	-3.3	6.2	-0.53	180	0.594
Electric	3.0	3.5	0.87	na	0.396	3.0	2.2	1.34	180	0.183
non-Electric	-12.1	4.2	-2.86	na	0.003	-12.1	2.8	-4.40	184	0.000
GHG	-0.02	0.58	-0.04	na	0.972	0.0	0.4	-0.05	180	0.957

Table S2. Statistics for the delta of the two weighted means, $\tilde{e}_C - \tilde{e}_B$, as determined by the permutation method used in this paper and the weighted 2-sample t-test used previously. Here sigma is the standard error in the difference of the two weighted means (the denominator of the t-stat).

The p-values in the last column for siteEUI, sourceEUI, and GHGI savings, calculated using the old methodology, are in complete agreement with those published in our paper [2]; this is expected as we use the same methodology. The only difference is in the filter process to remove outlyers from the data. p-values calculated using the permutation testing methodology are all larger than those calculated using the older methodology, but are qualitatively in agreement. These new p-values do not change any of the conclusions drawn in the 2015 Chicago study [2]. The permutation testing affirms the previous conclusions that LEED offices are saving 12% in site energy but are not saving source energy or GHG emission, relative to non-LEED offices in Chicago for 2015.

2. Calculating Electric and non-Electric EUI from Site and Source EUI

Benchmarking data were collected and organized for municipalities using the *U.S. Environmental Protection Agency's* (EPA) Energy Star *Portfolio Manager* (PM) web site [8]. *Portfolio Manager* calculates annual site energy and source energy from 12-consecutive months of energy purchases. Source energy is calculated using national average, site-to-source energy factors which do not account for regional differences in the electric grid [4]. To account for building size annual site and source energies are each divided by building floor area to form obtain energy use intensities SiteEUI and SourceEUI.

Energy purchases by the vast majority of buildings are limited to electricity and natural gas. In 2016 the U.S. national, site-to-source energy factors used by *Portfolio Manager* for these fuels were 3.14 and 1.05, respectively. Absent other energy inputs this allows us to calculate the ElectricEUI and non-ElectricEUI from SiteEUI and SourceEUI as

$$\begin{aligned} ElectricEUI &= \frac{\left(SourceEUI - 1.05\left(SiteEUI\right)\right)}{2.09} \\ nonElectricEUI &= \frac{\left(3.14\left(SiteEUI\right) - SourceEUI\right)}{2.09} \end{aligned} \tag{S10}$$

These calculations will, of course, produce errors for buildings that have other energy inputs such as district steam, chilled water, or other forms of non-Electric energy. But for a large set of buildings the overall error is quite small. Three cities (Boston, Chicago, and Seattle) actually include detailed fuel usage in their 2016 benchmarking data. We have used these data for 2668 Chicago properties to compare ElectricEUI calculated using Supplement Eq.(7) from Site and SourceEUI to the actual ElectricEUI reported. The results are shown in Figure S1 which shows excellent agreement between the two for the vast number of buildings. LEED-certified buildings are shown as green circles and non-LEED as red triangles. A linear regression to the non-LEED buildings yields a slope of 1.0084 with an R^2 of 99.8%. The calculated total annual electric energy used by all buildings exceeds the total measured electric by just 0.3% and the rms-deviation of the calculated from the reported ElectricEUI on a building by building level is just 1.6 kBtu/ft^2, or 3.5% of the gross ElectricEUI. A graph of the calculated vs reported

nonElectricEUI (not shown) is similar. Hence we have confidence in the overall accuracy of determining Electric and non-Electric EUI from reported SiteEUI and SourceEUI.

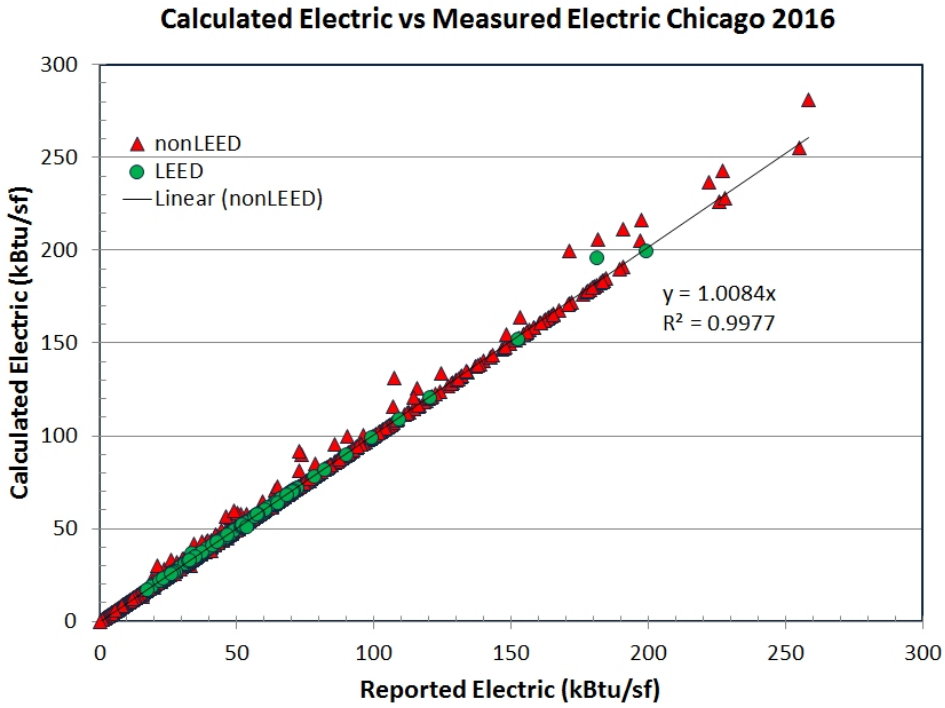

Figure S1. Comparison of the calculated vs reported ElectricEUI for Chicago buildings demonstrating the validity of calculating ElectricEUI from Site and SourceEUI.

3. Imputing Predicted Energy Savings from LEED parameter EAc1

3.1 Imputing Site EUI savings for LEED NC and CS

The criteria for awarding points for energy efficiency during LEED certification varies by version and LEED system. These points are recorded on the LEED scorecard as EAc1. We were able to obtain credible EAc1 parameters only for buildings certified under LEED v2009.[1] The vast majority of Offices certified under v2009 in our data were for the EB:OM system. In contrast the vast majority of MFH certified under v2009 in our data were for NC (new construction).

EAc1 points for LEED NC and CS systems are awarded based on simulations for the annual site energy of the adopted design, as compared with simulations for a (presumably less-efficient) code-compliant baseline design. EAc1 points ranging from 1-19 are earned based on the simulated relative savings, ranging from 12% to 48%. This fractional savings (r_{site}) is obtained from EAc1 using

[1] In data mining the gbig.org web site we downloaded EA and EAc1 parameters for something like 20,000 projects. For LEED systems other than v2009 the EAc1 parameters downloaded were 0 or 1, and were not consistent with total EA points. We concluded these parameters were not valid for LEED versions other than v2009.

$$r_{site} \equiv \frac{e_{Base} - e_{Design}}{e_{Base}} = 0.10 + (0.02)(EAc1). \quad \text{(S11)}$$

The r_{Site} calculated above, combined with the gross SiteEUI for nonLEED buildings in the same city, allows us to calculate the projected energy savings for a LEED building certified under NC v2009 based on the EAc1 points earned during certification.[2]

3.2 Imputing Source EUI savings for LEED EB

For the EB:OM system EAc1 points are awarded based on the Energy Star score earned by the building in its first year of operation. We determined that the Energy Star score (S) could be extracted from EAc1 using the relationship

$$S = \begin{cases} 70.67 + 1.0385(EAc1), & EAc1 \le 12 \\ 59 + 2(EAc1), & EAc1 > 12 \end{cases}. \quad \text{(S12)}$$

Energy Star scores are based, in part, on measured SourceEUI and its relationship to the median SourceEUI for a national survey of similar buildings. In this case we are talking about office buildings as characterized by the 2003 CBECS survey. The other factor in the Energy Star score is determined by various operating parameters and their supposed impact on SourceEUI as determined by a multivariate regression used by the EPA. The science behind building Energy Star scores has been discussed extensively [9]. The EPA fits a gamma distribution to the distribution of energy efficiency ratios (ratio of measured SourceEUI to that predicted by the EPA regression based on certain operating parameters) for the regression dataset of representative buildings. It has been shown that, with reasonable assumptions, one can extract from a building's Energy Star score the SourceEUI savings relative to the median SourceEUI for this distribution [30]. For Offices the relationship between Energy Star score (S) and fractional SourceEUI savings (r_{source}) is given by

$$r_{source} \equiv \frac{\hat{e} - e}{\hat{e}} = 1 - \mu \cdot GammaInv\left(1 - S/100, \alpha, \beta, 1\right), \quad \text{(S13)}$$

where $\mu = (0.92533)^{-1} = 1.081$, and the alpha and beta parameters of the gamma distribution fit to the Office model are $\alpha = 5.64456$ and $\beta = 0.1741$.[3] Imputed SourceEUI savings are obtained for a particular office building first by calculating r_{source} from its Energy Star Score then multiplying this by the $\hat{e}$, which is calculated based on the EPA office model regression combined with the bulding's operational parameters. Without access to the operational parameters used in determining a building's Energy Star score we cannot determine $\hat{e}$. Absent this, a reasonable assumption is to replace $\hat{e}$ with the gross sourceEUI for non-LEED buildings in the same city.

[2] Clearly this process does not replicate the baseline EUI used by the design team, but it is a reasonable interpretation if the methodology based on the information available.

[3] The median energy efficiency ratio for the Energy Star office model is 0.92533 and the GAMMAINV function is implemented in MS Excel.

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Detailed statistics for various building subsets and comparisons.

What follows are numerous tables and graphs that provide detail behind the analysis described in our paper. Tables and graphs are provided for six different comparisons. In all cases benchmarking data are first filtered as described in the paper. The last filter applied is to eliminate any office property on a city-by-city basis, whose log(SiteEUI) is more than two standards above or below the mean log(SiteEUI) for all offices in that same city. This eliminates approximately 5% of the office properties in each city. These filters removed mostly non-LEED

offices, but did eliminate a few LEED offices as well. In the tables mean and sd of EUI are calculated without weighting, that is, using Supplement Eqns. (S1) and (S2) with weights w_j = 1/N. Weighted means and standard deviations (wt.mean and wt.sd) are calculated using these same equations with $w_j = A_j/A_{Tot}$. sdm (standard deviation of the weighted means) in all cases (including comparison rows where the label reads sd) are calculated using permutation (bootstrap) methods. The sdm listed are <u>not</u> calculated using Supplement Eq. (S3).

The column labeled N_{eff} is calculated using Eqn. (S8) per Madansky and Alexander [6]. While listed, we did do anything more with this statistic.

Error bars on all graphs that follow represent the standard error (one sigma or 68% confidence) of the quantity being graphed. In most cases the quantity graphed represents the weighted mean of one of the five energy intensity metrics. Standard errors are all standard deviations of these weighted means calculated using the bootstrap method.

1. **LEED vs non-LEED**. Here the **Case** set is LEED offices in a particular city and the **Base** set is all non-LEED offices in the same city. These are the underlying data behind Figures 1-3 and Tables 1-3 in the paper.

2. **LEED Ce vs non-LEED**. Here the **Case** set is LEED offices certified at the **certified** level in a particular city and the **Base** set is all non-LEED offices in the same city. These are the data behind row 1 (Certified) of Table 4 in the paper.

3**. LEED Ag vs non-LEED**. Here the **Case** set is LEED offices certified at the **silver** level in a particular city and the **Base** set is all non-LEED offices in the same city. These are the data behind row 2 (Silver) of Table 4 in the paper.

4. **LEED Au vs non-LEED**. Here the **Case** set is LEED offices certified at the **gold** level in a particular city and the **Base** set is all non-LEED offices in the same city. These are the data behind row 3 (Gold) of Table 4 in the paper.

5. **LEED Pt vs non-LEED**. Here the **Case** set is LEED offices certified at the **platinum** level in a particular city and the **Base** set is all non-LEED offices in the same city. These are the data behind row 4 (Platinum) of Table 4 in the paper.

6. **LEED vs newer non-LEED**. Here the **Case** set is LEED offices in a particular city and the **Base** set is all non-LEED offices with YearBuilt after a cut-off date that was chosen (by trial and error) to yield the same mean YearBuilt for non-LEED offices in each city as found for LEED offices in the same city. The cut-off YearBuilt and the resulting mean YearBuilt are listed in the first table. Note that this analysis does not include any offices from Portland (since Portland did not supply YearBuilt for their data) and also omits any other buildings for which YearBuilt was not supplied. These are the data behind Table 6 in the paper.

					Site EUI (kBtu/sf)					Source EUI (kBtu/sf)					GHG intensity (kg/ft$_2$)					Electric Intensity (kBtu/sf)					nonElectric Intensity (kBtu/sf)				
Case	City	N	Neff	Tot. Area	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mearl	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm
1	Boston	35	27	23,413,149	71.6	70.6	20.3	14.8	2.6	188.9	182.7	49.2	37.2	6.0	5.64	5.78	2.01	1.73	0.33	54.4	52.0	16.3	13.4	2.2	17.1	18.6	17.5	15.3	2.9
2	Chicago	81	54	85,307,634	71.9	73.9	18.8	19.4	2.7	188.6	194.1	44.3	44.0	6.2	10.94	11.27	2.63	2.60	0.37	54.1	55.7	16.7	16.6	2.3	17.7	18.2	21.7	22.5	3.2
3	Denver	49	31	22,473,633	62.0	58.6	17.7	15.2	2.5	163.9	152.4	53.5	43.1	6.3	12.42	11.98	4.42	3.51	0.50	47.3	43.5	19.7	16.2	2.3	14.7	15.1	18.3	17.1	2.7
4	LosAngeles	41	22	28,041,596	50.6	47.1	16.1	14.3	2.9	146.6	136.6	47.1	40.0	7.3	3.75	3.54	1.38	1.07	0.20	44.7	41.7	15.2	12.8	2.3	6.0	5.4	8.5	8.5	1.7
5	Minneapolis	16	13	13,035,044	65.4	63.1	20.5	18.6	4.8	160.4	157.9	35.8	30.7	7.6	9.53	9.41	2.11	1.79	0.44	43.9	43.9	8.9	7.5	1.9	21.5	19.2	16.9	16.2	4.2
6	NYC	81	53	67,700,677	77.6	84.3	19.7	20.1	2.7	192.8	204.5	42.5	42.1	5.6	6.75	7.07	2.52	1.78	0.21	53.3	55.5	12.3	12.2	1.6	24.4	28.8	14.5	15.7	2.2
7	Philadelphia	16	11	11,814,767	66.7	69.0	10.3	9.8	2.9	191.9	199.2	34.3	30.1	8.4	6.69	6.91	1.73	1.54	0.47	58.3	60.6	11.9	10.2	2.8	8.4	8.4	7.2	6.9	2.0
8	Portland	26	15	7,658,712	57.8	60.0	12.5	11.8	2.6	157.7	162.1	30.6	31.1	7.4	4.62	4.83	1.12	1.01	0.22	46.4	47.4	10.4	10.9	2.6	11.4	12.6	11.3	11.0	2.4
9	Seattle	50	28	23,681,785	57.3	52.4	20.4	16.3	2.5	164.5	155.8	47.4	44.7	6.8	4.89	4.51	1.84	1.72	0.27	49.9	48.2	14.7	13.7	2.1	7.4	4.2	15.7	7.3	0.9
10	Washington	150	109	46,221,008	59.8	60.0	12.0	11.7	1.0	181.3	181.8	34.1	32.3	2.8	7.01	6.98	2.90	2.55	0.20	56.7	56.8	11.1	10.4	0.9	3.1	3.2	7.4	7.2	0.7
11	**ALL CITIES**	545	298	329,348,005	64.6	68.1	18.6	20.6	1.3	177.5	181.2	44.2	45.6	2.7	7.47	7.94	3.67	3.51	0.20	52.5	52.5	14.6	14.6	0.9	12.1	15.5	16.3	18.2	1.2
Base																													
1	Boston	239	76	46,599,545	78.7	81.9	36.2	32.3	3.1	192.7	212.0	93.7	89.7	9.1	5.92	6.37	2.70	2.54	0.25	52.7	60.3	30.3	29.7	3.1	26.1	21.6	26.6	22.9	2.3
2	Chicago	244	85	77,253,811	83.5	82.0	26.8	23.8	2.1	202.2	202.3	68.6	58.5	6.3	11.63	11.66	4.04	3.45	0.38	54.8	55.6	23.8	20.4	2.4	28.7	26.4	25.1	23.1	2.4
3	Denver	144	88	22,590,922	71.4	67.4	20.1	18.8	1.9	176.3	169.3	48.8	46.1	4.8	12.89	12.49	3.76	3.60	0.37	48.4	47.2	16.9	15.7	1.6	23.0	20.2	19.4	17.5	1.6
4	LosAngeles	691	246	167,612,776	55.4	53.1	23.9	19.4	1.1	156.4	149.9	64.6	51.3	2.6	4.09	3.96	1.72	1.39	0.07	47.0	45.1	19.9	15.9	0.8	8.3	8.0	12.1	11.3	0.7
5	Minneapolis	93	40	23,831,087	86.4	81.5	34.1	30.6	3.9	186.0	181.8	82.3	82.9	11.0	10.45	10.29	5.40	5.45	0.71	45.6	46.0	26.0	27.2	3.6	40.8	35.5	26.2	22.1	2.6
6	NYC	1,166	414	332,797,339	85.4	91.9	45.5	45.1	2.0	195.4	214.0	102.5	98.7	4.1	6.95	7.45	3.63	3.39	0.14	50.6	56.2	29.4	28.1	1.2	34.9	35.7	30.1	31.3	1.6
7	Philadelphia	173	73	54,432,024	82.8	80.9	39.4	33.9	3.7	217.3	215.6	108.2	95.1	11.1	8.06	7.70	4.90	3.97	0.42	62.3	62.5	34.4	30.3	3.7	20.5	18.5	23.1	18.8	1.8
8	Portland	133	71	18,841,143	65.9	66.3	24.5	22.7	2.3	178.3	182.6	68.4	63.6	6.5	5.37	5.52	2.29	2.27	0.24	52.2	54.0	22.0	20.6	2.1	13.6	12.3	14.5	13.9	1.5
9	Seattle	409	141	40,135,019	57.1	58.7	22.5	19.8	1.2	157.4	168.2	63.0	57.4	3.6	4.72	4.76	2.09	1.85	0.14	46.7	51.0	21.0	19.1	1.2	10.4	7.8	16.5	13.2	0.8
10	Washington	331	183	69,542,043	69.7	66.9	18.7	17.0	1.1	203.7	198.5	55.6	50.2	3.4	7.81	7.86	2.87	3.35	0.27	62.5	61.4	18.7	16.7	1.1	7.2	5.5	12.8	10.8	0.6
11	**ALL CITIES**	3,623	1,247	853,635,709	73.1	77.0	36.0	37.0	1.0	184.1	194.1	84.7	83.5	2.3	6.80	7.18	3.98	3.87	0.11	51.4	54.2	25.7	24.7	0.7	21.7	22.8	25.7	26.5	0.8
		median YearBuilt																											
Comparison		**LEED**	**nonLEED**		**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**
1	Boston	1984	1928		-13.9%	-11.3	-1.57	0.1197	7.2	-13.8%	-29.3	-1.47	0.1380	20.0	-9.2%	-0.58	-0.93	0.3580	0.63	-13.8%	-8.3	-1.23	0.2072	6.7	-14.0%	-3.0	-0.56	0.5839	5.4
2	Chicago	1983	1929		-9.8%	-8.0	-1.96	0.0479	4.1	-4.0%	-8.1	-0.78	0.4446	10.5	-3.4%	-0.39	-0.63	0.5328	0.62	0.3%	0.1	0.04	0.9716	3.9	-31.1%	-8.2	-1.75	0.0797	4.7
3	Denver	1983	1981		-13.1%	-8.9	-2.28	0.0194	3.9	-10.0%	-16.9	-1.80	0.0711	9.4	-4.1%	-0.51	-0.71	0.4762	0.72	-7.8%	-3.7	-1.10	0.2714	3.3	-25.7%	-5.2	-1.37	0.1720	3.8
4	LosAngeles	1986	1981		-11.3%	-6.0	-1.36	0.1717	4.4	-8.9%	-13.3	-1.23	0.2106	10.9	-10.6%	-0.42	-1.37	0.1656	0.31	-7.5%	-3.4	-1.02	0.2995	3.3	-32.5%	-2.6	-0.91	0.3625	2.8
5	Minneapolis	1986	1934		-22.7%	-18.5	-1.92	0.0528	9.6	-13.2%	-24.0	-1.05	0.2779	22.8	-8.6%	-0.89	-0.61	0.5415	1.46	-4.7%	-2.2	-0.30	0.7720	7.2	-45.9%	-16.3	-2.22	0.0278	7.4
6	NYC	1962	1926		-8.2%	-7.6	-1.06	0.2823	7.1	-4.4%	-9.5	-0.66	0.5042	14.4	-5.1%	-0.38	-0.75	0.4431	0.51	-1.3%	-0.7	-0.18	0.8543	4.2	-19.2%	-6.8	-1.21	0.2122	5.6
7	Philadelphia	1987	1950		-14.8%	-12.0	-1.08	0.2184	11.1	-7.6%	-16.4	-0.50	0.5005	32.6	-10.2%	-0.78	-0.61	0.4509	1.29	-3.0%	-1.8	-0.17	0.8061	10.8	-54.7%	-10.1	-1.76	0.0736	5.7
8	Portland	NA	NA		-9.6%	-6.4	-1.27	0.1988	5.0	-11.2%	-20.5	-1.45	0.1460	14.2	-12.4%	-0.69	-1.36	0.1658	0.51	-12.3%	-6.6	-1.39	0.1648	4.8	2.2%	0.3	0.08	0.9388	3.5
9	Seattle	1990	1968		-10.7%	-6.3	-1.51	0.1244	4.2	-7.4%	-12.4	-1.08	0.2679	11.4	-5.2%	-0.25	-0.58	0.5455	0.42	-5.4%	-2.8	-0.78	0.4317	3.5	-45.7%	-3.5	-1.70	0.0846	2.1
10	Washington	1989	1977		-10.3%	-6.9	-4.01	0.0001	1.7	-8.4%	-16.7	-3.38	0.0005	5.0	-11.1%	-0.88	-2.23	0.0221	0.39	-7.4%	-4.5	-2.82	0.0041	1.6	-42.8%	-2.4	-2.33	0.0180	1.0
11	**ALL CITIES**	1984	1963		-10.8%	-8.3	-3.88	0.0001	2.1	-7.1%	-13.7	-2.82	0.0039	4.9	-7.1%	-0.51	-2.50	0.0115	0.20	-4.4%	-2.4	-1.59	0.1124	1.5	-25.9%	-5.9	-3.39	0.0011	1.7

All	City	N	Neff	Tot. Area	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm
1	Boston	274	100	70,012,694	77.8	78.1	34.6	28.2	2.4	192.2	202.2	89.2	77.6	6.6	5.9	6.2	2.6	2.3	0.21	52.9	57.5	28.9	25.7	2.3	24.9	20.6	25.8	20.7	1.8
2	Chicago	325	129	162,561,445	80.6	77.8	25.5	22.0	1.8	198.8	198.0	63.6	51.6	4.5	11.5	11.5	3.7	3.0	0.27	54.6	55.7	22.2	18.5	1.7	26.0	22.1	24.7	23.2	2.0
3	Denver	193	91	45,064,555	69.0	63.0	19.9	17.7	1.7	173.1	160.9	50.2	45.4	4.1	12.8	12.2	3.9	3.6	0.31	48.1	45.3	17.6	16.1	1.4	20.9	17.7	19.4	17.5	1.6
4	LosAngeles	732	254	195,654,372	55.1	52.2	23.5	18.9	1.0	155.9	148.0	63.8	50.0	2.5	4.1	3.9	1.7	1.4	0.07	46.9	44.6	19.7	15.6	0.8	8.2	7.6	11.9	11.0	0.7
5	Minneapolis	109	49	36,866,131	83.3	75.0	33.2	28.4	3.3	182.3	173.3	77.6	70.1	7.8	10.3	10.0	5.1	4.5	0.50	45.4	45.3	24.2	22.4	2.4	38.0	29.7	25.9	21.6	2.6
6	NYC	1,247	453	400,498,016	84.9	90.6	44.3	42.0	1.7	195.2	212.4	99.7	91.7	3.6	6.9	7.4	3.6	3.2	0.12	50.7	56.1	28.6	26.1	1.0	34.2	34.5	29.5	29.4	1.4
7	Philadelphia	189	83	66,246,791	81.5	78.8	38.1	31.3	3.1	215.1	212.6	104.2	87.3	9.2	7.9	7.6	4.7	3.7	0.36	62.0	62.1	33.1	27.8	3.1	19.5	16.7	22.5	17.7	1.5
8	Portland	159	79	26,499,855	64.5	64.5	23.1	20.3	1.8	174.9	176.7	64.2	56.9	5.2	5.3	5.3	2.2	2.0	0.18	51.3	52.1	20.6	18.5	1.7	13.3	12.4	14.0	13.1	1.3
9	Seattle	459	130	63,816,804	57.1	56.4	22.3	18.8	1.3	158.2	163.6	61.5	53.4	3.5	4.7	4.7	2.1	1.8	0.13	47.0	50.0	20.5	17.3	1.1	10.1	6.4	16.4	11.5	0.6
10	Washington	481	291	115,763,051	66.6	64.1	17.5	15.5	0.8	196.7	191.8	50.9	44.7	2.3	7.6	7.5	2.9	3.1	0.18	60.7	59.6	16.9	14.7	0.7	5.9	4.6	11.6	9.6	0.5
11	**ALL CITIES**	4,168	1,476	1,182,983,714	72.0	74.5	34.4	33.5	0.8	183.3	190.5	80.6	75.2	1.8	6.9	7.4	3.9	3.8	0.10	51.5	53.7	24.5	22.4	0.5	20.5	20.8	24.9	24.7	0.7

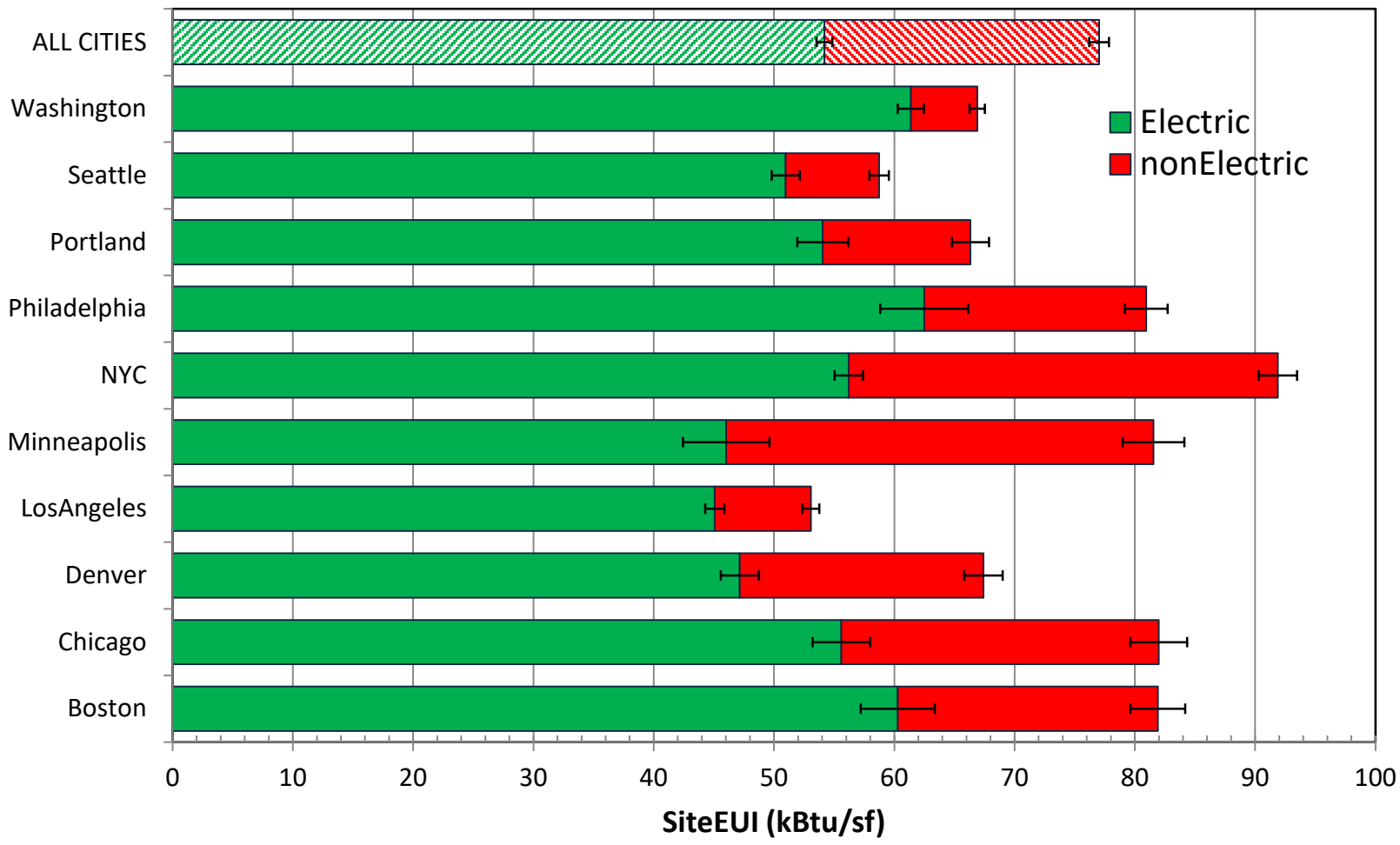
Office - LEED savings relative to nonLEED																			
	LEED		Base (nonLEED)		SiteEUI			ElectricEUI			nonElectricEUI			SourceEUI			GHGI (kg/ft^2)		
City	N	A ($10^6 ft^2$)	N	A ($10^6 ft^2$)	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p
Boston	35	23.4	239	46.6	82	14%	0.120	60	14%	0.207	22	14%	0.584	212	14%	0.138	6.4	9%	0.358
Chicago	81	85.3	244	77.3	82	10%	0.048	56	0%	0.972	26	31%	0.080	202	4%	0.445	11.7	3%	0.533
Denver	49	22.5	144	22.6	67	13%	0.019	47	8%	0.271	20	26%	0.172	169	10%	0.071	12.5	4%	0.476
LosAngeles	41	28.0	691	167.6	53	11%	0.172	45	8%	0.300	8	33%	0.363	150	9%	0.211	4.0	11%	0.166
Minneapolis	16	13.0	93	23.8	82	23%	0.053	46	5%	0.772	36	46%	0.028	182	13%	0.278	10.3	9%	0.542
NYC	81	67.7	1166	332.8	92	8%	0.282	56	1%	0.854	36	19%	0.212	214	4%	0.504	7.5	5%	0.443
Philadelphia	16	11.8	173	54.4	81	15%	0.218	62	3%	0.806	18	55%	0.074	216	8%	0.501	7.7	10%	0.451
Portland	26	7.7	133	18.8	66	10%	0.199	54	12%	0.165	12	-2%	0.939	183	11%	0.146	5.5	12%	0.166
Seattle	50	23.7	409	40.1	59	11%	0.124	51	5%	0.432	8	46%	0.085	168	7%	0.268	4.8	5%	0.546
Washington	150	46.2	331	69.5	67	10%	0.000	61	7%	0.004	6	43%	0.018	199	8%	0.001	7.9	11%	0.022
Aggregate	**545**	**329.3**	**3623**	**853.6**	**77**	**11%**	**0.000**	**54**	**4%**	**0.112**	**23**	**26%**	**0.001**	**194**	**7%**	**0.004**	**7.2**	**7%**	**0.012**

													LEED savings "delta"									
			SiteEUI		ElectricEUI		nElectricEUI		SourceEUI		GHGI		SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston	274	70.0	78	3.0%	58	3.9%	21	8.8%	202	3.3%	6.2	3.4%										
nonLEED	239	46.6	82	3.8%	60	5.1%	22	10.6%	212	4.3%	6.4	4.0%	11.3	0.120	8.3	0.207	3.0	0.584	29	0.138	0.6	0.358
LEED	35	23.4	71	3.7%	52	4.3%	19	15.5%	183	3.3%	5.8	5.8%	14%		14%		14%		14%		9%	
Chicago	325	162.6	78	2.3%	56	3.0%	22	9.0%	198	2.3%	11.5	2.3%										
nonLEED	244	77.3	82	2.5%	56	4.3%	26	9.0%	202	3.1%	11.7	3.2%	8.0	0.048	-0.1	0.972	8.2	0.080	8	0.445	0.4	0.533
LEED	81	85.3	74	3.7%	56	4.2%	18	17.7%	194	3.2%	11.3	3.2%	10%		0%		31%		4%		3%	
Denver	193	45.1	63	2.7%	45	3.1%	18	9.2%	161	2.5%	12.2	2.5%										
nonLEED	144	22.6	67	2.8%	47	3.3%	20	7.9%	169	2.8%	12.5	3.0%	8.9	0.019	3.7	0.271	5.2	0.172	17	0.071	0.5	0.476
LEED	49	22.5	59	4.2%	44	5.3%	15	18.2%	152	4.1%	12.0	4.2%	13%		8%		26%		10%		4%	
LosAngeles	732	195.7	52	2.0%	45	1.7%	8	8.6%	148	1.7%	3.9	1.8%										
nonLEED	691	167.6	53	2.0%	45	1.8%	8	8.7%	150	1.7%	4.0	1.8%	6.0	0.172	3.4	0.300	2.6	0.363	13	0.211	0.4	0.166
LEED	41	28.0	47	6.1%	42	5.6%	5	32.3%	137	5.4%	3.5	5.7%	11%		8%		33%		9%		11%	
Minneapolis	109	36.9	75	4.4%	45	5.3%	38	8.6%	173	4.5%	10.0	5.0%										
nonLEED	93	23.8	82	4.7%	46	7.8%	36	7.3%	182	6.1%	10.3	6.9%	18.5	0.053	2.2	0.772	16.3	0.028	24	0.278	0.9	0.542
LEED	16	13.0	63	7.6%	44	4.2%	19	22.1%	158	4.8%	9.4	4.6%	23%		5%		46%		13%		9%	
NYC	1,247	400.5	91	1.9%	56	1.8%	35	4.0%	212	1.7%	7.4	1.7%										
nonLEED	1,166	332.8	92	2.2%	56	2.1%	36	4.5%	214	1.9%	7.5	1.9%	7.6	0.282	0.7	0.854	6.8	0.212	9	0.504	0.4	0.443
LEED	81	67.7	84	3.3%	55	2.9%	29	7.6%	204	2.7%	7.1	3.0%	8%		1%		19%		4%		5%	
Philadelphia	189	66.2	79	4.0%	62	4.9%	17	9.1%	213	4.3%	7.6	4.8%										
nonLEED	173	54.4	81	4.6%	62	5.9%	18	9.6%	216	5.1%	7.7	5.4%	12.0	0.218	1.8	0.806	10.1	0.074	16	0.501	0.8	0.451
LEED	16	11.8	69	4.2%	61	4.7%	8	24.3%	199	4.2%	6.9	6.8%	15%		3%		55%		8%		10%	
Portland	159	26.5	64	2.8%	52	3.3%	12	10.2%	177	3.0%	5.3	3.4%										
nonLEED	133	18.8	66	3.5%	54	3.9%	12	12.5%	183	3.5%	5.5	4.3%	6.4	0.199	6.6	0.165	-0.3	0.939	21	0.146	0.7	0.166
LEED	26	7.7	60	4.3%	47	5.6%	13	19.1%	162	4.6%	4.8	4.5%	10%		12%		-2%		11%		12%	
Seattle	459	63.8	56	2.3%	50	2.2%	6	9.7%	164	2.1%	4.7	2.8%										
nonLEED	409	40.1	59	2.1%	51	2.3%	8	10.4%	168	2.1%	4.8	2.8%	6.3	0.124	2.8	0.432	3.5	0.085	12	0.268	0.2	0.546
LEED	50	23.7	52	4.8%	48	4.4%	4	21.4%	156	4.3%	4.5	6.0%	11%		5%		46%		7%		5%	
Washington	481	115.8	64	1.2%	60	1.3%	5	10.4%	192	1.2%	7.5	2.4%										
nonLEED	331	69.5	67	1.7%	61	1.8%	6	11.6%	199	1.7%	7.9	3.4%	6.9	0.000	4.5	0.004	2.4	0.018	17	0.001	0.9	0.022
LEED	150	46.2	60	1.7%	57	1.6%	3	21.6%	182	1.6%	7.0	2.9%	10%		7%		43%		8%		11%	
Aggregate	4,168	1183.0	75	1.1%	54	1.0%	21	3.2%	191	0.9%	7.4	1.3%										
nonLEED	3,623	853.6	77	1.4%	54	1.2%	23	3.6%	194	1.2%	7.2	1.5%	8.3	0.000	2.4	0.112	5.9	0.001	14	0.004	0.5	0.012
LEED	545	329.3	68	1.9%	53	1.6%	16	7.6%	181	1.5%	7.9	2.6%	11%		4%		26%		7%		7%	

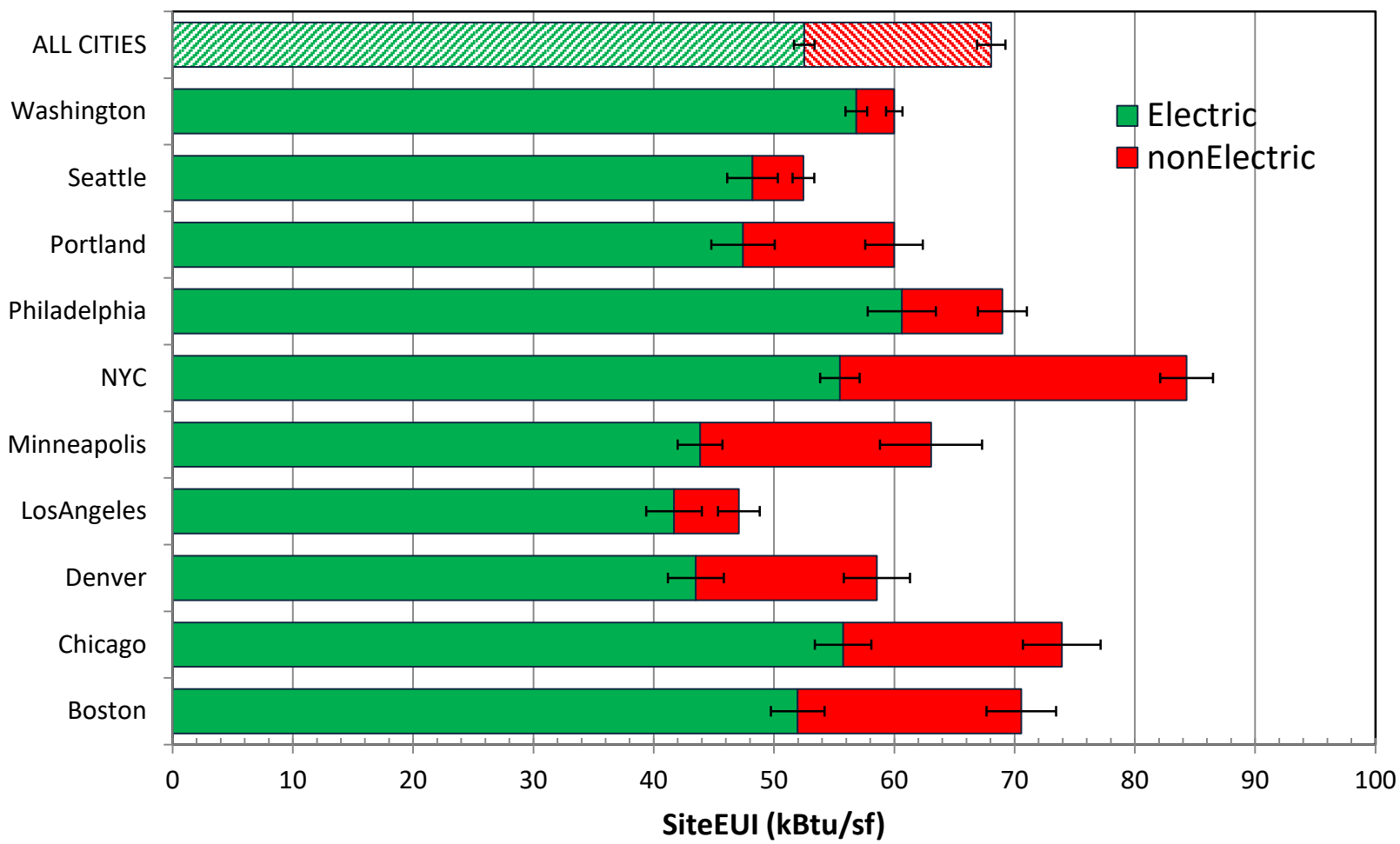
	ALL		nonLEED											
					SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE
Boston	274	70.0	239	46.6	82	4%	60	5%	22	11%	212	4%	6.4	4%
Chicago	325	162.6	244	77.3	82	3%	56	4%	26	9%	202	3%	11.7	3%
Denver	193	45.1	144	22.6	67	3%	47	3%	20	8%	169	3%	12.5	3%
LosAngeles	732	195.7	691	167.6	53	2%	45	2%	8.0	9%	150	2%	4.0	2%
Minneapolis	109	36.9	93	23.8	82	5%	46	8%	36	7%	182	6%	10.3	7%
NYC	1,247	400.5	1,166	332.8	92	2%	56	2%	36	4%	214	2%	7.5	2%
Philadelphia	189	66.2	173	54.4	81	5%	62	6%	18	10%	216	5%	7.7	5%
Portland	159	26.5	133	18.8	66	3%	54	4%	12	13%	183	4%	5.5	4%
Seattle	459	63.8	409	40.1	59	2%	51	2%	7.8	10%	168	2%	4.8	3%
Washington	481	115.8	331	69.5	67	2%	61	2%	5.5	12%	199	2%	7.9	3%
Aggregate	4,168	1,183.0	3,623	853.6	77	1%	54.2	1%	22.8	4%	194	1%	7.2	2%

		LEED		LEED savings "delta"									
City		N	A (Mft^2)	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston		35	23.4	11.3	0.120	8.3	0.207	3.0	0.584	29	0.138	0.6	0.358
Chicago		81	85.3	8.0	0.048	-0.1	0.972	8.2	0.080	8	0.445	0.4	0.533
Denver		49	22.5	8.9	0.019	3.7	0.271	5.2	0.172	17	0.071	0.5	0.476
LosAngeles		41	28.0	6.0	0.172	3.4	0.300	2.6	0.363	13	0.211	0.4	0.166
Minneapolis		16	13.0	18.5	0.053	2.2	0.772	16.3	0.028	24	0.278	0.9	0.542
NYC		81	67.7	7.6	0.282	0.7	0.854	6.8	0.212	9	0.504	0.4	0.443
Philadelphia		16	11.8	12.0	0.218	1.8	0.806	10.1	0.074	16	0.501	0.8	0.451
Portland		26	7.7	6.4	0.199	6.6	0.165	-0.3	0.939	21	0.146	0.7	0.166
Seattle		50	23.7	6.3	0.124	2.8	0.432	3.5	0.085	12	0.268	0.2	0.546
Washington		150	46.2	6.9	0.000	4.5	0.004	2.4	0.018	17	0.001	0.9	0.022
Aggregate		545	329.3	8.3	0.000	2.4	0.112	5.9	0.0011	14	0.004	0.5	0.012

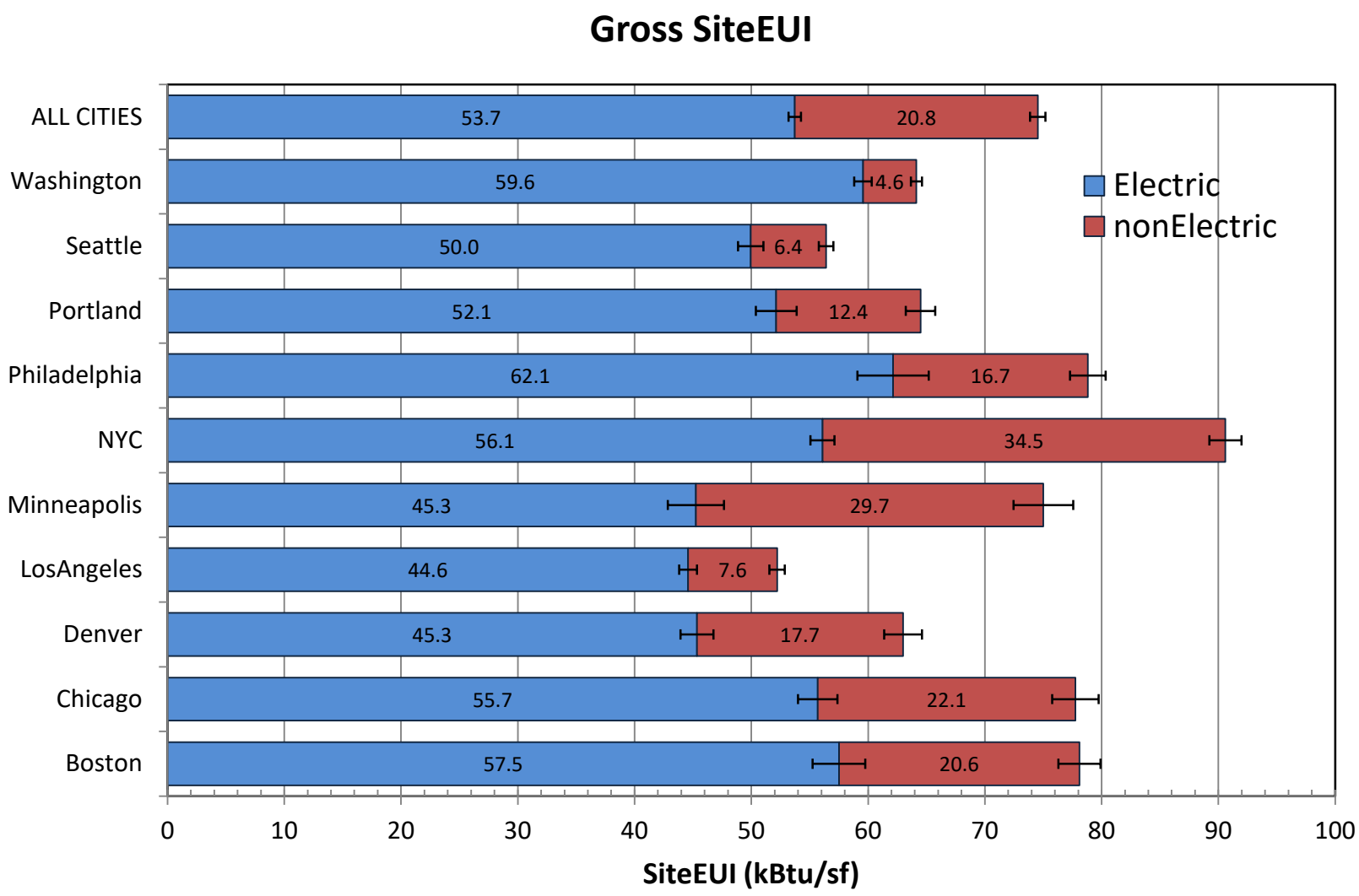
	LEED		nonLEED										LEED savings "delta"									
					SiteEUI		ElectricEUI		nElectricEUI		SourceEUI		GHGI		SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston	35	23.4	239	46.6	82	4%	60	5%	22	11%	212	4%	6.4	4%	11.3	0.120	8.3	0.207	3.0	0.584	29	0.1380	0.6	0.358
Chicago	81	85.3	244	77.3	82	3%	56	4%	26	9%	202	3%	11.7	3%	8.0	0.048	-0.1	0.972	8.2	0.080	8	0.4446	0.4	0.533
Denver	49	22.5	144	22.6	67	3%	47	3%	20	8%	169	3%	12.5	3%	8.9	0.019	3.7	0.271	5.2	0.172	17	0.0711	0.5	0.476
LosAngeles	41	28.0	691	167.6	53	2%	45	2%	8.0	9%	150	2%	4.0	2%	6.0	0.172	3.4	0.300	2.6	0.363	13	0.2106	0.4	0.166
Minneapolis	16	13.0	93	23.8	82	5%	46	8%	36	7%	182	6%	10.3	7%	18.5	0.053	2.2	0.772	16.3	0.028	24	0.2779	0.9	0.542
NYC	81	67.7	1,166	332.8	92	2%	56	2%	36	4%	214	2%	7.5	2%	7.6	0.282	0.7	0.854	6.8	0.212	9	0.5042	0.4	0.443
Philadelphia	16	11.8	173	54.4	81	5%	62	6%	18	10%	216	5%	7.7	5%	12.0	0.218	1.8	0.806	10.1	0.074	16	0.5005	0.8	0.451
Portland	26	7.7	133	18.8	66	3%	54	4%	12	13%	183	4%	5.5	4%	6.4	0.199	6.6	0.165	-0.3	0.939	21	0.1460	0.7	0.166
Seattle	50	23.7	409	40.1	59	2%	51	2%	7.8	10%	168	2%	4.8	3%	6.3	0.124	2.8	0.432	3.5	0.085	12	0.2679	0.2	0.546
Washington	150	46.2	331	69.5	67	2%	61	2%	5.5	12%	199	2%	7.9	3%	6.9	0.000	4.5	0.004	2.4	0.018	17	0.0005	0.9	0.022
Aggregate	545	329.3	3,623	853.6	77	1%	54.2	1%	22.8	4%	194	1%	7.2	2%	8.3	0.000	2.4	0.112	5.9	0.001	14	0.004	0.5	0.012

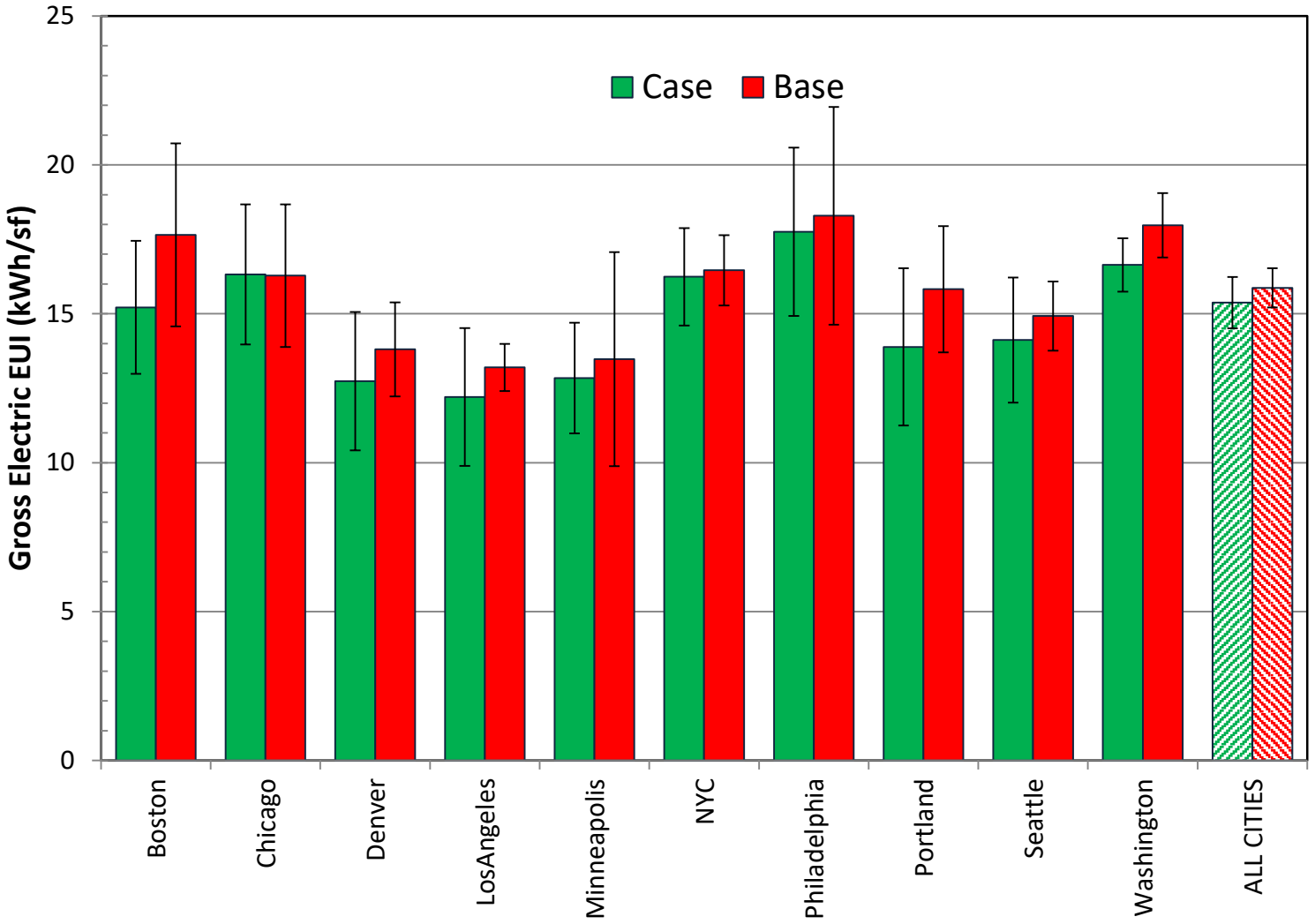


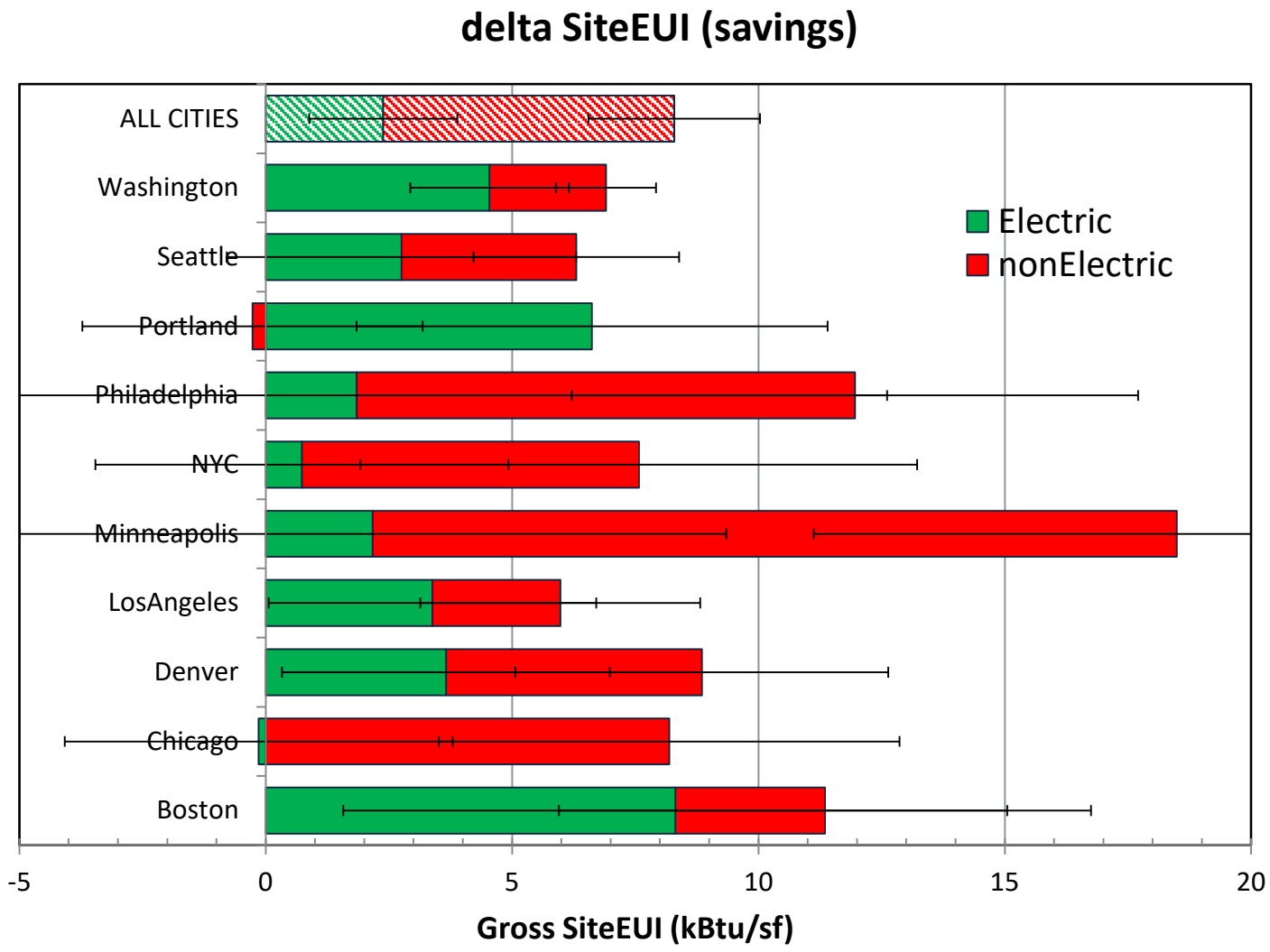
nonLEED Office

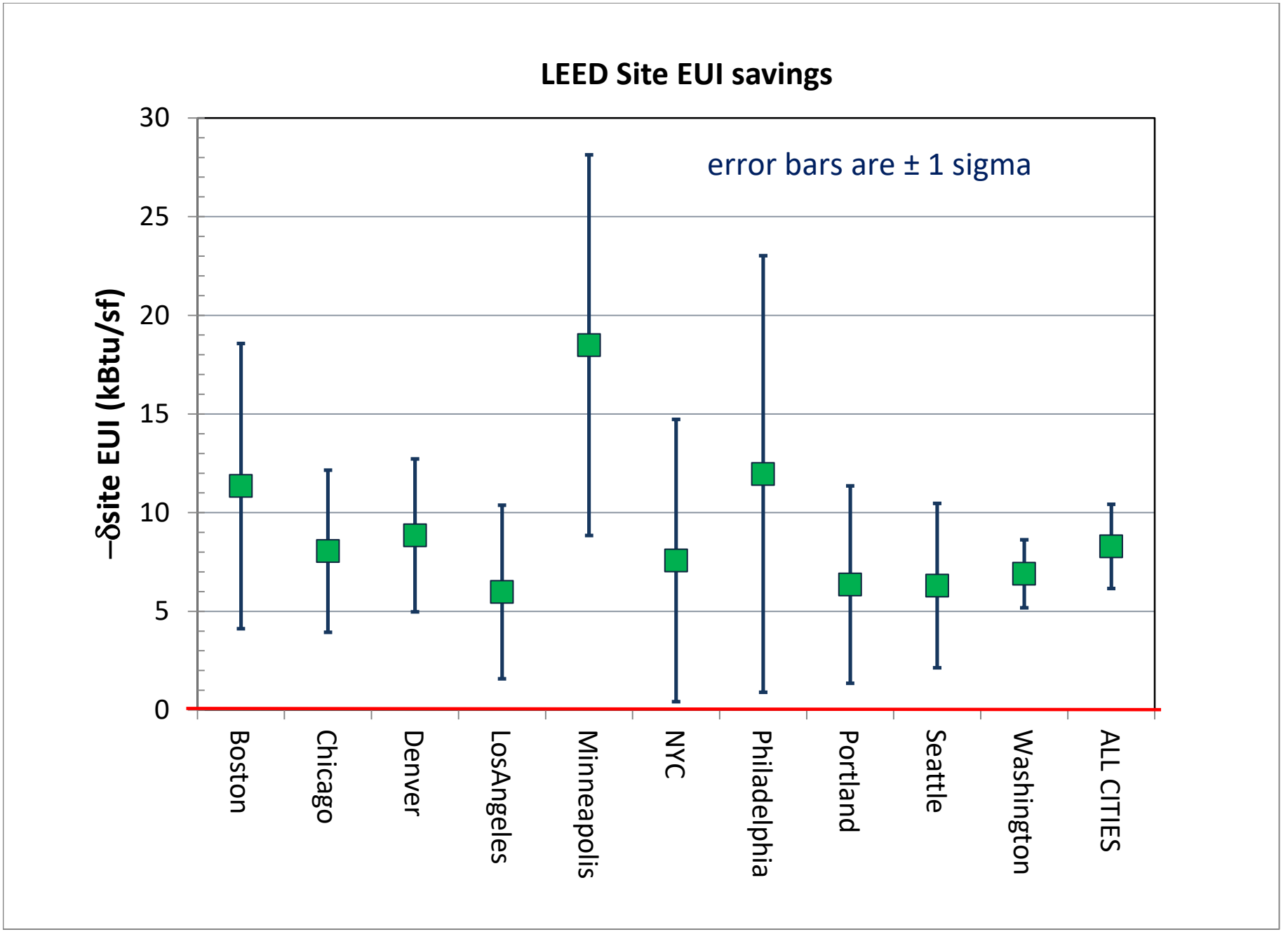

Gross SiteEUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
Electric
nonElectric
0
10
20
30
40
50
60
70
80
90
100
SiteEUI (kBtu/sf)

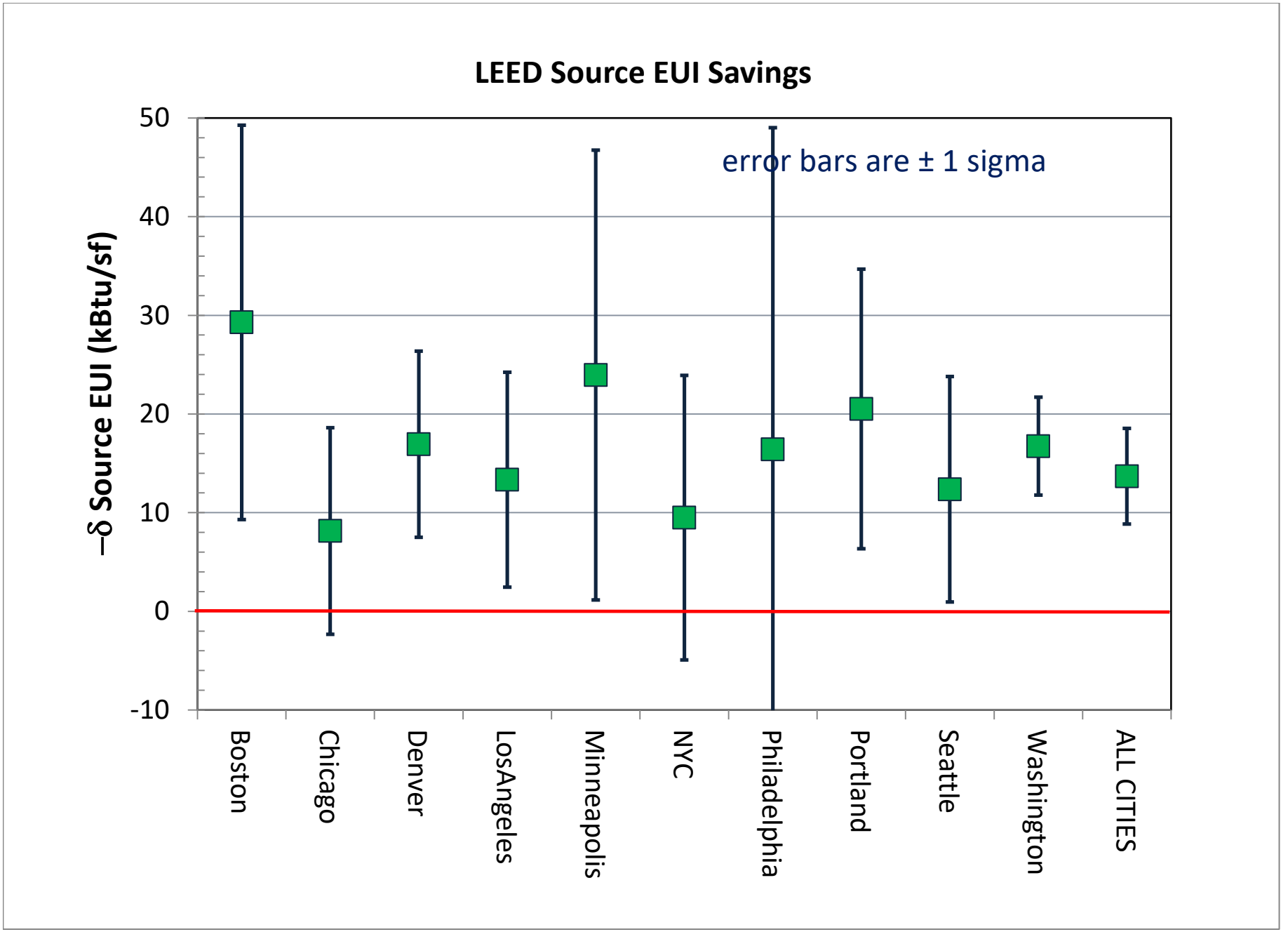
LEED Office

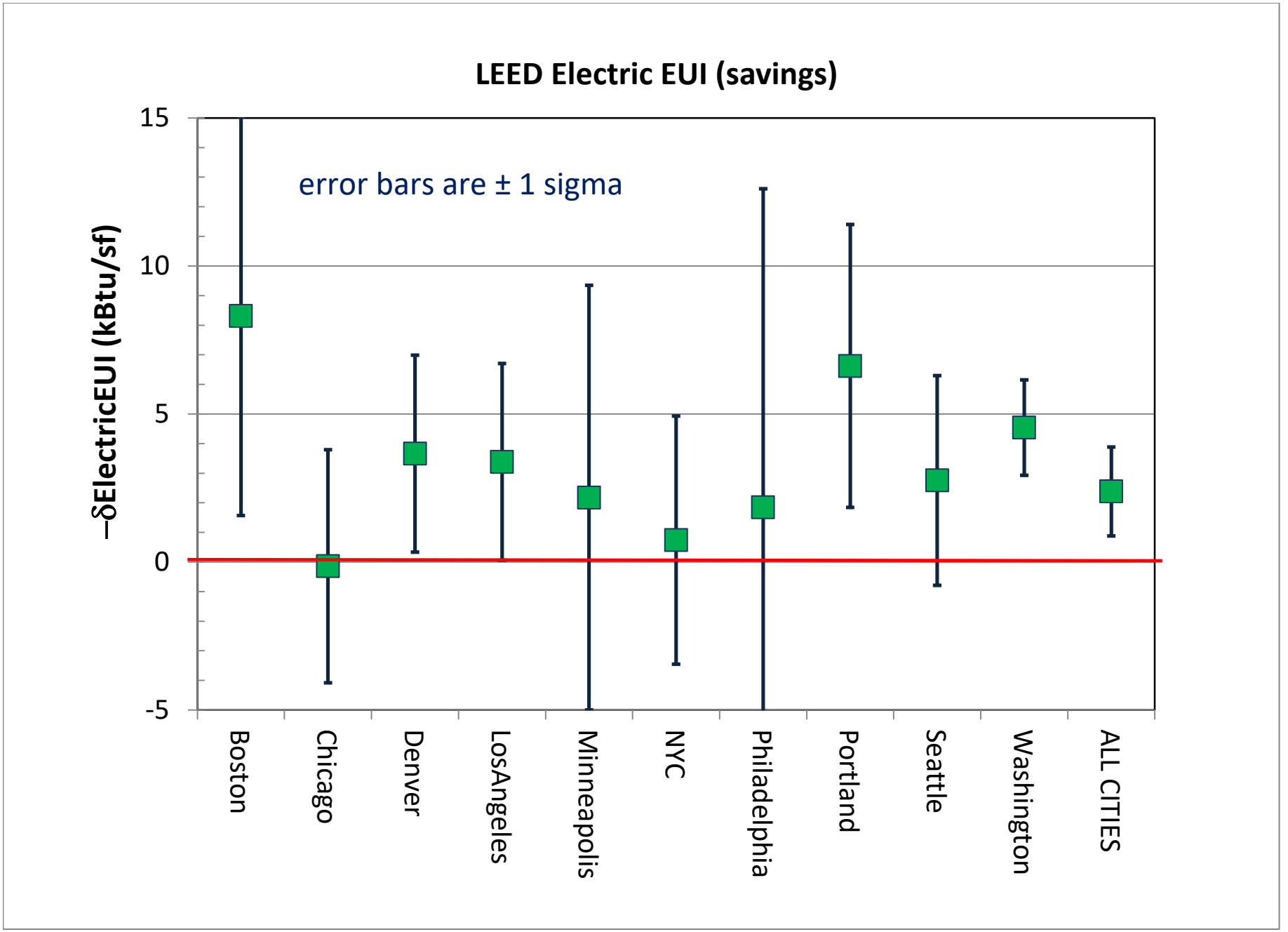

Gross SiteEUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
53.7
20.8
59.6
4.6
50.0
6.4
52.1
12.4
62.1
16.7
56.1
34.5
45.3
29.7
44.6
7.6
45.3
17.7
55.7
22.1
57.5
20.6
Electric
nonElectric
0
10
20
30
40
50
60
70
80
90
100
SiteEUI (kBtu/sf)

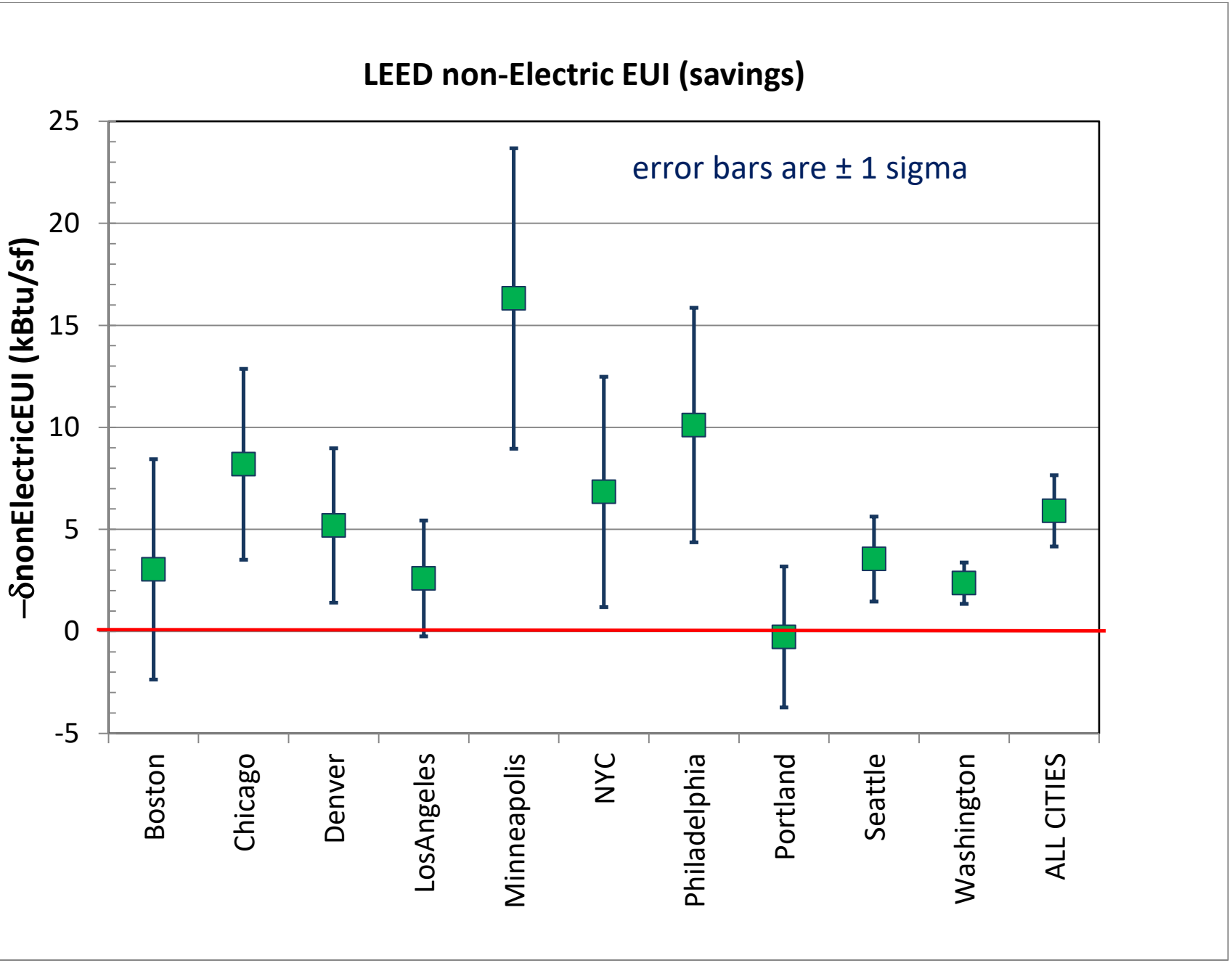

Electric Energy Use
Gross Electric EUI (kWh/sf)
25
20
15
10
5
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

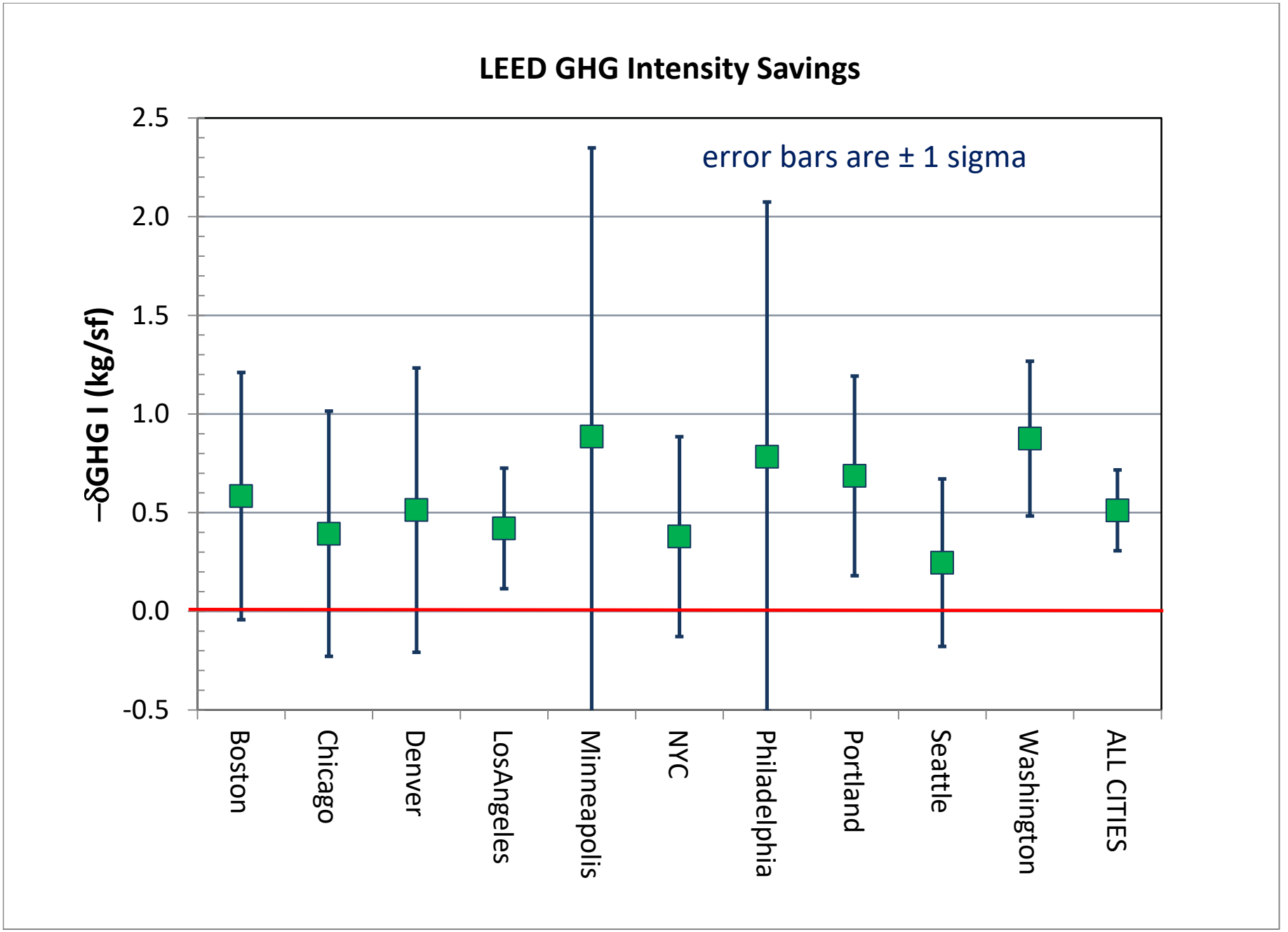

delta SiteEUI (savings)
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
Electric
nonElectric
-5
0
5
10
15
20
Gross SiteEUI (kBtu/sf)

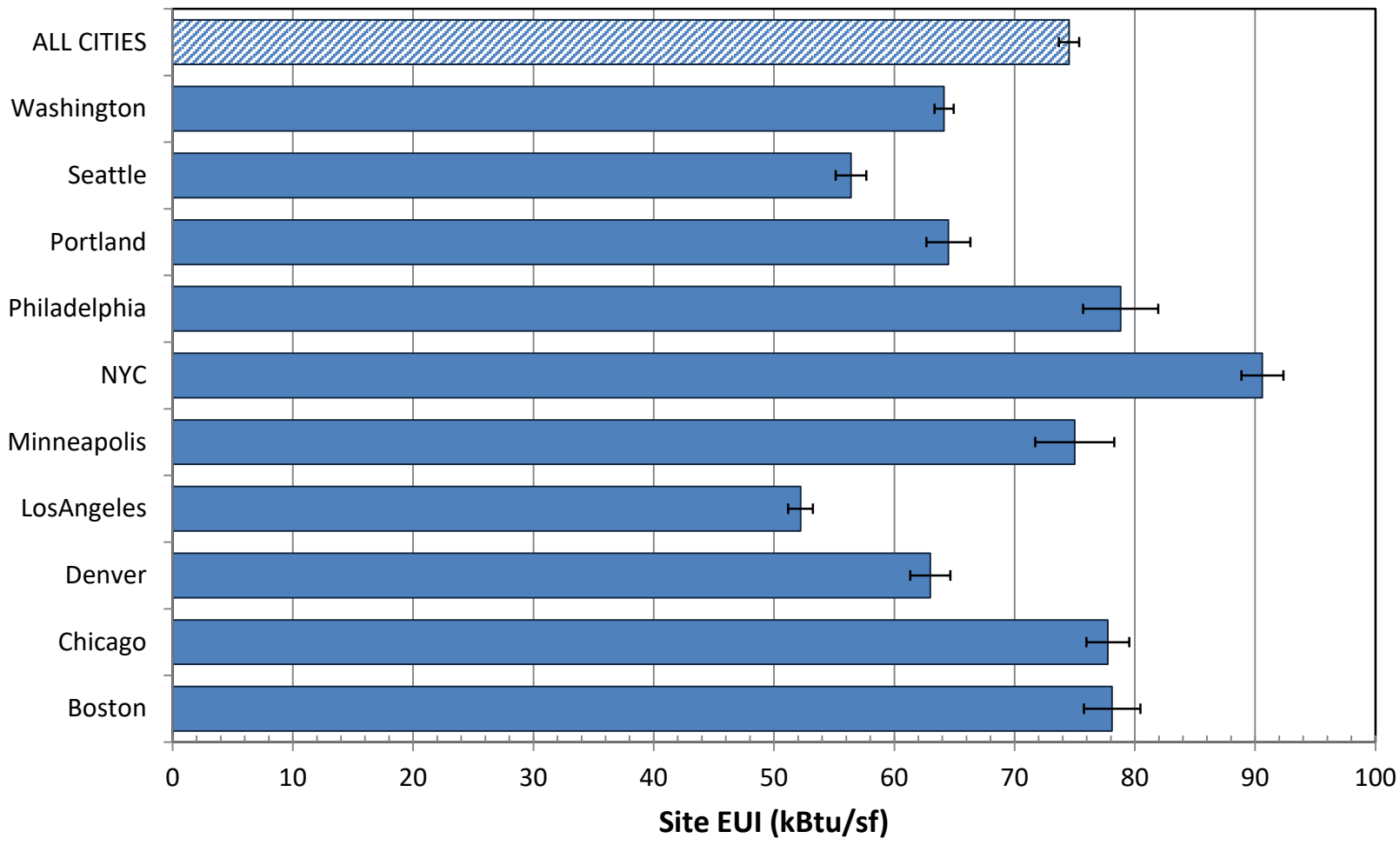

LEED Site EUI savings
error bars are ± 1 sigma
–δsite EUI (kBtu/sf)
30
25
20
15
10
5
0
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

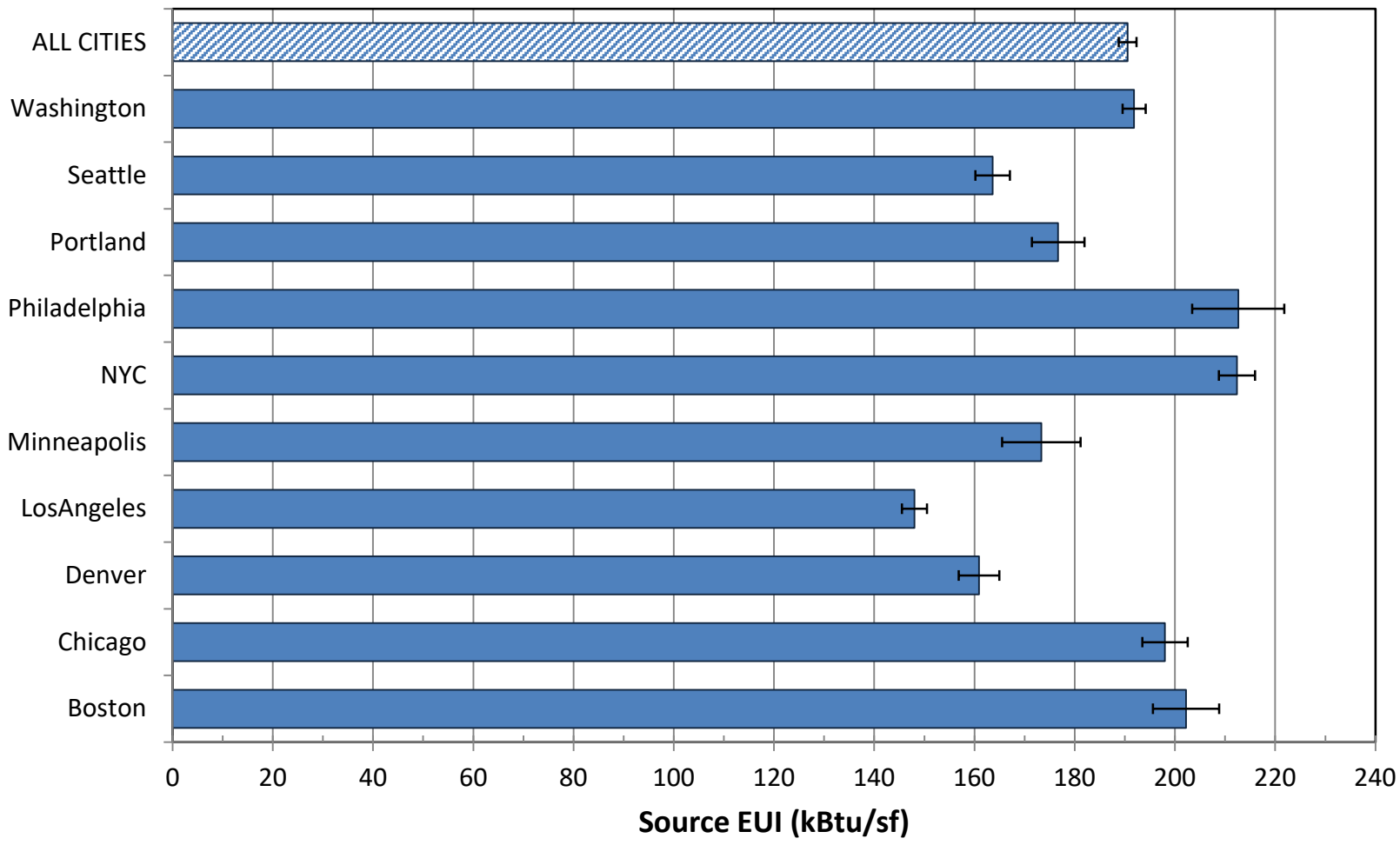

LEED Source EUI Savings
error bars are ± 1 sigma
–δ Source EUI (kBtu/sf)
50
40
30
20
10
0
-10
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

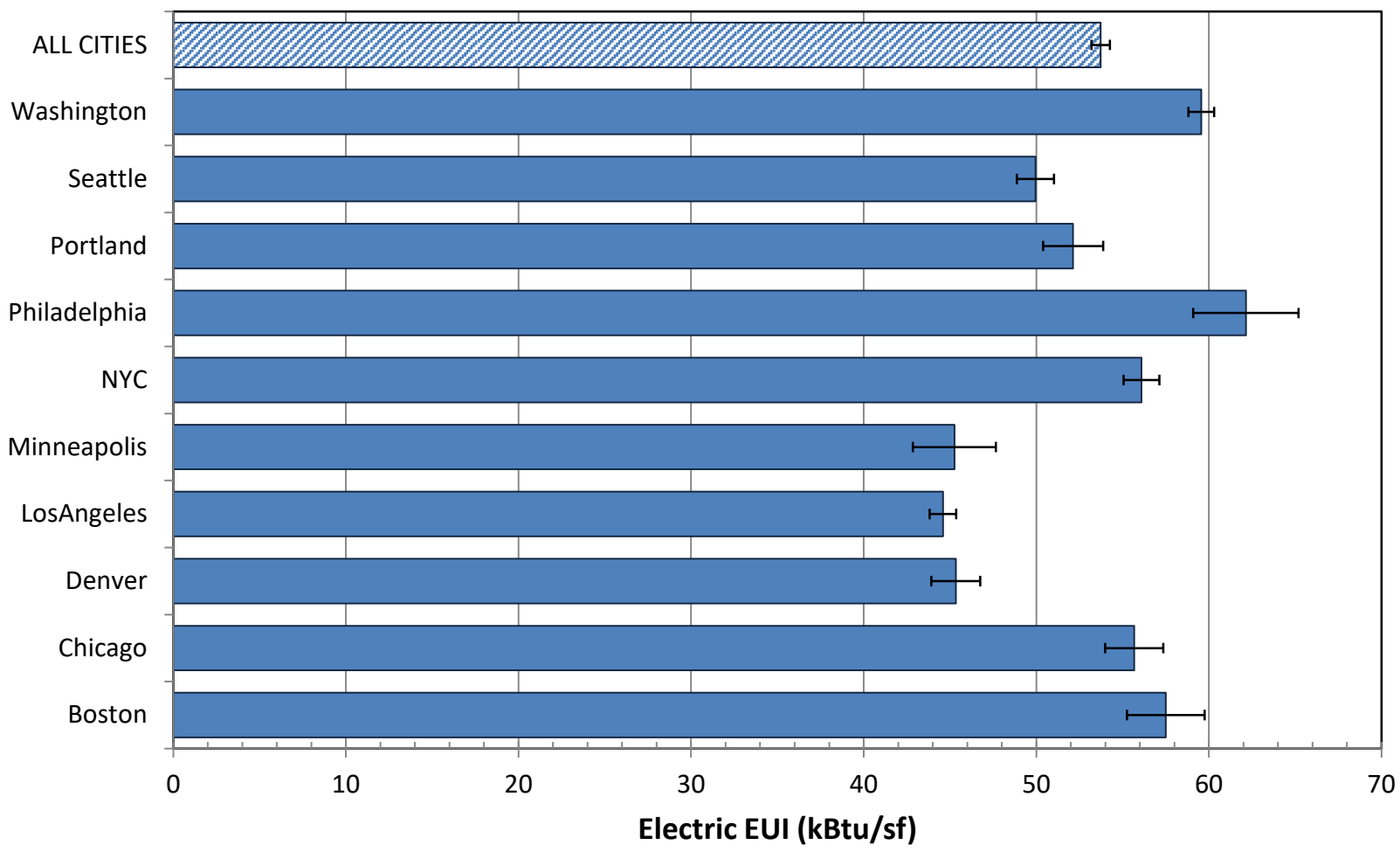

LEED Electric EUI (savings)
error bars are ± 1 sigma
–δElectricEUI (kBtu/sf)
15
10
5
0
-5
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

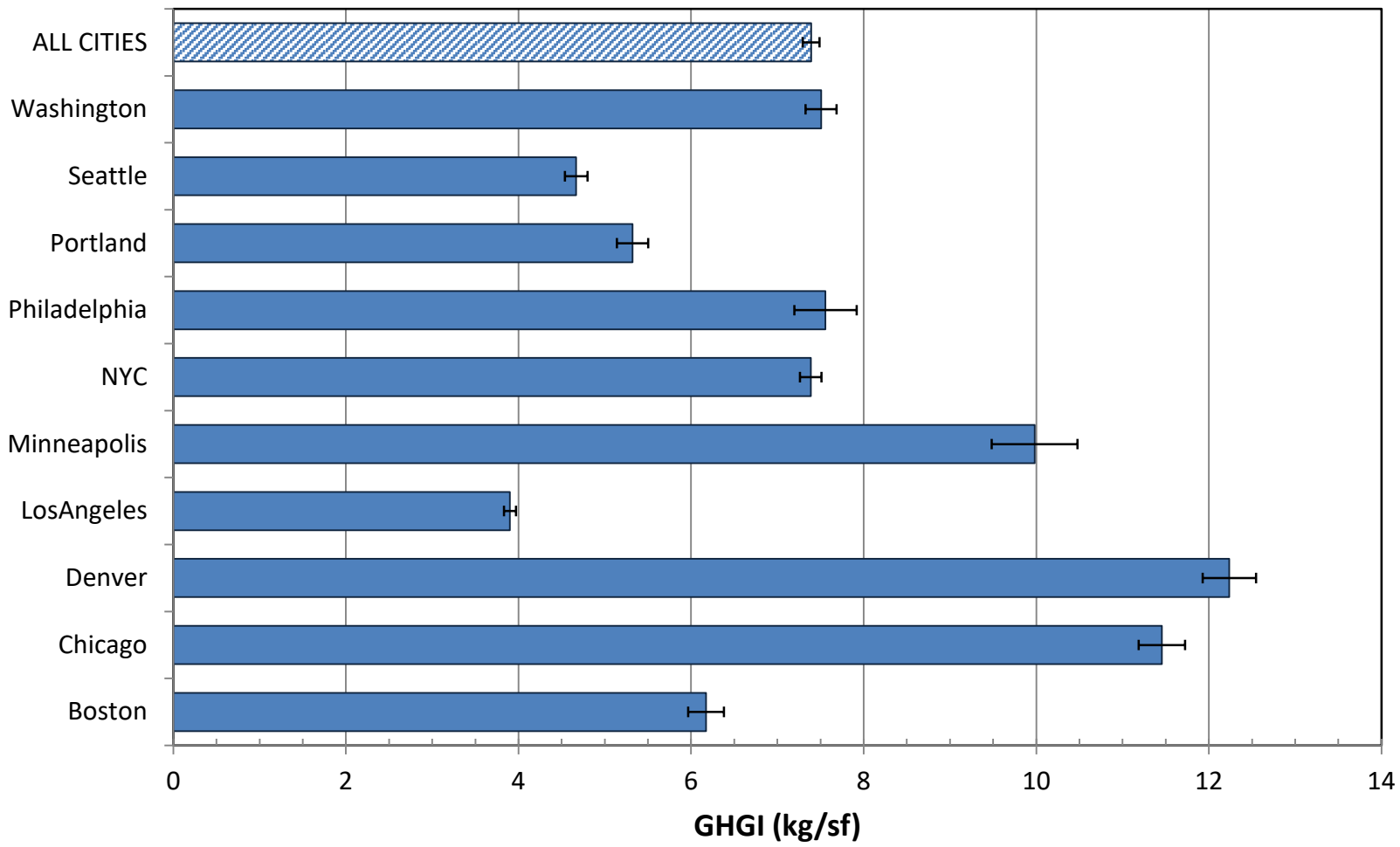

LEED non-Electric EUI (savings)
error bars are ± 1 sigma
–δnonElectricEUI (kBtu/sf)
25
20
15
10
5
0
-5
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

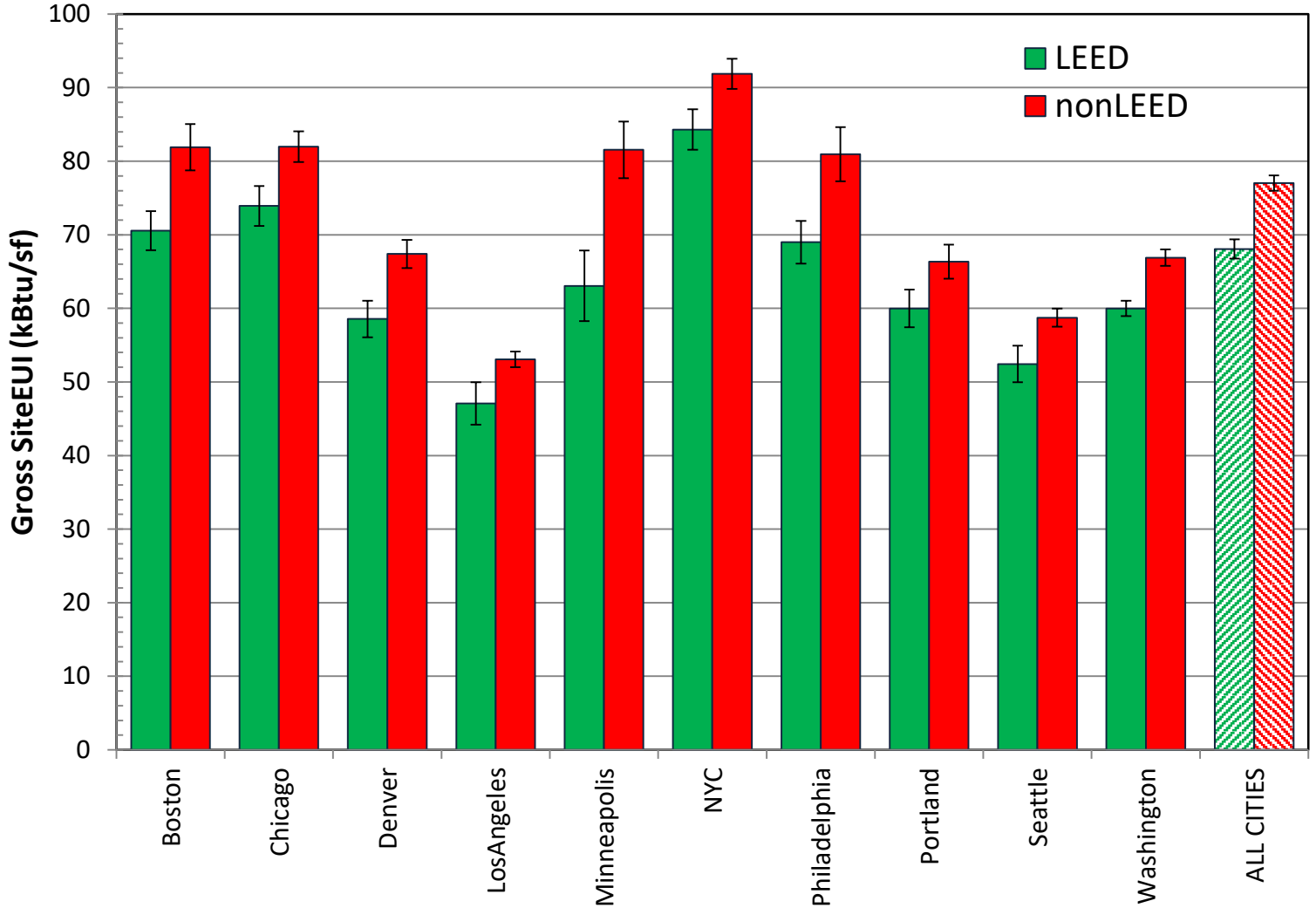

LEED GHG Intensity Savings
error bars are ± 1 sigma
−δGHG I (kg/sf)
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

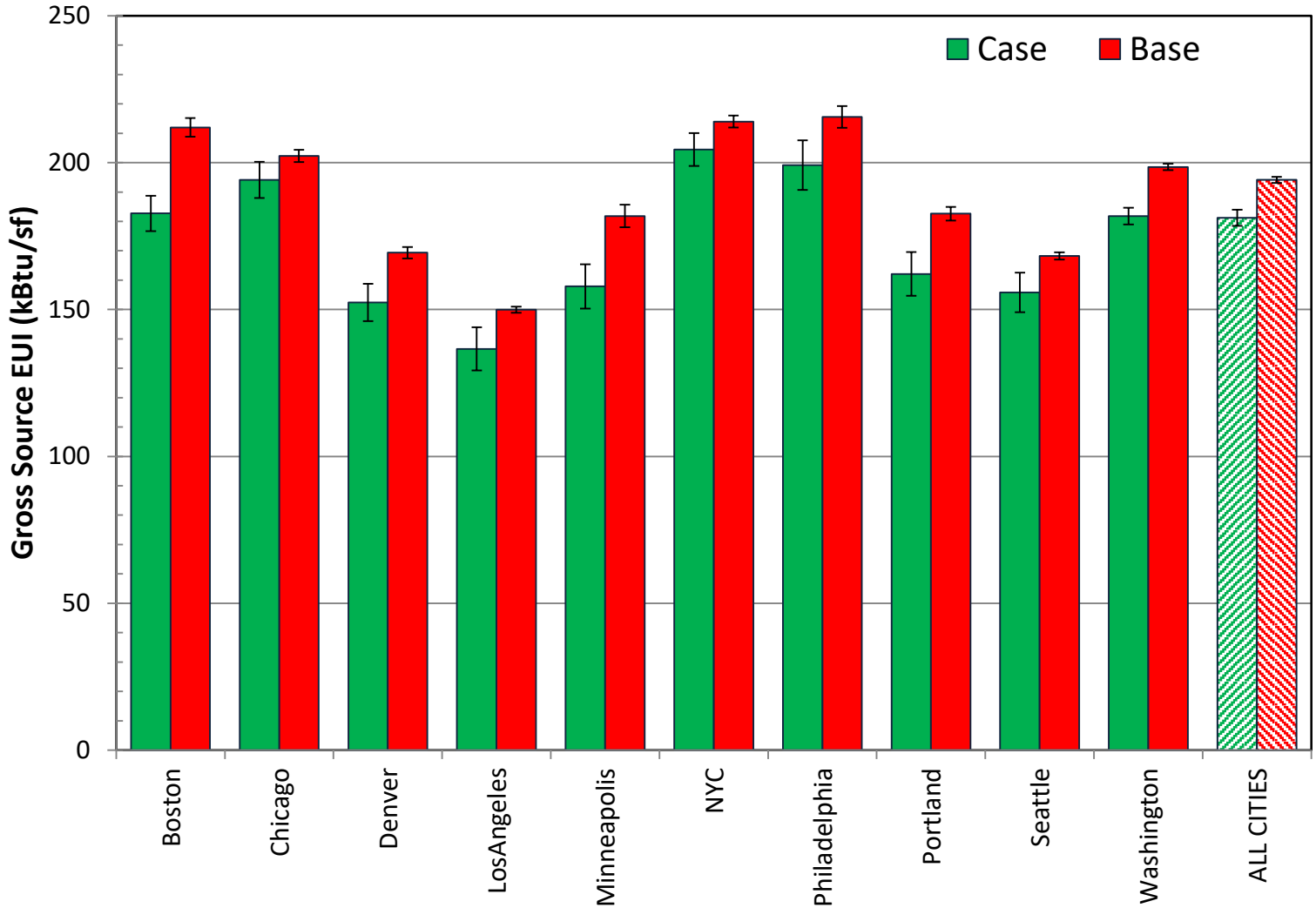

Gross Site EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
10
20
30
40
50
60
70
80
90
100
Site EUI (kBtu/sf)

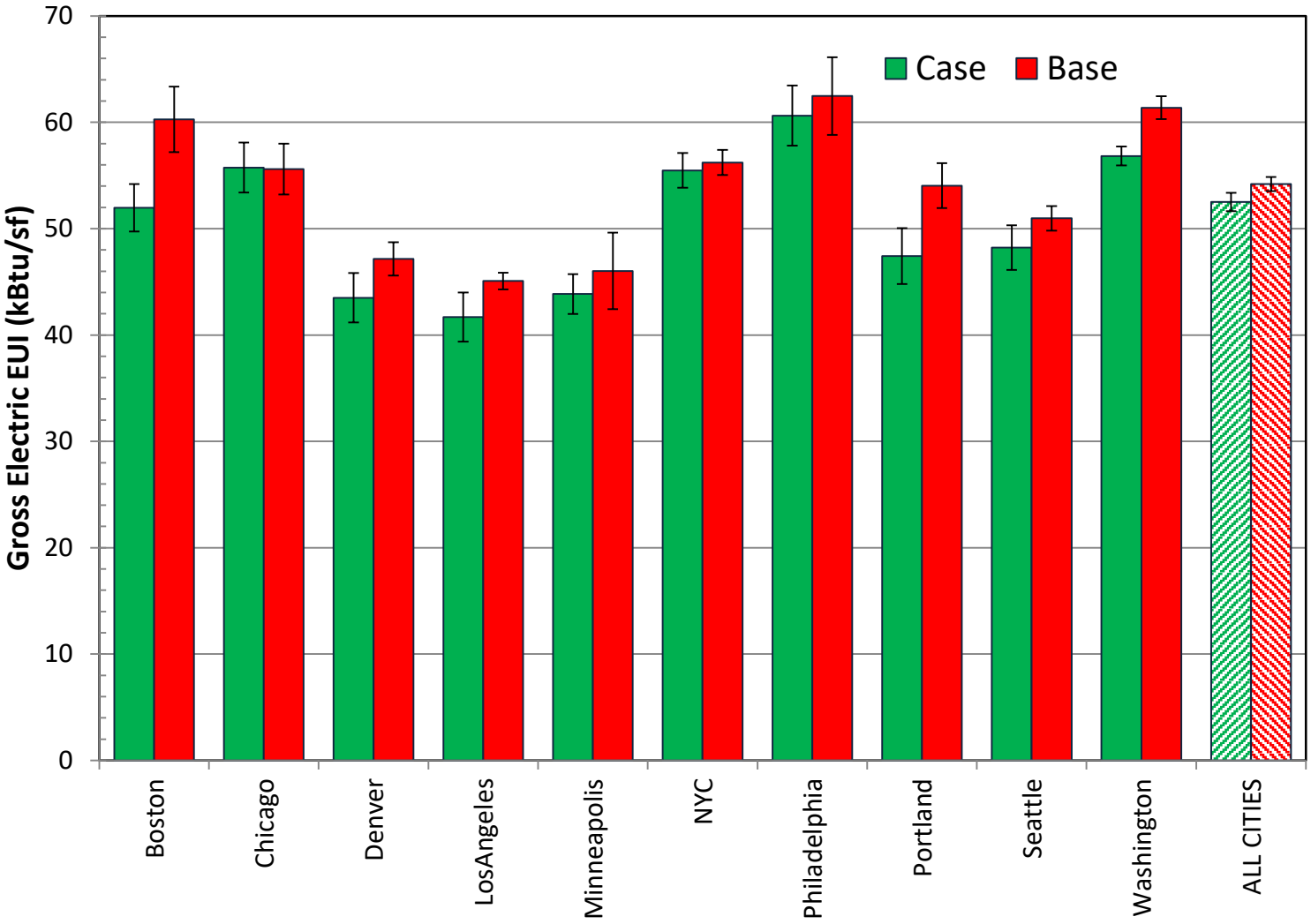

Gross Source EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
20
40
60
80
100
120
140
160
180
200
220
240
Source EUI (kBtu/sf)

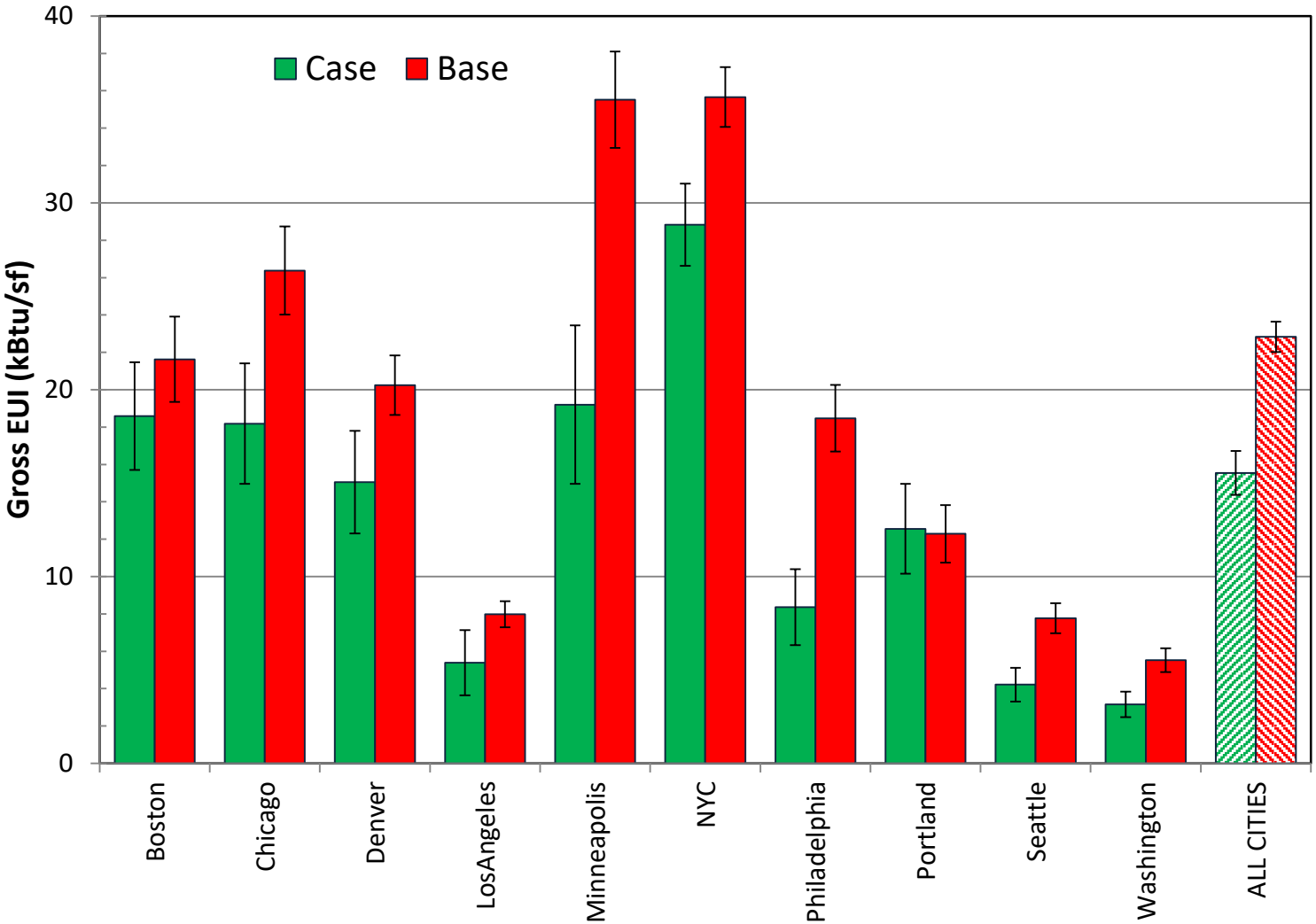

Gross Electric EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
10
20
30
40
50
60
70
Electric EUI (kBtu/sf)

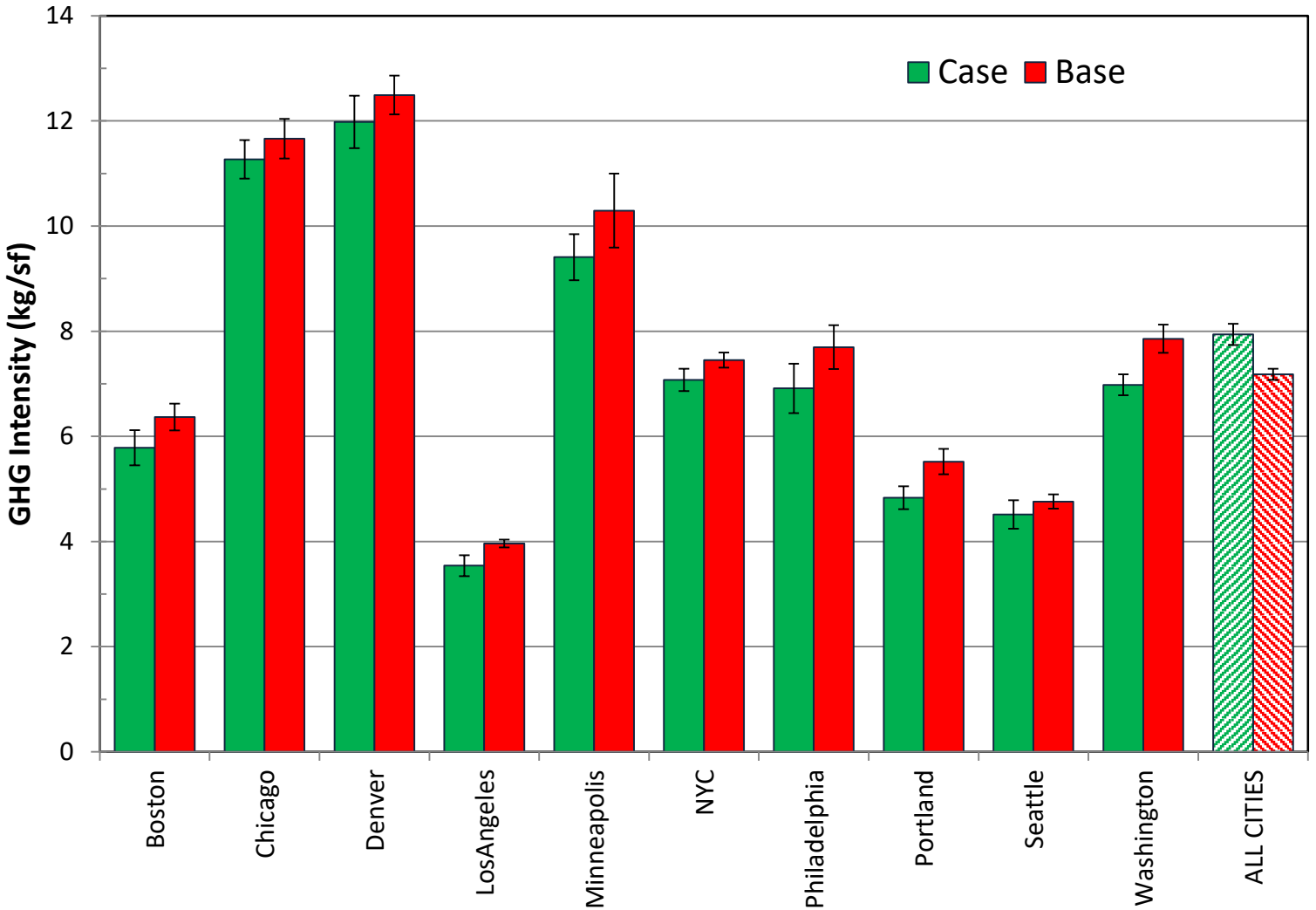

Gross GHGI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
2
4
6
8
10
12
14
GHGI (kg/sf)


Site Energy
Gross SiteEUI (kBtu/sf)
100
90
80
70
60
50
40
30
20
10
0
LEED
nonLEED
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


Source Energy
Gross Source EUI (kBtu/sf)
250
200
150
100
50
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


Electric Energy Use
Gross Electric EUI (kBtu/sf)
70
60
50
40
30
20
10
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


non-Electric Energy Use
Gross EUI (kBtu/sf)
40
30
20
10
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


GHG Emission
GHG Intensity (kg/sf)
14
12
10
8
6
4
2
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

					Site EUI (kBtu/sf)					Source EUI (kBtu/sf)					GHG intensity (kg/ft$_2$)					Electric Intensity (kBtu/sf)					nonElectric Intensity (kBtu/sf)				
Case	City	N	Neff	Tot. Area	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mearl	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm
1	Boston	3	1	1,159,204	72.4	74.2	2.6	1.3	1.4	182.8	170.8	17.7	8.4	9.1	3.86	5.40	2.99	1.22	1.23	51.1	44.4	9.8	4.6	5.1	21.2	29.8	12.4	5.9	6.4
2	Chicago	2	1	1,740,557	81.6	94.9	20.4	5.5	12.2	191.2	221.0	45.6	12.3	27.6	11.00	12.75	2.67	0.72	1.59	50.5	58.0	11.6	3.1	6.9	31.1	36.9	8.8	2.4	5.3
3	Denver	5	4	1,004,838	45.4	43.7	11.6	9.7	4.4	127.9	118.5	42.1	37.8	17.8	10.07	9.44	2.89	2.53	1.19	38.4	34.7	15.1	14.0	6.8	7.1	9.0	8.9	8.9	4.4
4	LosAngeles	2	1	1,108,728	100.3	94.4	13.7	7.7	7.5	303.4	291.6	27.4	15.4	14.8	7.91	7.27	1.49	0.84	0.81	94.8	92.1	6.2	3.5	3.4	5.5	2.3	7.5	4.2	4.1
5	Minneapolis	0	NA	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	NYC	15	8	11,607,950	69.9	73.5	19.8	15.1	5.1	175.8	178.0	44.5	33.5	9.6	5.93	6.11	1.66	1.20	0.36	49.0	48.3	12.9	10.8	3.0	20.9	25.2	13.5	13.3	5.2
7	Philadelphia	2	2	1,056,175	56.9	56.2	13.2	9.3	6.6	154.8	152.3	45.3	32.0	22.8	5.80	5.71	1.66	1.17	0.84	45.5	44.7	15.1	10.6	7.6	11.4	11.5	1.9	1.4	1.0
8	Portland	1	1	97,765	48.4	48.4	NA	0.0	0.0	133.8	133.8	NA	0.0	0.0	3.99	3.99	NA	0.00	0.00	39.7	39.7	NA	0.0	0.0	8.7	8.7	NA	0.0	0.0
9	Seattle	2	2	476,169	62.2	71.2	26.4	16.3	13.9	169.3	185.3	46.5	28.7	24.7	5.33	5.97	1.84	1.14	0.97	49.8	52.9	9.0	5.6	4.8	12.4	18.3	17.4	10.7	9.2
10	Washington	3	3	731,567	67.0	68.5	12.5	8.7	5.2	205.0	212.1	47.5	32.0	19.1	7.53	7.77	1.68	1.14	0.66	64.4	67.0	16.5	11.0	6.6	2.6	1.5	4.3	2.8	1.7
11	**ALL CITIES**	35	16	18,982,953	67.0	73.8	20.0	17.3	4.0	177.5	184.8	53.4	45.5	8.9	6.79	6.95	2.74	2.39	0.59	51.3	51.4	17.0	15.3	3.1	15.7	22.4	13.1	14.3	4.0
Base																													
1	Boston	239	76	46,599,545	78.7	81.9	36.2	32.3	3.2	192.7	212.0	93.7	89.7	9.1	5.92	6.37	2.70	2.54	0.26	52.7	60.3	30.3	29.7	3.0	26.1	21.6	26.6	22.9	2.3
2	Chicago	244	85	77,253,811	83.5	82.0	26.8	23.8	2.1	202.2	202.3	68.6	58.5	6.3	11.63	11.66	4.04	3.45	0.38	54.8	55.6	23.8	20.4	2.4	28.7	26.4	25.1	23.1	2.3
3	Denver	144	88	22,590,922	71.4	67.4	20.1	18.8	1.9	176.3	169.3	48.8	46.1	4.8	12.89	12.49	3.76	3.60	0.37	48.4	47.2	16.9	15.7	1.6	23.0	20.2	19.4	17.5	1.6
4	LosAngeles	691	246	167,612,776	55.4	53.1	23.9	19.4	1.1	156.4	149.9	64.6	51.3	2.6	4.09	3.96	1.72	1.39	0.07	47.0	45.1	19.9	15.9	0.8	8.3	8.0	12.1	11.3	0.7
5	Minneapolis	93	40	23,831,087	86.4	81.5	34.1	30.6	3.9	186.0	181.8	82.3	82.9	10.9	10.45	10.29	5.40	5.45	0.71	45.6	46.0	26.0	27.2	3.6	40.8	35.5	26.2	22.1	2.5
6	NYC	1,166	414	332,797,339	85.4	91.9	45.5	45.1	2.0	195.4	214.0	102.5	98.7	4.1	6.95	7.45	3.63	3.39	0.14	50.6	56.2	29.4	28.1	1.2	34.9	35.7	30.1	31.3	1.6
7	Philadelphia	173	73	54,432,024	82.8	80.9	39.4	33.9	3.7	217.3	215.6	108.2	95.1	11.1	8.06	7.70	4.90	3.97	0.43	62.3	62.5	34.4	30.3	3.6	20.5	18.5	23.1	18.8	1.7
8	Portland	133	71	18,841,143	65.9	66.3	24.5	22.7	2.3	178.3	182.6	68.4	63.6	6.4	5.37	5.52	2.29	2.27	0.24	52.2	54.0	22.0	20.6	2.1	13.6	12.3	14.5	13.9	1.5
9	Seattle	409	141	40,135,019	57.1	58.7	22.5	19.8	1.3	157.4	168.2	63.0	57.4	3.6	4.72	4.76	2.09	1.85	0.14	46.7	51.0	21.0	19.1	1.2	10.4	7.8	16.5	13.2	0.8
10	Washington	331	183	69,542,043	69.7	66.9	18.7	17.0	1.1	203.7	198.5	55.6	50.2	3.3	7.81	7.86	2.87	3.35	0.27	62.5	61.4	18.7	16.7	1.1	7.2	5.5	12.8	10.8	0.6
11	**ALL CITIES**	3,623	1,247	853,635,709	73.1	77.0	36.0	37.0	1.0	184.1	194.1	84.7	83.5	2.3	6.80	7.18	3.98	3.87	0.11	51.4	54.2	25.7	24.7	0.7	21.7	22.8	25.7	26.5	0.8
		median YearBuilt																											
Comparison		**LEED**	**nonLEED**		**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**
1	Boston	1966	1928		-9.4%	-7.7	-0.32	0.7765	23.9	-19.4%	-41.2	-0.61	0.5260	67.2	-15.2%	-0.97	-0.52	0.6390	1.85	-26.3%	-15.8	-0.73	0.4431	21.6	37.7%	8.1	0.47	0.6244	17.3
2	Chicago	1939	1929		15.8%	12.9	0.64	0.5256	20.2	9.2%	18.7	0.37	0.7289	49.8	9.3%	1.09	0.38	0.7386	2.87	4.4%	2.4	0.14	0.8996	17.1	39.8%	10.5	0.55	0.6229	19.2
3	Denver	1983	1981		-35.1%	-23.7	-2.37	0.0182	10.0	-30.0%	-50.8	-2.06	0.0339	24.7	-24.5%	-3.06	-1.62	0.1055	1.89	-26.3%	-12.4	-1.51	0.1315	8.2	-55.7%	-11.3	-1.27	0.2088	8.9
4	LosAngeles	1967	1981		78.0%	41.4	2.43	0.0255	17.0	94.5%	141.7	3.04	0.0136	46.6	83.5%	3.31	2.70	0.0184	1.23	104.3%	47.0	3.25	0.0102	14.5	-70.8%	-5.7	-0.63	0.4539	9.0
5	Minneapolis	NA	1934		0.0%	0.0	#DIV/0!	NA	0.0	0.0%	0.0	#DIV/0!	NA	0.0	0.0%	0.00	#DIV/0!	NA	0.00	0.0%	0.0	#DIV/0!	NA	0.0	0.0%	0.0	#DIV/0!	NA	0.0
6	NYC	1955	1926		-20.0%	-18.4	-1.08	0.2314	17.1	-16.8%	-35.9	-0.99	0.2711	36.5	-18.0%	-1.34	-1.09	0.2258	1.23	-14.1%	-7.9	-0.76	0.3873	10.5	-29.3%	-10.5	-0.84	0.3290	12.5
7	Philadelphia	1977	1950		-30.6%	-24.7	-0.88	0.2716	28.2	-29.3%	-63.2	-0.81	0.2985	78.2	-25.8%	-1.99	-0.57	0.4078	3.52	-28.5%	-17.8	-0.72	0.3530	24.9	-37.5%	-6.9	-0.41	0.5685	16.9
8	Portland	NA	NA		-27.0%	-17.9	-0.74	0.4224	24.2	-26.7%	-48.8	-0.72	0.4600	67.9	-27.7%	-1.53	-0.65	0.4204	2.34	-26.5%	-14.3	-0.65	0.4741	22.2	-29.2%	-3.6	-0.25	0.8052	14.4
9	Seattle	1993	1968		21.3%	12.5	0.75	0.4419	16.7	10.2%	17.1	0.35	0.7336	49.1	25.4%	1.21	0.78	0.4041	1.54	3.7%	1.9	0.12	0.8973	16.5	136.2%	10.6	0.90	0.1811	11.8
10	Washington	1975	1977		2.4%	1.6	0.14	0.8874	11.4	6.8%	13.5	0.41	0.6703	32.8	-1.1%	-0.09	-0.04	0.9542	2.25	9.2%	5.7	0.51	0.6085	11.1	-73.7%	-4.1	-0.57	0.5430	7.2
11	**ALL CITIES**	1971	1963		-13.6%	-10.5	-1.19	0.1899	8.8	-10.3%	-20.0	-0.99	0.2739	20.3	-11.7%	-0.84	-1.07	0.2477	0.78	-8.0%	-4.3	-0.69	0.4364	6.2	-27.0%	-6.2	-0.93	0.2739	6.7

All	City	N	Neff	Tot. Area	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm
1	Boston	242	78	47,758,749	78.7	81.7	36.0	31.9	3.1	192.6	211.0	93.2	88.9	8.9	5.9	6.3	2.7	2.5	0.25	52.6	59.9	30.1	29.4	3.0	26.0	21.8	26.5	22.7	2.2
2	Chicago	246	85	78,994,368	83.5	82.3	26.7	23.6	2.1	202.1	202.7	68.3	57.9	6.2	11.6	11.7	4.0	3.4	0.37	54.7	55.7	23.7	20.2	2.4	28.8	26.6	25.0	22.9	2.3
3	Denver	149	93	23,595,760	70.6	66.4	20.4	19.1	1.9	174.6	167.2	49.2	46.9	4.7	12.8	12.4	3.8	3.6	0.36	48.1	46.6	16.9	15.9	1.5	22.4	19.8	19.3	17.4	1.6
4	LosAngeles	693	247	168,721,504	55.5	53.3	24.0	19.6	1.1	156.8	150.9	65.0	52.4	2.7	4.1	4.0	1.7	1.4	0.07	47.2	45.4	20.1	16.3	0.8	8.3	7.9	12.0	11.2	0.7
5	Minneapolis	93	40	23,831,087	86.4	81.5	34.1	30.6	3.8	186.0	181.8	82.3	82.9	11.1	10.5	10.3	5.4	5.4	0.72	45.6	46.0	26.0	27.2	3.6	40.8	35.5	26.2	22.1	2.5
6	NYC	1,181	417	344,405,289	85.2	91.3	45.3	44.5	2.0	195.1	212.8	102.0	97.4	4.0	6.9	7.4	3.6	3.3	0.14	50.5	55.9	29.2	27.7	1.2	34.7	35.3	30.0	30.9	1.6
7	Philadelphia	175	75	55,488,199	82.5	80.5	39.3	33.7	3.6	216.6	214.4	107.8	94.7	10.9	8.0	7.7	4.9	3.9	0.41	62.2	62.1	34.3	30.2	3.6	20.4	18.3	23.0	18.6	1.7
8	Portland	134	71	18,938,908	65.7	66.2	24.4	22.7	2.3	177.9	182.4	68.3	63.5	6.4	5.4	5.5	2.3	2.3	0.23	52.1	54.0	21.9	20.5	2.1	13.6	12.3	14.5	13.8	1.5
9	Seattle	411	143	40,611,188	57.1	58.9	22.5	19.8	1.2	157.5	168.4	62.9	57.2	3.5	4.7	4.8	2.1	1.9	0.14	46.7	51.0	21.0	19.0	1.2	10.4	7.9	16.5	13.2	0.8
10	Washington	334	185	70,273,610	69.6	66.9	18.6	16.9	1.1	203.7	198.7	55.4	50.0	3.3	7.8	7.9	2.9	3.3	0.26	62.5	61.4	18.7	16.6	1.1	7.2	5.5	12.8	10.8	0.6
11	**ALL CITIES**	3,658	1,255	872,618,662	73.0	77.0	35.9	36.7	1.0	184.1	193.9	84.4	82.9	2.2	6.8	7.2	4.0	3.8	0.11	51.4	54.1	25.6	24.5	0.6	21.7	22.8	25.6	26.3	0.8

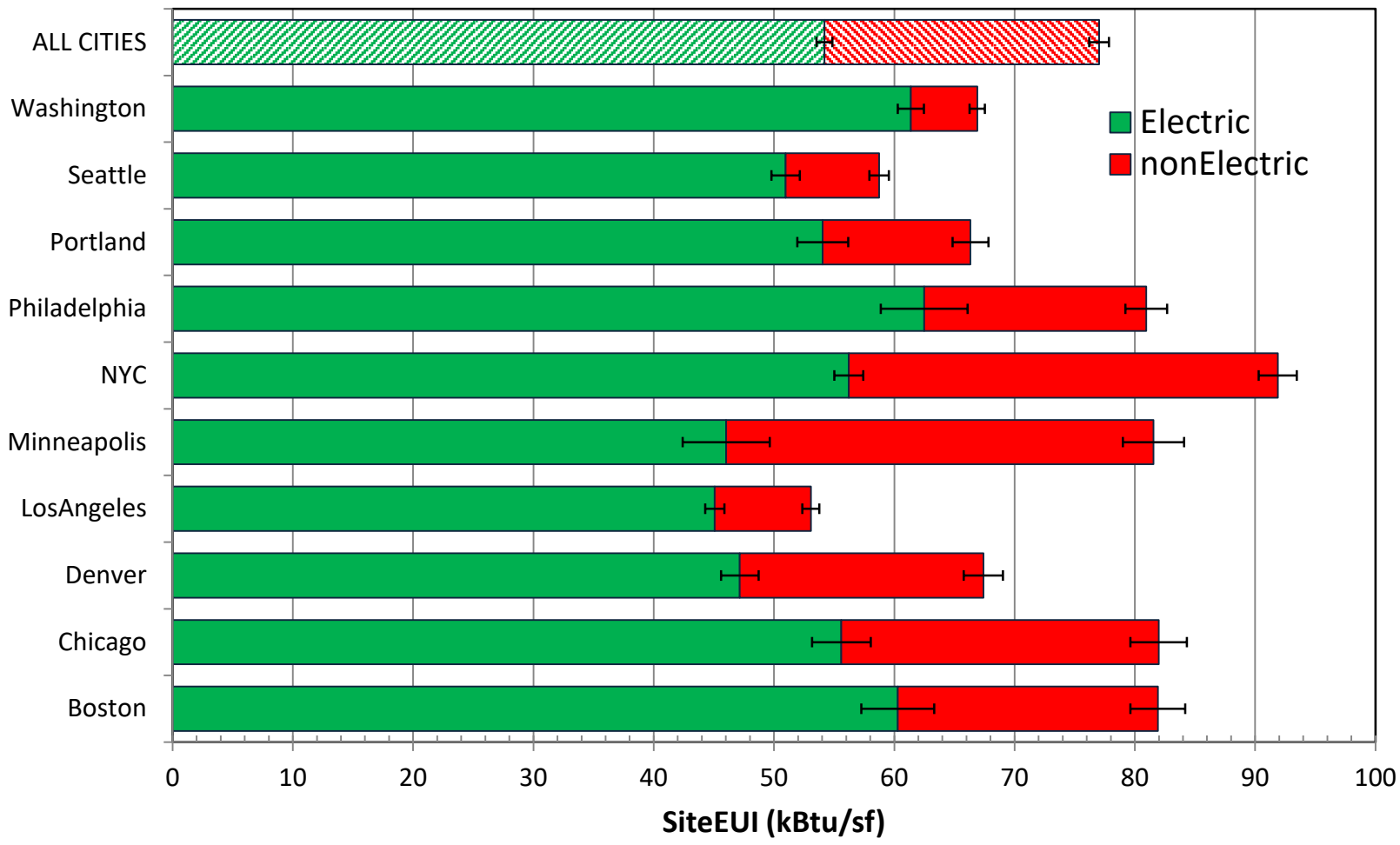
Office - LEED savings relative to nonLEED																			
	LEED		Base (nonLEED)		SiteEUI			ElectricEUI			nonElectricEUI			SourceEUI			GHGI (kg/ft^2)		
City	N	A ($10^6 ft^2$)	N	A ($10^6 ft^2$)	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p
Boston	3	1.2	239	46.6	82	9%	0.777	60	26%	0.443	22	-38%	0.624	212	19%	0.526	6.4	15%	0.639
Chicago	2	1.7	244	77.3	82	-16%	0.526	56	-4%	0.900	26	-40%	0.623	202	-9%	0.729	11.7	-9%	0.739
Denver	5	1.0	144	22.6	67	35%	0.018	47	26%	0.132	20	56%	0.209	169	30%	0.034	12.5	24%	0.106
LosAngeles	2	1.1	691	167.6	53	-78%	0.026	45	-104%	0.010	8	71%	0.454	150	-95%	0.014	4.0	-83%	0.018
Minneapolis	0	0.0	93	23.8	82	0%	NA	46	0%	NA	36	0%	NA	182	0%	NA	10.3	0%	NA
NYC	15	11.6	1166	332.8	92	20%	0.231	56	14%	0.387	36	29%	0.329	214	17%	0.271	7.5	18%	0.226
Philadelphia	2	1.1	173	54.4	81	31%	0.272	62	29%	0.353	18	37%	0.569	216	29%	0.299	7.7	26%	0.408
Portland	1	0.1	133	18.8	66	27%	0.422	54	27%	0.474	12	29%	0.805	183	27%	0.460	5.5	28%	0.420
Seattle	2	0.5	409	40.1	59	-21%	0.442	51	-4%	0.897	8	-136%	0.181	168	-10%	0.734	4.8	-25%	0.404
Washington	3	0.7	331	69.5	67	-2%	0.887	61	-9%	0.609	6	74%	0.543	199	-7%	0.670	7.9	1%	0.954
Aggregate	**35**	**19.0**	**3623**	**853.6**	**77**	**14%**	**0.190**	**54**	**8%**	**0.436**	**23**	**27%**	**0.274**	**194**	**10%**	**0.274**	**7.2**	**12%**	**0.248**

													LEED savings "delta"									
			SiteEUI		ElectricEUI		nElectricEUI		SourceEUI		GHGI		SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston	242	47.8	82	3.8%	60	5.0%	22	10.3%	211	4.2%	6.3	4.0%										
nonLEED	239	46.6	82	3.9%	60	5.0%	22	10.5%	212	4.3%	6.4	4.0%	7.7	0.777	15.8	0.443	-8.1	0.624	41	0.526	1.0	0.639
LEED	3	1.2	74	1.9%	44	11.4%	30	21.6%	171	5.3%	5.4	22.8%	9%		26%		-38%		19%		15%	
Chicago	246	79.0	82	2.5%	56	4.2%	27	8.7%	203	3.1%	11.7	3.2%										
nonLEED	244	77.3	82	2.5%	56	4.4%	26	8.9%	202	3.1%	11.7	3.3%	-12.9	0.526	-2.4	0.900	-10.5	0.623	-19	0.729	-1.1	0.739
LEED	2	1.7	95	12.8%	58	11.9%	37	14.4%	221	12.5%	12.7	12.5%	-16%		-4%		-40%		-9%		-9%	
Denver	149	23.6	66	2.9%	47	3.3%	20	7.9%	167	2.8%	12.4	2.9%										
nonLEED	144	22.6	67	2.9%	47	3.3%	20	8.0%	169	2.8%	12.5	2.9%	23.7	0.018	12.4	0.132	11.3	0.209	51	0.034	3.1	0.106
LEED	5	1.0	44	10.0%	35	19.5%	9	48.9%	119	15.0%	9.4	12.6%	35%		26%		56%		30%		24%	
LosAngeles	693	168.7	53	2.0%	45	1.8%	8	8.9%	151	1.8%	4.0	1.9%										
nonLEED	691	167.6	53	2.0%	45	1.8%	8	8.9%	150	1.7%	4.0	1.9%	-41.4	0.026	-47.0	0.010	5.7	0.454	-142	0.014	-3.3	0.018
LEED	2	1.1	94	8.0%	92	3.7%	2	174.8%	292	5.1%	7.3	11.2%	-78%		-104%		71%		-95%		-83%	
Minneapolis	93	23.8	82	4.7%	46	7.9%	41	7.1%	182	6.1%	10.3	7.0%										
nonLEED	93	23.8	82	4.7%	46	7.9%	36	7.1%	182	6.0%	10.3	6.9%	0.0	NA	0.0	NA	0.0	NA	0	NA	0.0	NA
LEED	0	0.0	NA	######	NA	#####	NA	######	NA	#####	NA	#####	0%		0%		0%		0%		0%	
NYC	1,181	344.4	91	2.1%	56	2.1%	35	4.4%	213	1.9%	7.4	1.9%										
nonLEED	1,166	332.8	92	2.2%	56	2.1%	36	4.5%	214	1.9%	7.5	1.9%	18.4	0.231	7.9	0.387	10.5	0.329	36	0.271	1.3	0.226
LEED	15	11.6	73	6.9%	48	6.3%	25	20.7%	178	5.4%	6.1	5.9%	20%		14%		29%		17%		18%	
Philadelphia	175	55.5	80	4.5%	62	5.7%	18	9.3%	214	5.1%	7.7	5.4%										
nonLEED	173	54.4	81	4.6%	62	5.8%	18	9.4%	216	5.1%	7.7	5.5%	24.7	0.272	17.8	0.353	6.9	0.569	63	0.299	2.0	0.408
LEED	2	1.1	56	11.7%	45	16.9%	12	8.2%	152	15.0%	5.7	14.7%	31%		29%		37%		29%		26%	
Portland	134	18.9	66	3.5%	54	4.0%	12	12.2%	182	3.5%	5.5	4.3%										
nonLEED	133	18.8	66	3.5%	54	3.9%	12	12.1%	183	3.5%	5.5	4.3%	17.9	0.422	14.3	0.474	3.6	0.805	49	0.460	1.5	0.420
LEED	1	0.1	48	0.0%	40	0.0%	9	0.0%	134	0.0%	4.0	0.0%	27%		27%		29%		27%		28%	
Seattle	411	40.6	59	2.1%	51	2.3%	8	10.2%	168	2.1%	4.8	2.8%										
nonLEED	409	40.1	59	2.1%	51	2.3%	8	10.4%	168	2.1%	4.8	2.9%	-12.5	0.442	-1.9	0.897	-10.6	0.181	-17	0.734	-1.2	0.404
LEED	2	0.5	71	19.5%	53	9.0%	18	50.4%	185	13.3%	6.0	16.2%	-21%		-4%		-136%		-10%		-25%	
Washington	334	70.3	67	1.7%	61	1.8%	5	11.7%	199	1.7%	7.9	3.4%										
nonLEED	331	69.5	67	1.7%	61	1.8%	6	11.6%	199	1.7%	7.9	3.4%	-1.6	0.887	-5.7	0.609	4.1	0.543	-14	0.670	0.1	0.954
LEED	3	0.7	68	7.5%	67	9.8%	1	115.1%	212	9.0%	7.8	8.6%	-2%		-9%		74%		-7%		1%	
Aggregate	3,658	872.6	77	1.4%	54	1.2%	23	3.4%	194	1.1%	7.2	1.5%										
nonLEED	3,623	853.6	77	1.4%	54	1.2%	23	3.6%	194	1.2%	7.2	1.5%	10.5	0.190	4.3	0.436	6.2	0.274	20	0.274	0.8	0.248
LEED	35	19.0	74	5.4%	51	6.0%	22	17.9%	185	4.8%	6.9	8.5%	14%		8%		27%		10%		12%	

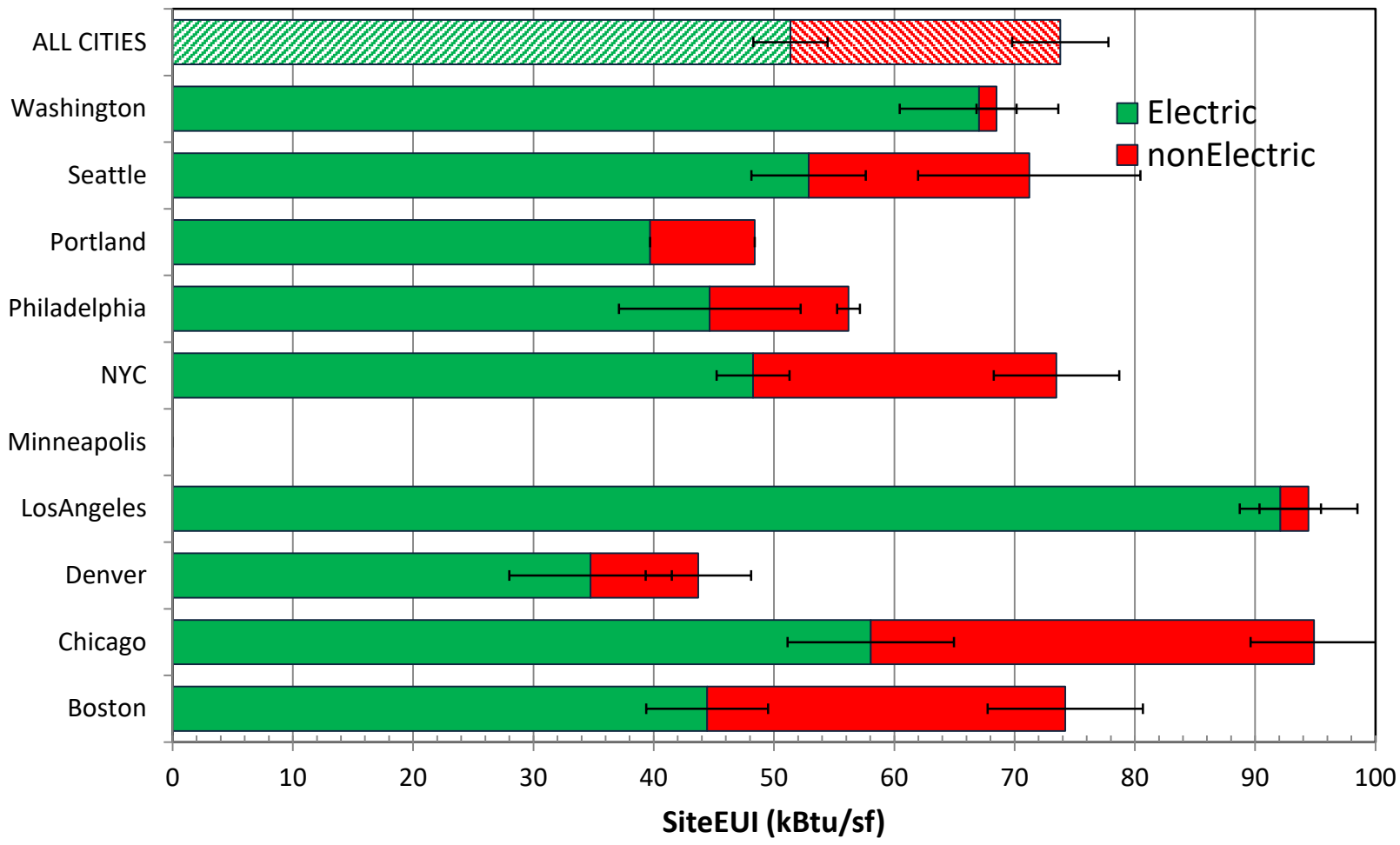
	ALL		nonLEED											
					SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE
Boston	242	47.8	239	46.6	82	4%	60	5%	22	11%	212	4%	6.4	4%
Chicago	246	79.0	244	77.3	82	3%	56	4%	26	9%	202	3%	11.7	3%
Denver	149	23.6	144	22.6	67	3%	47	3%	20	8%	169	3%	12.5	3%
LosAngeles	693	168.7	691	167.6	53	2%	45	2%	8.0	9%	150	2%	4.0	2%
Minneapolis	93	23.8	93	23.8	82	5%	46	8%	36	7%	182	6%	10.3	7%
NYC	1,181	344.4	1,166	332.8	92	2%	56	2%	36	4%	214	2%	7.5	2%
Philadelphia	175	55.5	173	54.4	81	5%	62	6%	18	9%	216	5%	7.7	6%
Portland	134	18.9	133	18.8	66	4%	54	4%	12	12%	183	3%	5.5	4%
Seattle	411	40.6	409	40.1	59	2%	51	2%	7.8	10%	168	2%	4.8	3%
Washington	334	70.3	331	69.5	67	2%	61	2%	5.5	12%	199	2%	7.9	3%
Aggregate	3,658	872.6	3,623	853.6	77	1%	54.2	1%	22.8	4%	194	1%	7.2	2%

		LEED		LEED savings "delta"									
City		N	A (Mft^2)	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston		3	1.2	7.7	0.777	15.8	0.443	-8.1	0.624	41	0.526	1.0	0.639
Chicago		2	1.7	-12.9	0.526	-2.4	0.900	-10.5	0.623	-19	0.729	-1.1	0.739
Denver		5	1.0	23.7	0.018	12.4	0.132	11.3	0.209	51	0.034	3.1	0.106
LosAngeles		2	1.1	-41.4	0.026	-47.0	0.010	5.7	0.454	-142	0.014	-3.3	0.018
Minneapolis		0	0.0	0.0	NA	0.0	NA	0.0	NA	0	NA	0.0	NA
NYC		15	11.6	18.4	0.231	7.9	0.387	10.5	0.329	36	0.271	1.3	0.226
Philadelphia		2	1.1	24.7	0.272	17.8	0.353	6.9	0.569	63	0.299	2.0	0.408
Portland		1	0.1	17.9	0.422	14.3	0.474	3.6	0.805	49	0.460	1.5	0.420
Seattle		2	0.5	-12.5	0.442	-1.9	0.897	-10.6	0.181	-17	0.734	-1.2	0.404
Washington		3	0.7	-1.6	0.887	-5.7	0.609	4.1	0.543	-14	0.670	0.1	0.954
Aggregate		35	19.0	10.5	0.190	4.3	0.436	6.2	0.2739	20	0.274	0.8	0.248

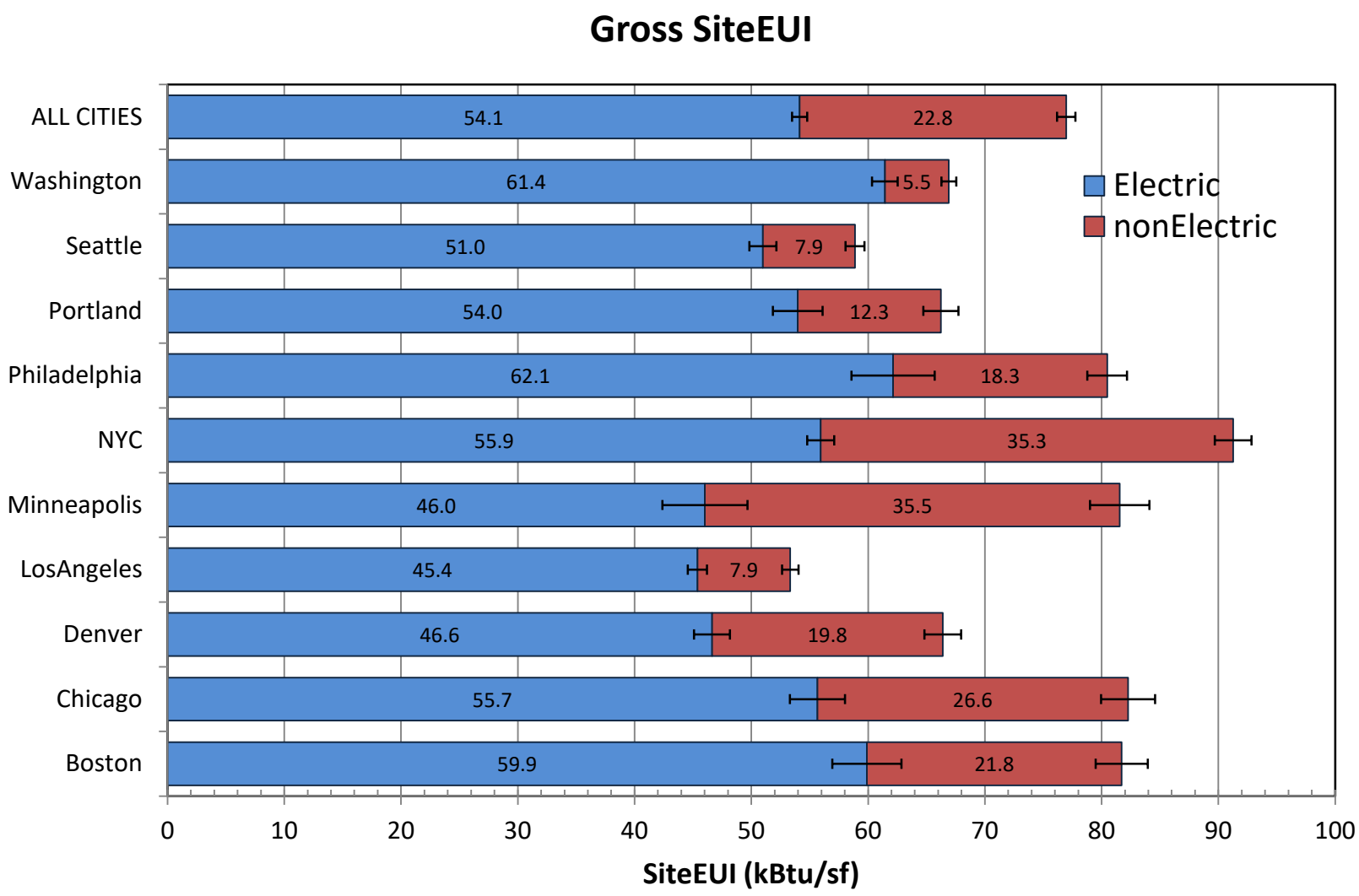
	LEED		nonLEED										LEED savings "delta"									
					SiteEUI		ElectricEUI		nElectricEUI		SourceEUI		GHGI		SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston	3	1.2	239	46.6	82	4%	60	5%	22	11%	212	4%	6.4	4%	7.7	0.777	15.8	0.443	-8.1	0.624	41	0.5260	1.0	0.639
Chicago	2	1.7	244	77.3	82	3%	56	4%	26	9%	202	3%	11.7	3%	-12.9	0.526	-2.4	0.900	-10.5	0.623	-19	0.7289	-1.1	0.739
Denver	5	1.0	144	22.6	67	3%	47	3%	20	8%	169	3%	12.5	3%	23.7	0.018	12.4	0.132	11.3	0.209	51	0.0339	3.1	0.106
LosAngeles	2	1.1	691	167.6	53	2%	45	2%	8.0	9%	150	2%	4.0	2%	-41.4	0.026	-47.0	0.010	5.7	0.454	-142	0.0136	-3.3	0.018
Minneapolis	0	0.0	93	23.8	82	5%	46	8%	36	7%	182	6%	10.3	7%	0.0	NA	0.0	NA	0.0	NA	0	NA	0.0	NA
NYC	15	11.6	1,166	332.8	92	2%	56	2%	36	4%	214	2%	7.5	2%	18.4	0.231	7.9	0.387	10.5	0.329	36	0.2711	1.3	0.226
Philadelphia	2	1.1	173	54.4	81	5%	62	6%	18	9%	216	5%	7.7	6%	24.7	0.272	17.8	0.353	6.9	0.569	63	0.2985	2.0	0.408
Portland	1	0.1	133	18.8	66	4%	54	4%	12	12%	183	3%	5.5	4%	17.9	0.422	14.3	0.474	3.6	0.805	49	0.4600	1.5	0.420
Seattle	2	0.5	409	40.1	59	2%	51	2%	7.8	10%	168	2%	4.8	3%	-12.5	0.442	-1.9	0.897	-10.6	0.181	-17	0.7336	-1.2	0.404
Washington	3	0.7	331	69.5	67	2%	61	2%	5.5	12%	199	2%	7.9	3%	-1.6	0.887	-5.7	0.609	4.1	0.543	-14	0.6703	0.1	0.954
Aggregate	35	19.0	3,623	853.6	77	1%	54.2	1%	22.8	4%	194	1%	7.2	2%	10.5	0.190	4.3	0.436	6.2	0.274	20	0.274	0.8	0.248

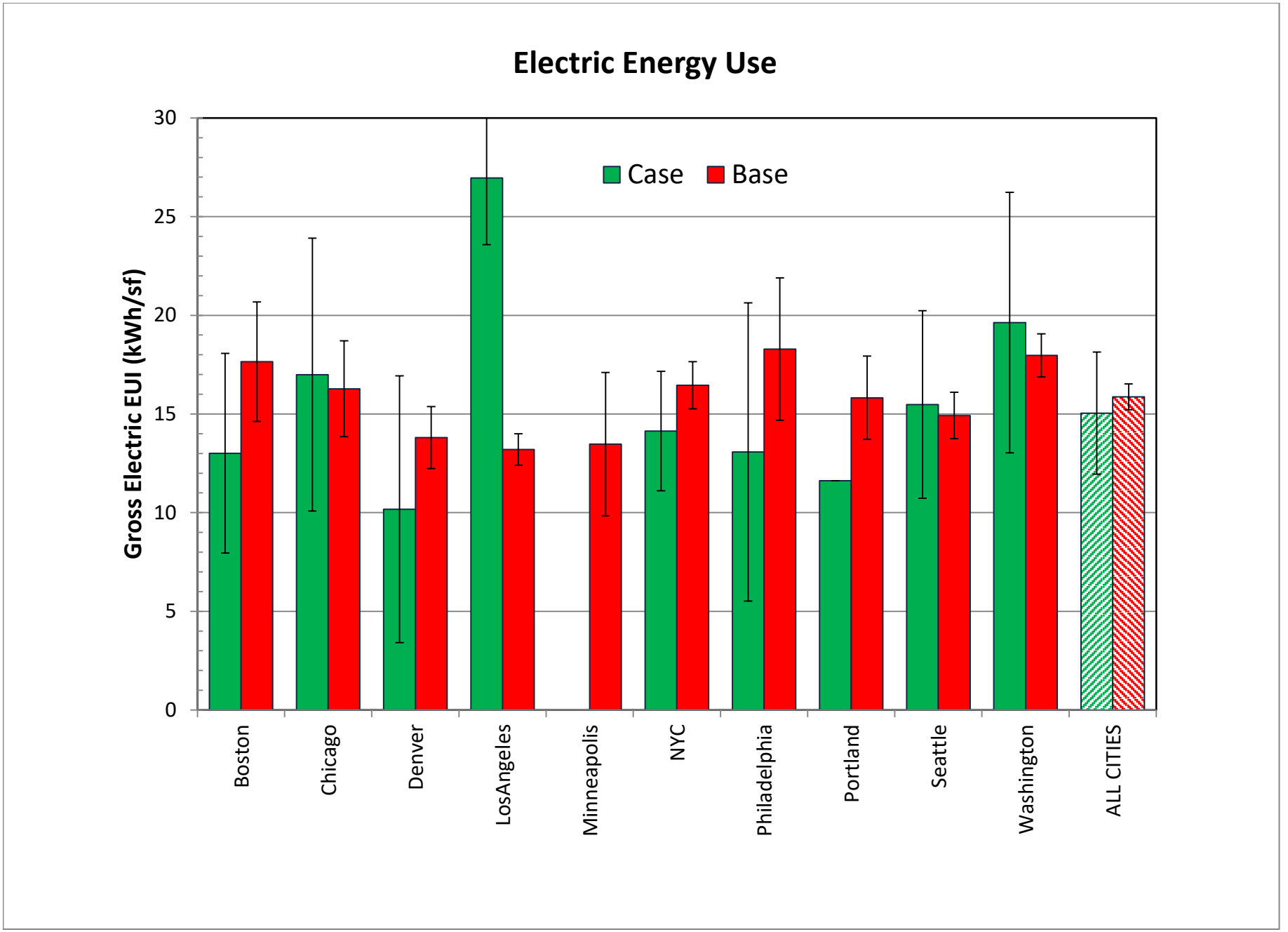


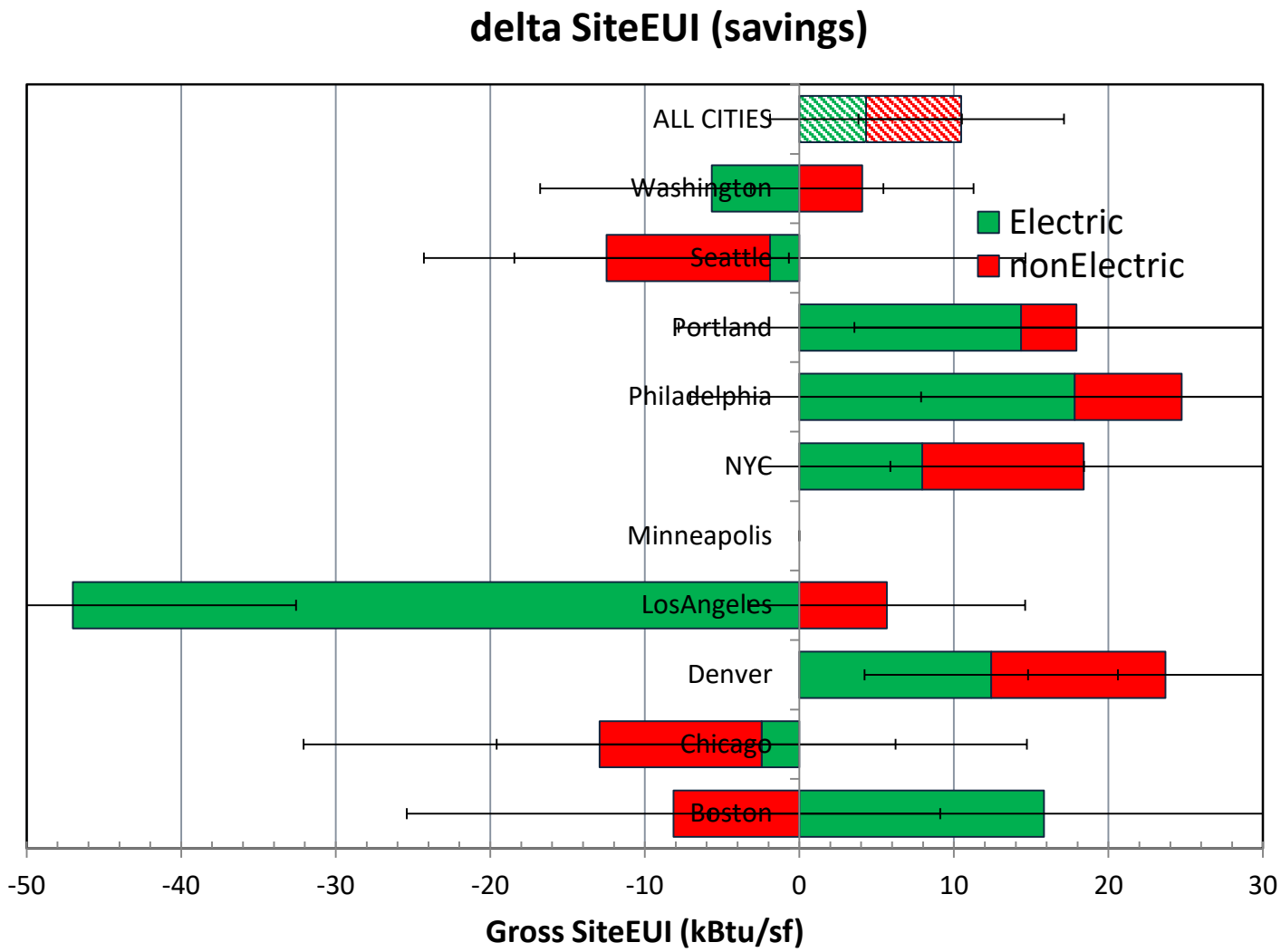
nonLEED Office

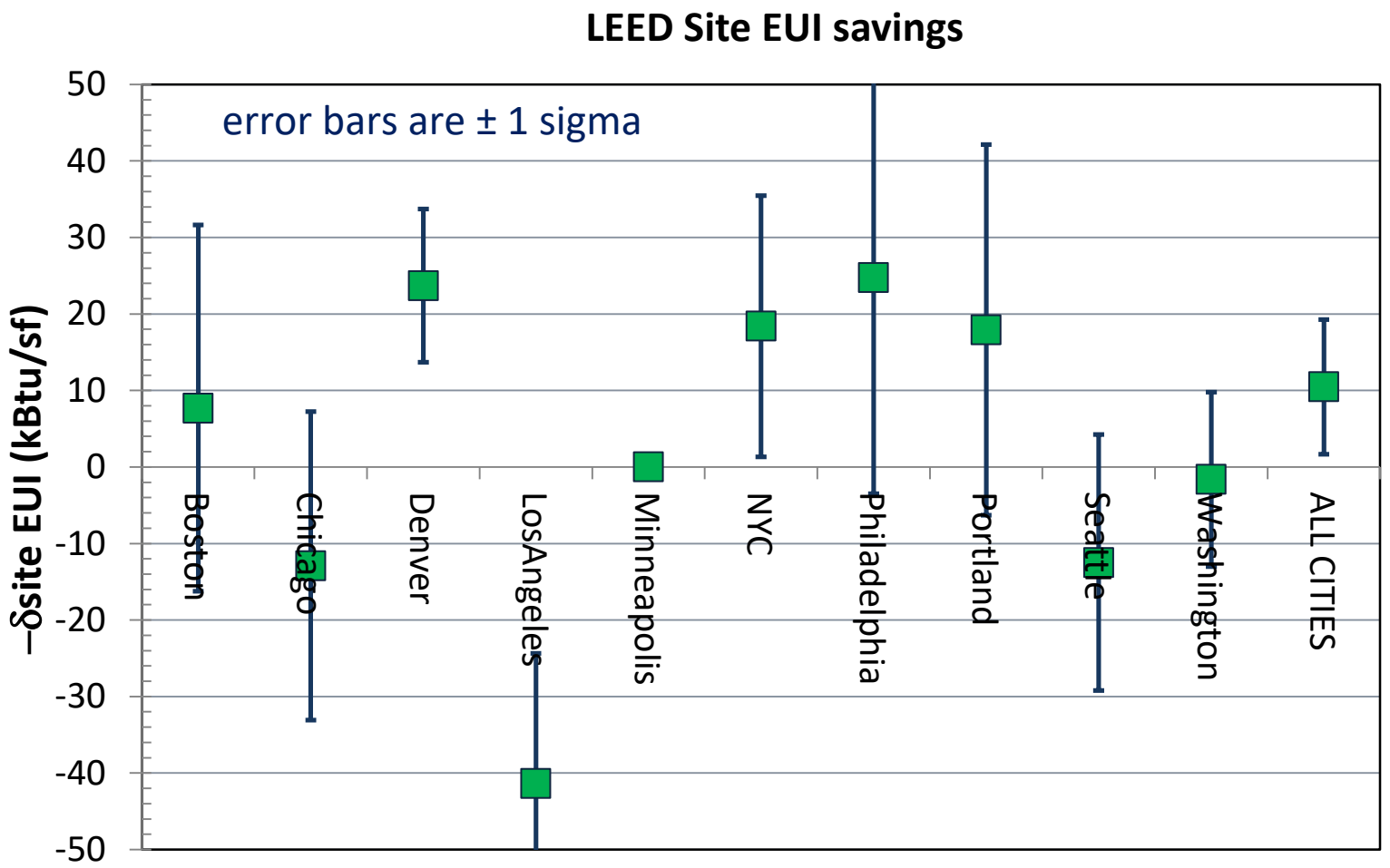

Gross SiteEUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
Electric
nonElectric
0
10
20
30
40
50
60
70
80
90
100
SiteEUI (kBtu/sf)

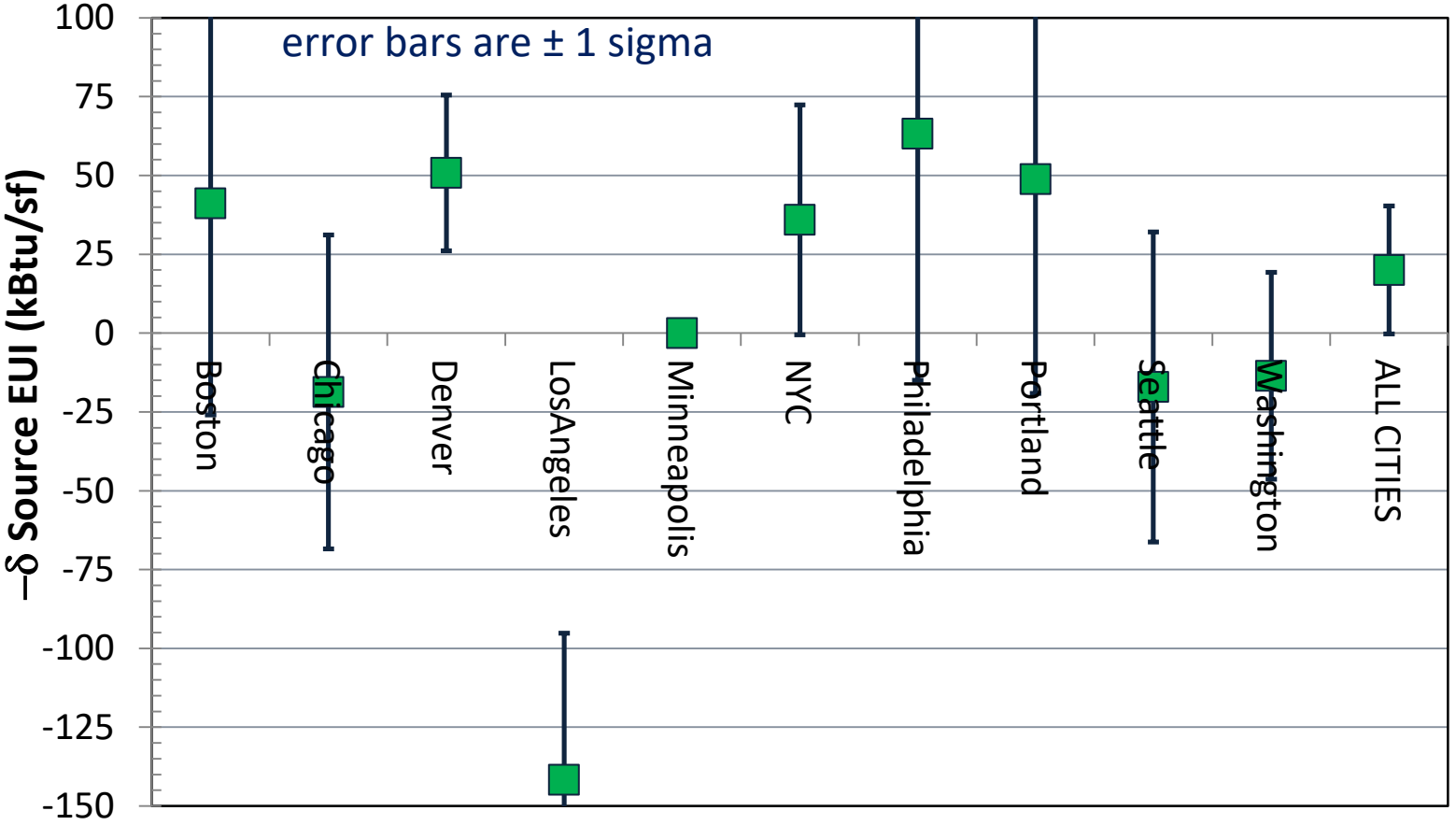
LEED Office

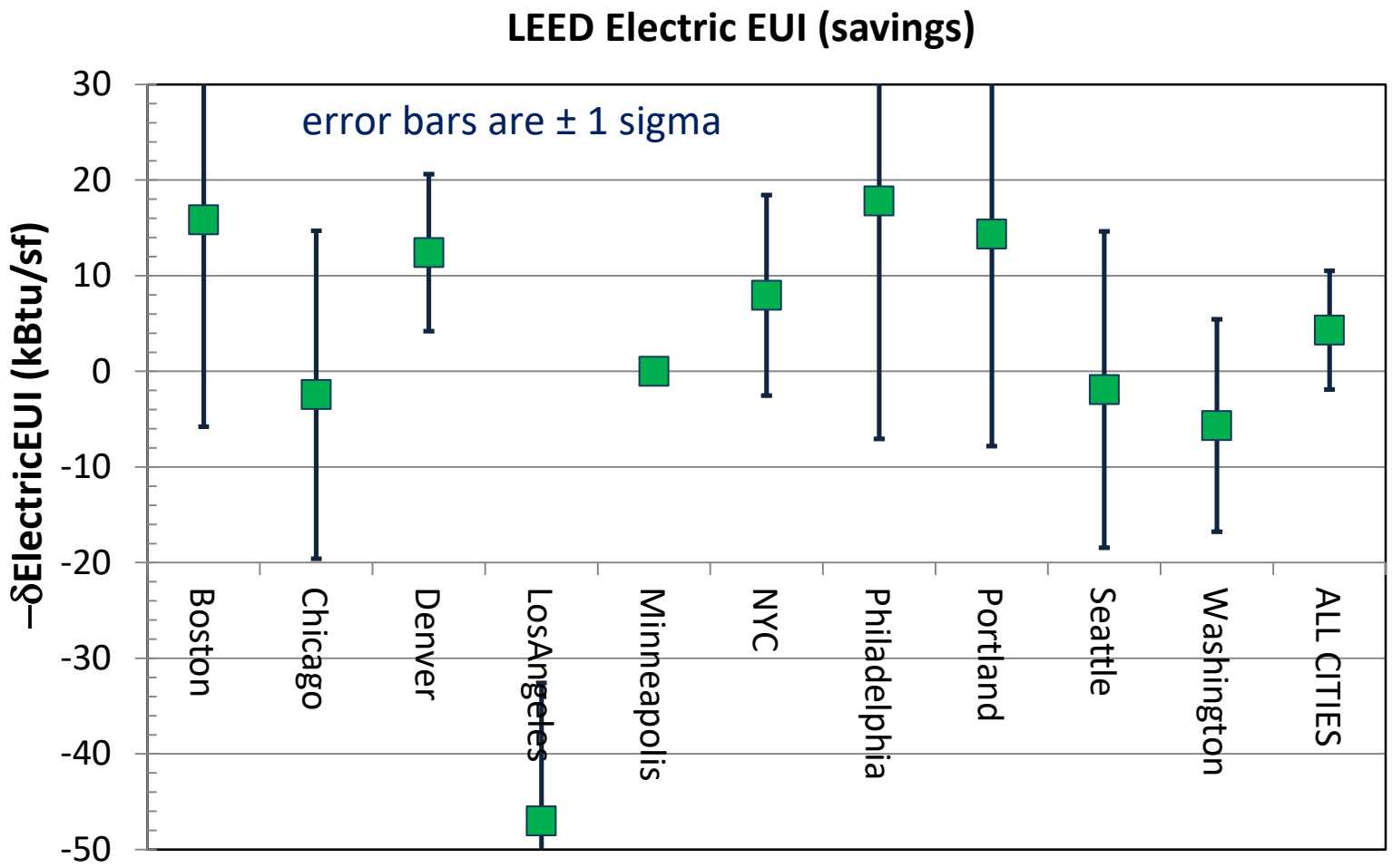

Gross SiteEUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
54.1
22.8
61.4
5.5
51.0
7.9
54.0
12.3
62.1
18.3
55.9
35.3
46.0
35.5
45.4
7.9
46.6
19.8
55.7
26.6
59.9
21.8
Electric
nonElectric
0
10
20
30
40
50
60
70
80
90
100
SiteEUI (kBtu/sf)

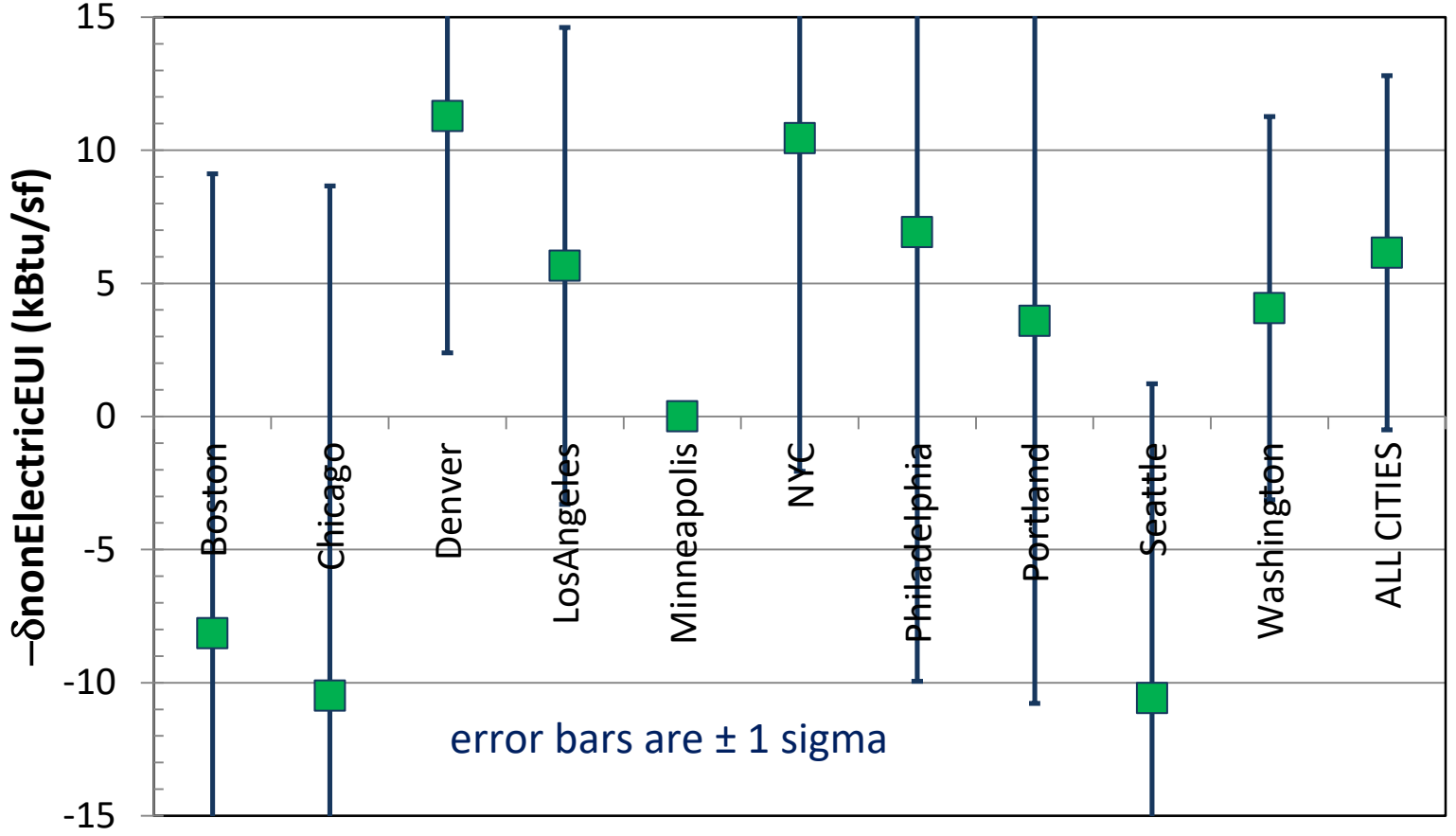

Electric Energy Use
Gross Electric EUI (kWh/sf)
30
25
20
15
10
5
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

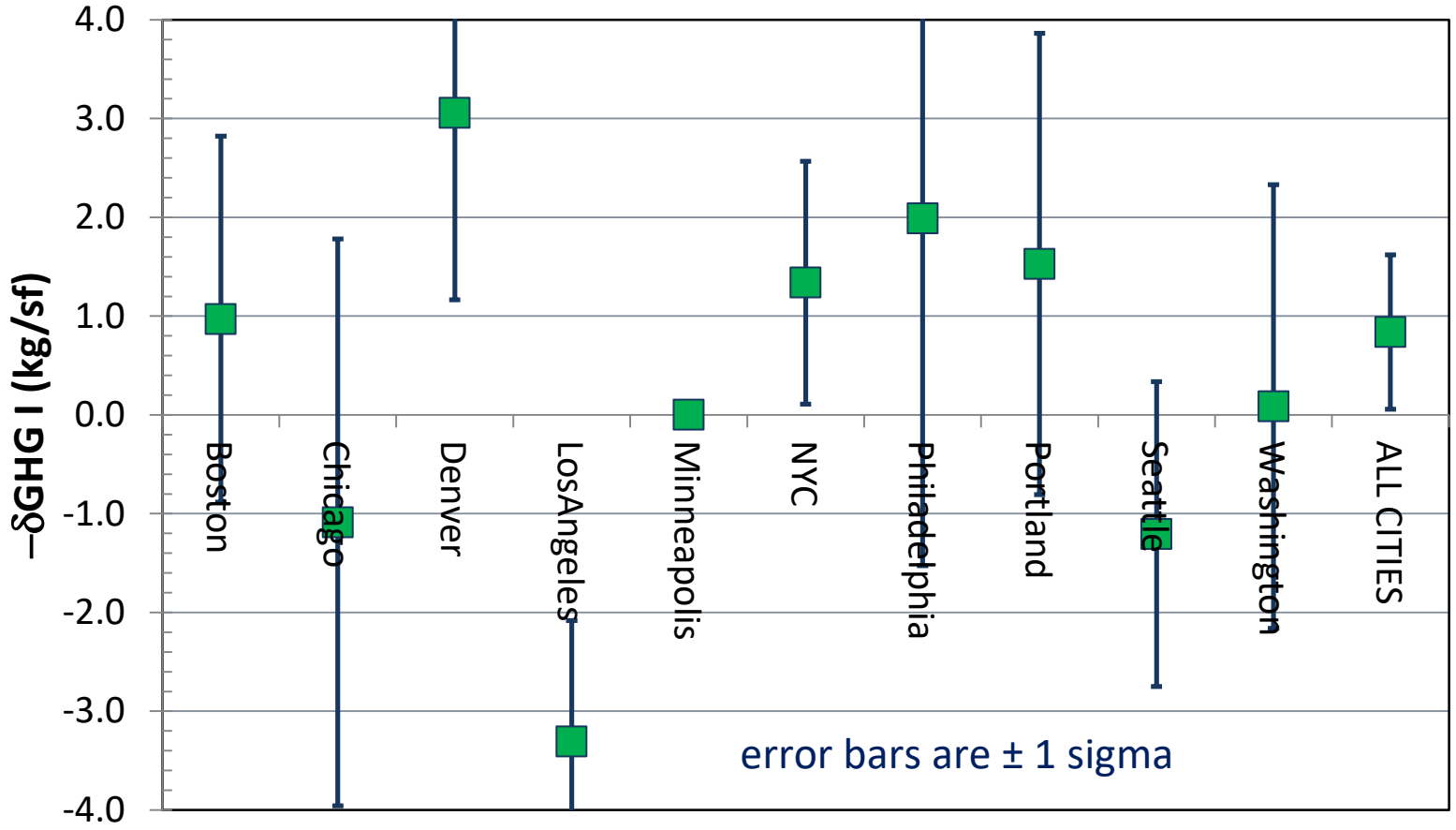

delta SiteEUI (savings)
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
Electric
nonElectric
-50
-40
-30
-20
-10
0
10
20
30
Gross SiteEUI (kBtu/sf)

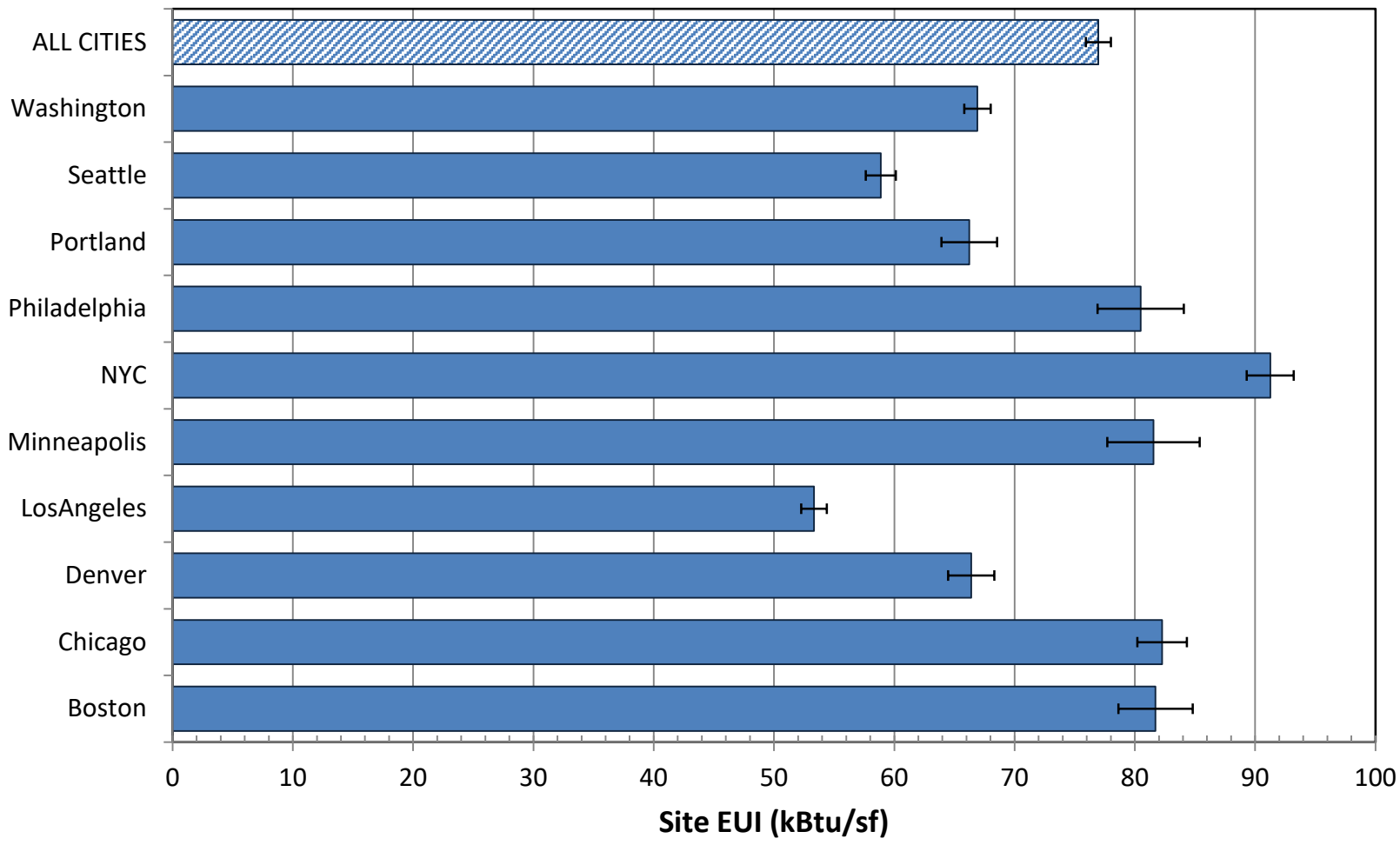

LEED Site EUI savings
error bars are ± 1 sigma
–δsite EUI (kBtu/sf)
50
40
30
20
10
0
-10
-20
-30
-40
-50
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

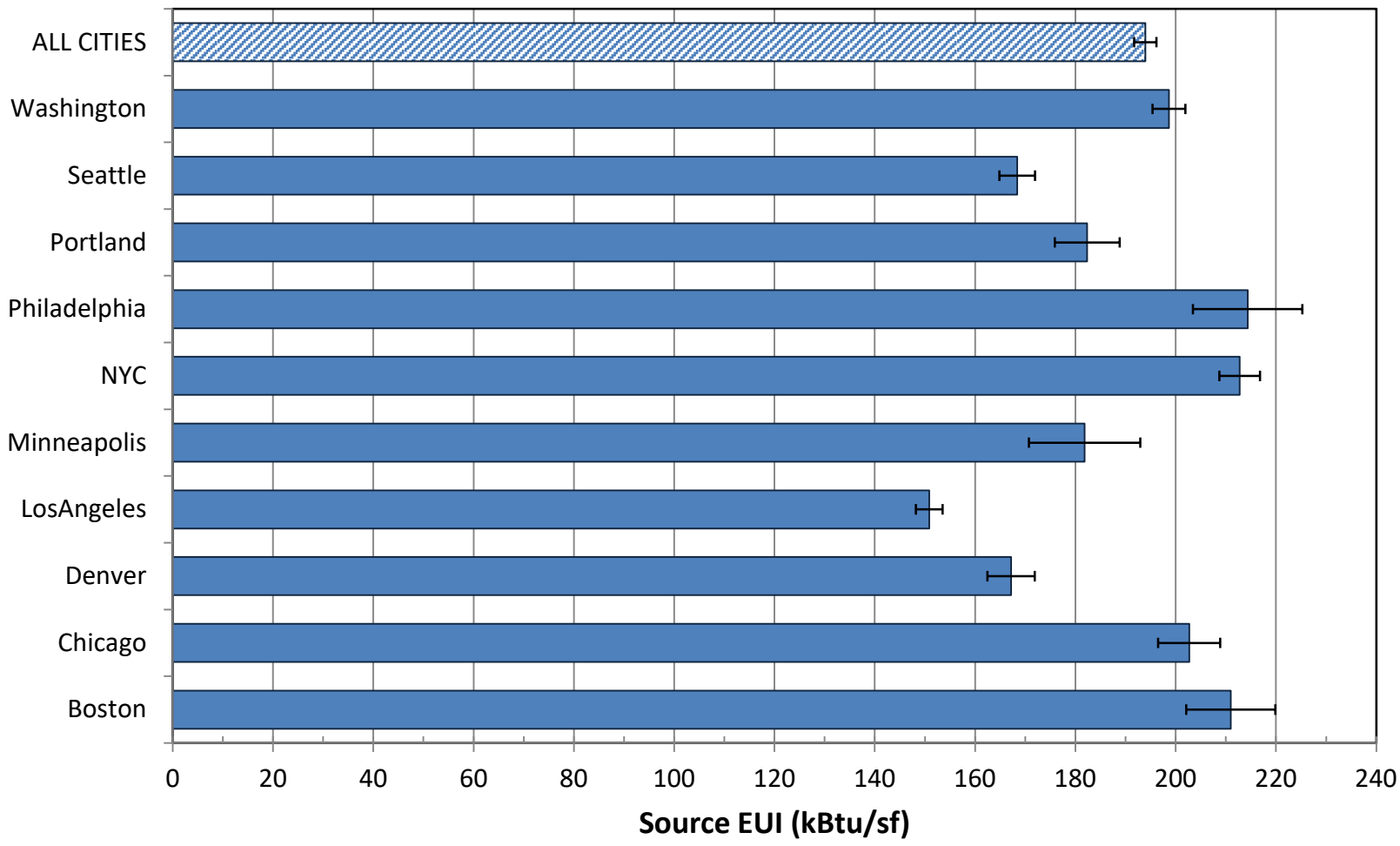

LEED Source EUI Savings
error bars are ± 1 sigma
–δ Source EUI (kBtu/sf)
100
75
50
25
0
-25
-50
-75
-100
-125
-150
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

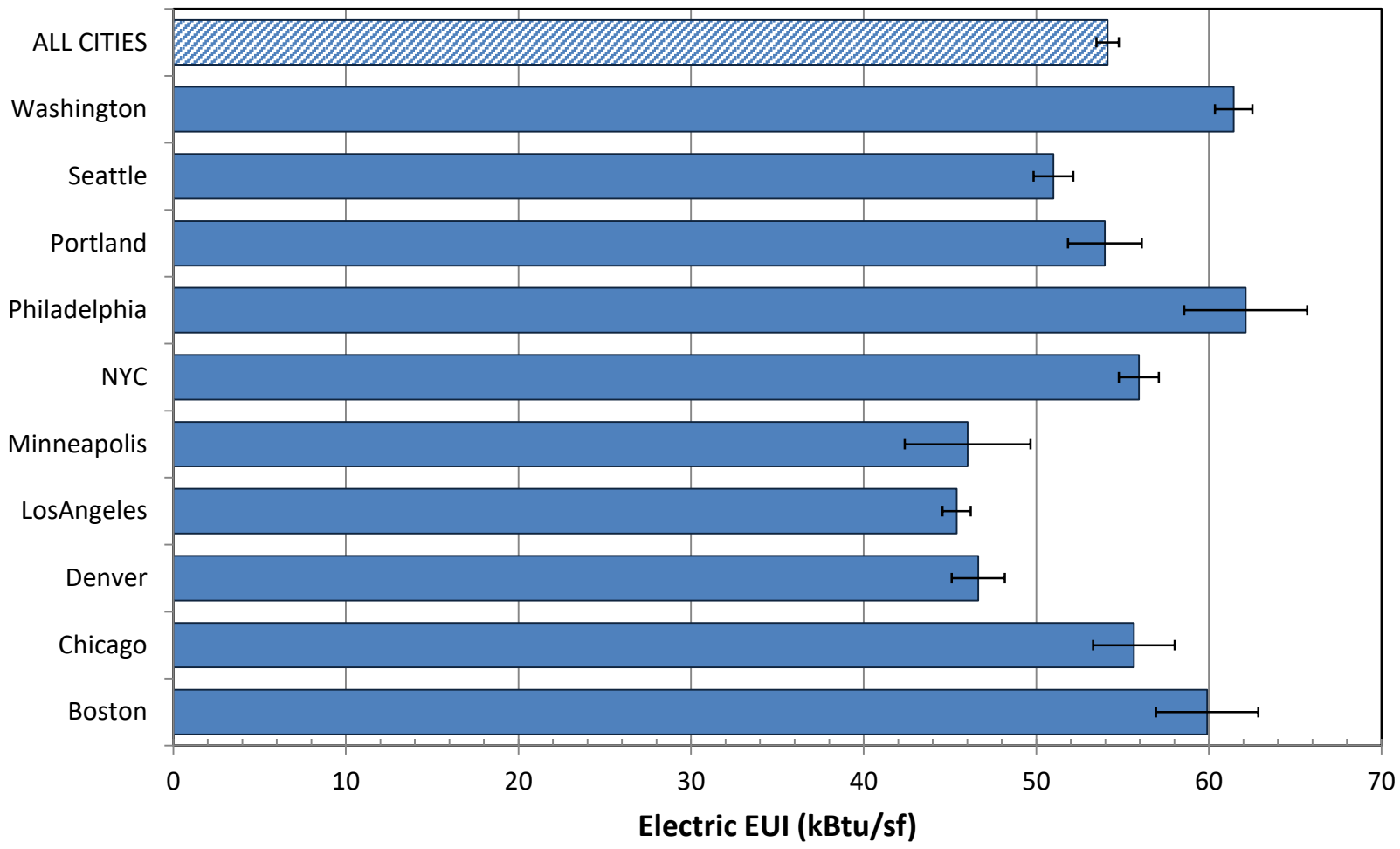

LEED Electric EUI (savings)
error bars are ± 1 sigma
–δElectricEUI (kBtu/sf)
30
20
10
0
-10
-20
-30
-40
-50
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

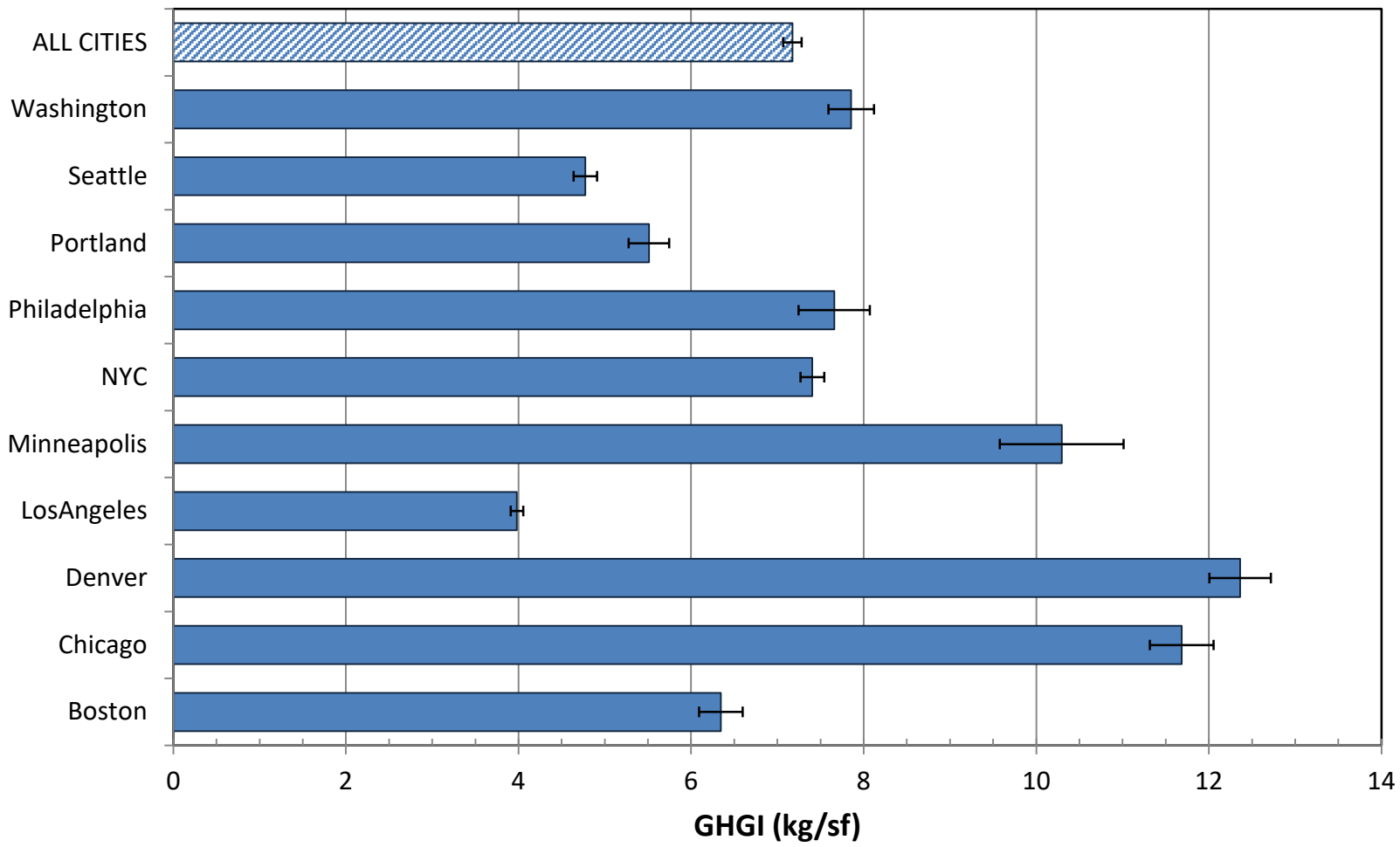

LEED non-Electric EUI (savings)
–δnonElectricEUI (kBtu/sf)
15
10
5
0
-5
-10
-15
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES
error bars are ± 1 sigma

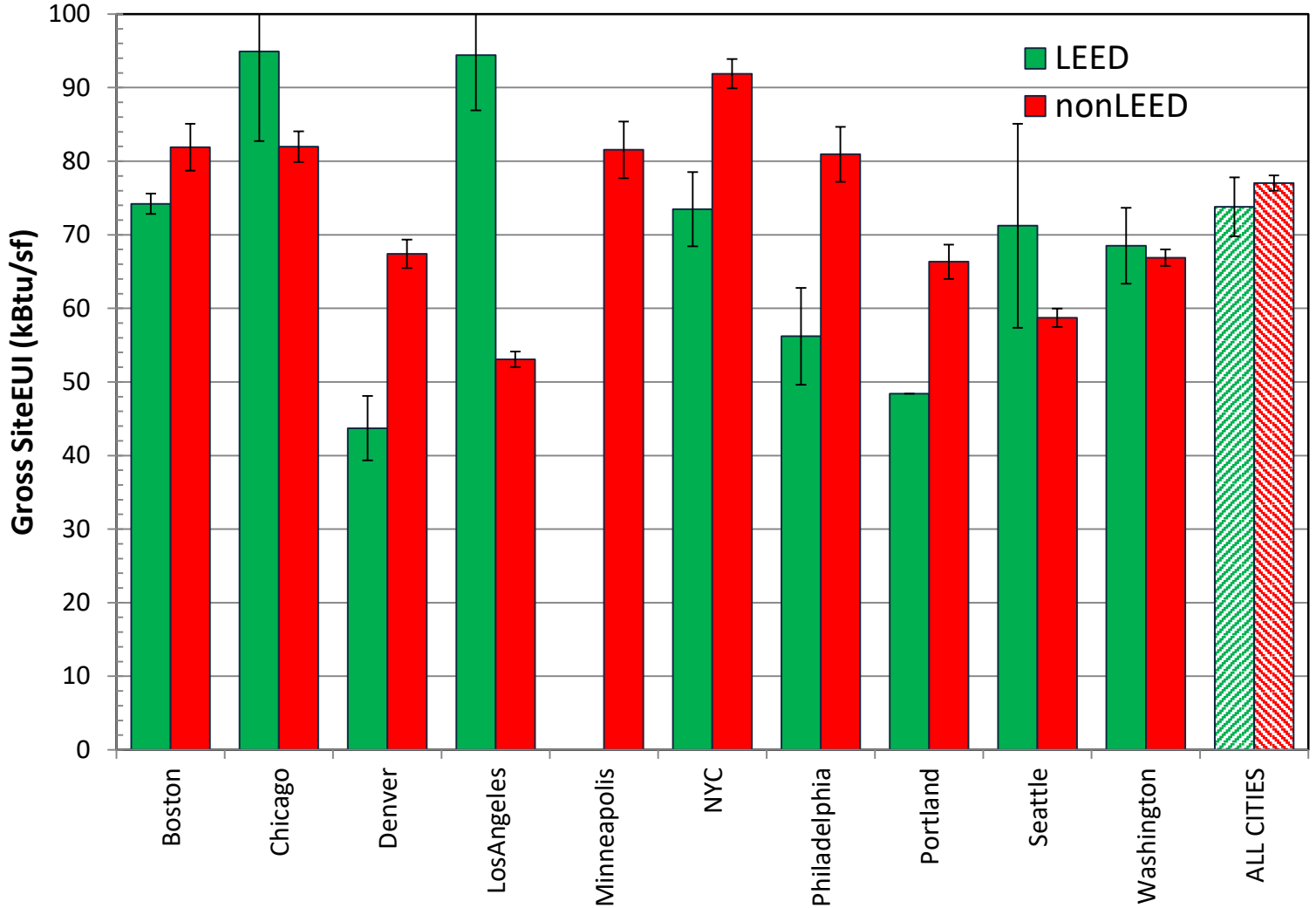

LEED GHG Intensity Savings
−δGHG I (kg/sf)
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES
error bars are ± 1 sigma

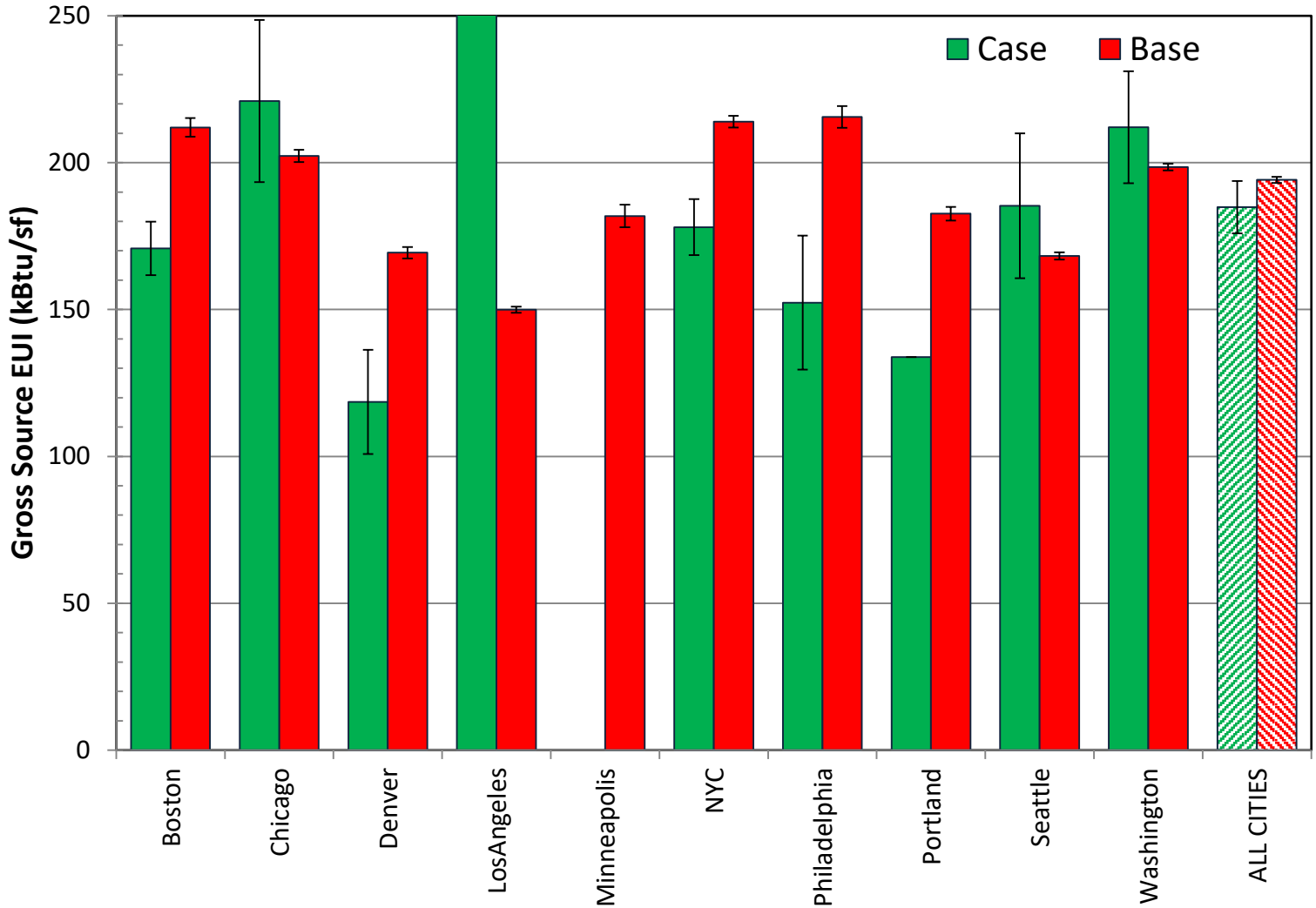

Gross Site EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
10
20
30
40
50
60
70
80
90
100
Site EUI (kBtu/sf)

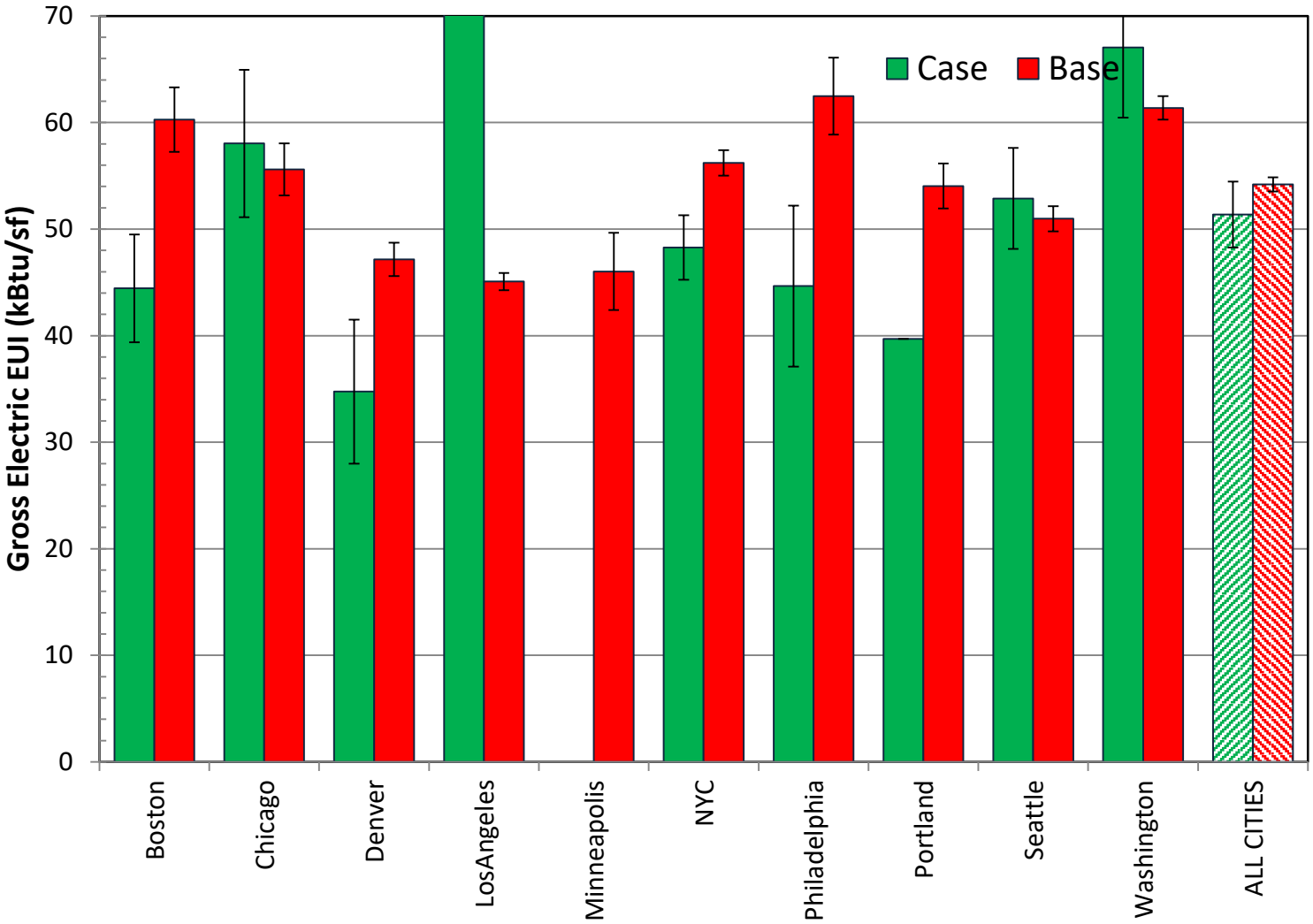

Gross Source EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
20
40
60
80
100
120
140
160
180
200
220
240
Source EUI (kBtu/sf)

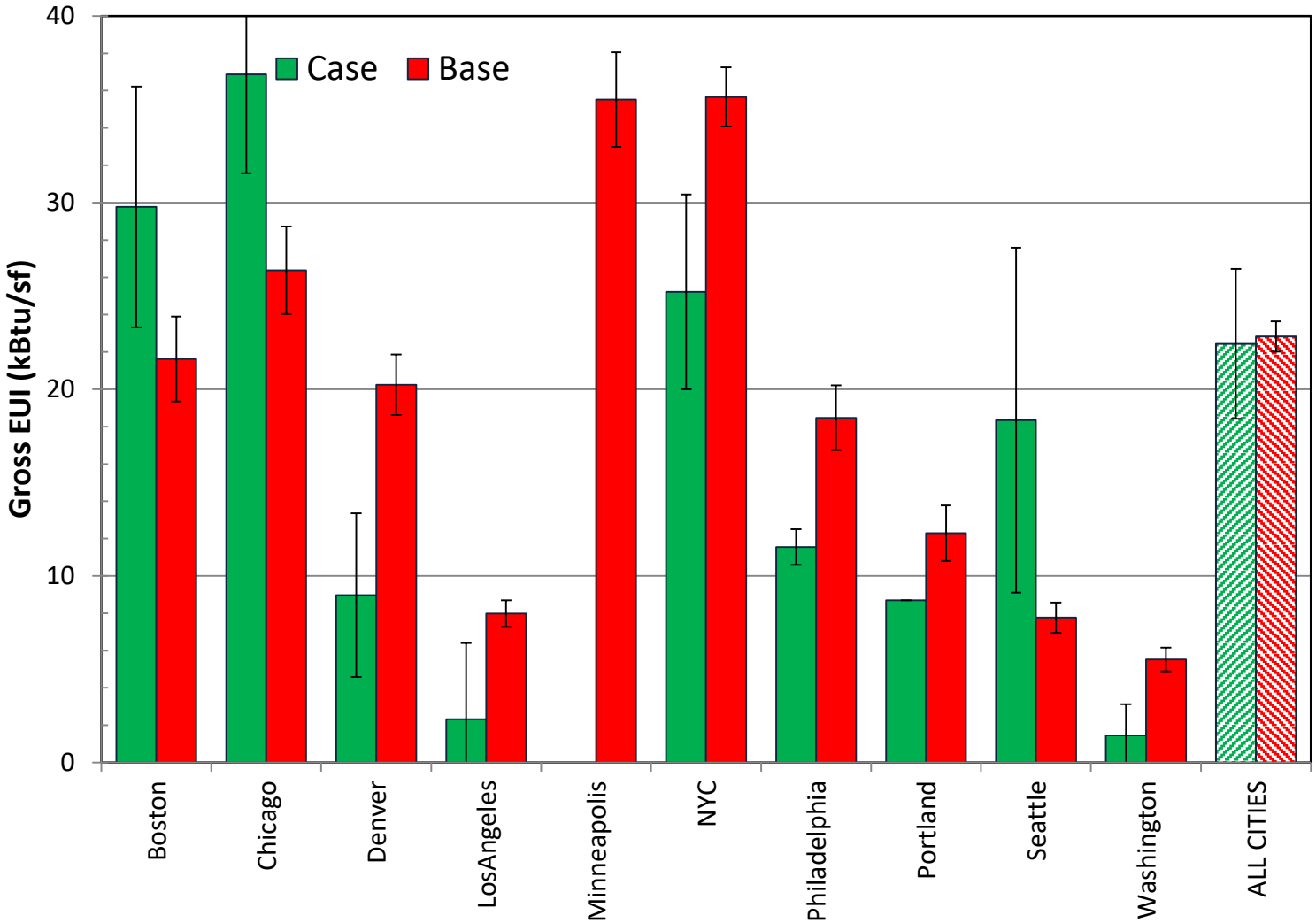

Gross Electric EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
10
20
30
40
50
60
70
Electric EUI (kBtu/sf)

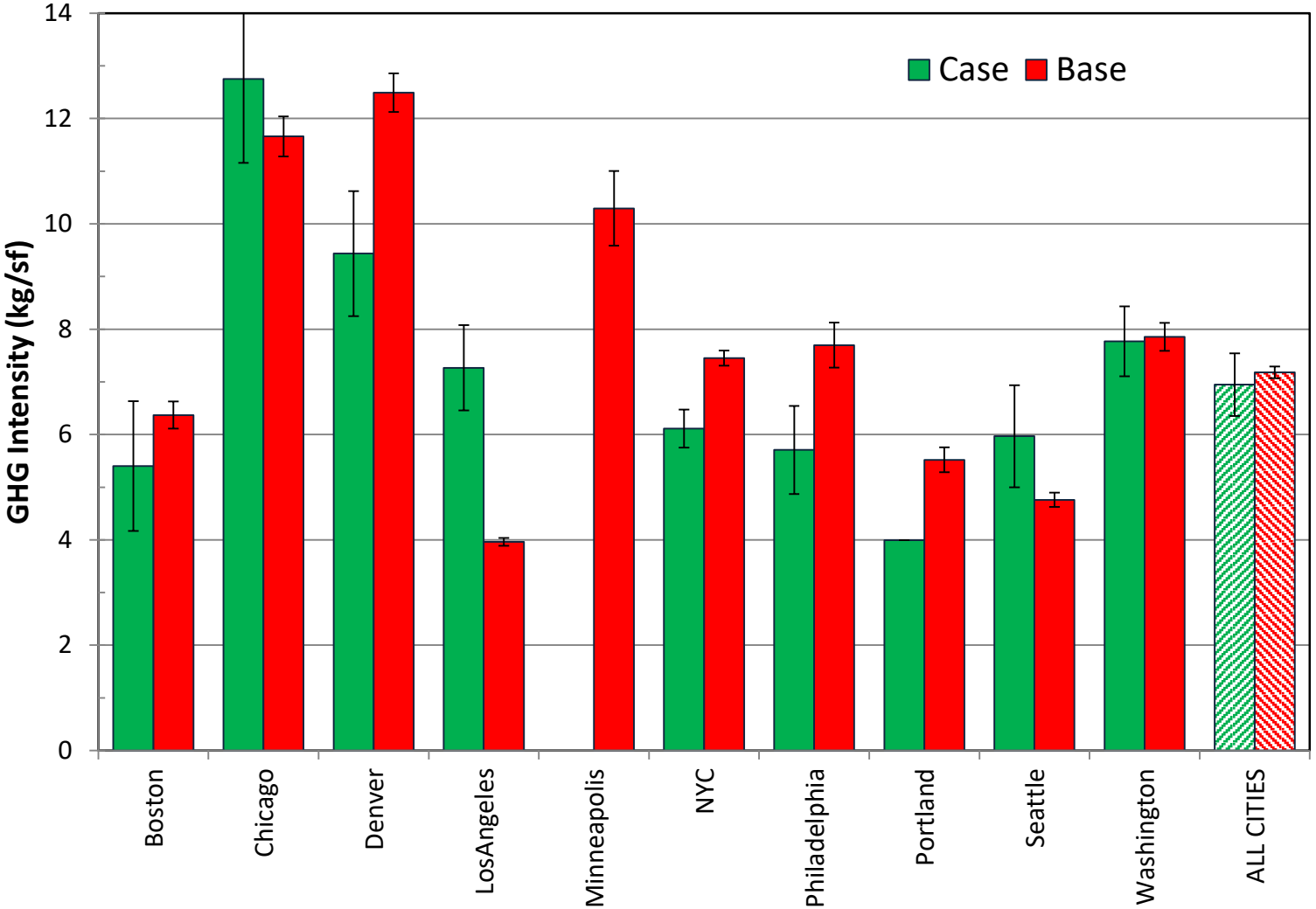

Gross GHGI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
2
4
6
8
10
12
14
GHGI (kg/sf)


Site Energy
Gross SiteEUI (kBtu/sf)
100
90
80
70
60
50
40
30
20
10
0
LEED
nonLEED
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


Source Energy
Gross Source EUI (kBtu/sf)
250
200
150
100
50
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


Electric Energy Use
Gross Electric EUI (kBtu/sf)
70
60
50
40
30
20
10
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


non-Electric Energy Use
Gross EUI (kBtu/sf)
40
30
20
10
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


GHG Emission
GHG Intensity (kg/sf)
14
12
10
8
6
4
2
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

					Site EUI (kBtu/sf)					Source EUI (kBtu/sf)					GHG intensity (kg/ft$_2$)					Electric Intensity (kBtu/sf)					nonElectric Intensity (kBtu/sf)				
Case	City	N	Neff	Tot. Area	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mearl	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm
1	Boston	8	6	6,066,798	65.2	68.1	9.8	9.4	3.7	184.4	185.7	30.7	29.3	11.4	5.35	5.53	0.78	0.73	0.28	55.5	54.7	12.0	11.9	4.8	9.8	13.4	12.2	13.0	5.5
2	Chicago	25	16	27,098,639	78.5	83.1	21.4	24.3	6.3	187.7	200.3	45.5	50.1	13.2	10.78	11.53	2.70	2.95	0.76	50.4	54.1	17.9	18.8	4.9	28.1	29.1	26.5	28.3	7.4
3	Denver	8	7	2,503,938	73.7	72.6	16.6	16.6	6.4	188.0	182.8	76.5	75.6	29.6	13.21	12.98	7.31	6.88	2.59	52.9	51.0	31.0	30.1	11.5	20.8	21.6	25.1	22.9	8.3
4	LosAngeles	10	8	3,593,863	53.0	50.9	9.8	7.9	2.6	160.2	154.1	25.9	19.8	6.4	4.10	3.93	0.60	0.51	0.19	50.0	48.2	7.9	5.9	1.9	2.9	2.7	4.8	4.5	1.5
5	Minneapolis	2	2	1,429,546	62.0	67.0	19.8	13.1	10.1	149.0	158.7	38.2	25.2	19.8	8.83	9.39	2.19	1.44	1.14	40.1	42.3	8.3	5.5	4.3	21.9	24.8	11.5	7.6	5.9
6	NYC	33	22	29,022,028	78.0	85.6	20.3	20.2	4.2	191.9	208.7	47.5	45.7	9.4	6.48	7.11	1.62	1.60	0.33	52.6	56.8	14.3	13.4	2.7	25.4	28.8	14.1	14.2	2.9
7	Philadelphia	5	5	5,066,238	69.1	67.7	7.5	6.7	3.0	203.3	202.9	16.7	15.6	7.3	7.24	7.19	0.60	0.49	0.21	62.6	63.1	6.4	5.7	2.6	6.5	4.7	8.9	7.4	3.2
8	Portland	5	4	1,229,984	60.6	61.4	9.4	6.9	3.1	167.6	178.1	32.2	22.4	9.6	4.41	4.84	1.78	1.34	0.59	49.7	54.4	12.7	9.3	4.2	10.9	7.0	12.1	10.2	5.0
9	Seattle	8	6	2,837,854	64.2	67.6	15.6	15.8	6.6	188.0	197.5	40.6	41.0	16.9	5.26	5.32	1.48	1.40	0.59	57.7	60.5	11.9	12.0	5.0	6.6	7.0	6.2	6.3	2.6
10	Washington	38	30	12,067,440	62.1	62.0	11.7	10.6	1.7	188.9	190.3	31.4	29.7	5.2	7.20	7.40	1.86	2.11	0.41	59.2	59.9	10.0	9.5	1.6	2.8	2.0	7.3	5.7	0.8
11	**ALL CITIES**	142	79	90,916,328	69.2	76.7	18.0	21.5	2.7	186.2	197.5	41.6	44.9	5.4	7.50	8.35	3.39	3.40	0.39	54.3	56.0	14.7	15.2	1.8	14.8	20.7	18.6	21.6	2.8
Base																													
1	Boston	239	76	46,599,545	78.7	81.9	36.2	32.3	3.2	192.7	212.0	93.7	89.7	9.1	5.92	6.37	2.70	2.54	0.25	52.7	60.3	30.3	29.7	3.0	26.1	21.6	26.6	22.9	2.3
2	Chicago	244	85	77,253,811	83.5	82.0	26.8	23.8	2.1	202.2	202.3	68.6	58.5	6.4	11.63	11.66	4.04	3.45	0.38	54.8	55.6	23.8	20.4	2.4	28.7	26.4	25.1	23.1	2.3
3	Denver	144	88	22,590,922	71.4	67.4	20.1	18.8	1.9	176.3	169.3	48.8	46.1	4.8	12.89	12.49	3.76	3.60	0.37	48.4	47.2	16.9	15.7	1.6	23.0	20.2	19.4	17.5	1.6
4	LosAngeles	691	246	167,612,776	55.4	53.1	23.9	19.4	1.1	156.4	149.9	64.6	51.3	2.6	4.09	3.96	1.72	1.39	0.07	47.0	45.1	19.9	15.9	0.8	8.3	8.0	12.1	11.3	0.7
5	Minneapolis	93	40	23,831,087	86.4	81.5	34.1	30.6	3.8	186.0	181.8	82.3	82.9	11.0	10.45	10.29	5.40	5.45	0.71	45.6	46.0	26.0	27.2	3.6	40.8	35.5	26.2	22.1	2.5
6	NYC	1,166	414	332,797,339	85.4	91.9	45.5	45.1	2.0	195.4	214.0	102.5	98.7	4.1	6.95	7.45	3.63	3.39	0.14	50.6	56.2	29.4	28.1	1.2	34.9	35.7	30.1	31.3	1.6
7	Philadelphia	173	73	54,432,024	82.8	80.9	39.4	33.9	3.7	217.3	215.6	108.2	95.1	11.2	8.06	7.70	4.90	3.97	0.42	62.3	62.5	34.4	30.3	3.6	20.5	18.5	23.1	18.8	1.8
8	Portland	133	71	18,841,143	65.9	66.3	24.5	22.7	2.3	178.3	182.6	68.4	63.6	6.5	5.37	5.52	2.29	2.27	0.24	52.2	54.0	22.0	20.6	2.1	13.6	12.3	14.5	13.9	1.5
9	Seattle	409	141	40,135,019	57.1	58.7	22.5	19.8	1.2	157.4	168.2	63.0	57.4	3.6	4.72	4.76	2.09	1.85	0.14	46.7	51.0	21.0	19.1	1.2	10.4	7.8	16.5	13.2	0.8
10	Washington	331	183	69,542,043	69.7	66.9	18.7	17.0	1.1	203.7	198.5	55.6	50.2	3.3	7.81	7.86	2.87	3.35	0.26	62.5	61.4	18.7	16.7	1.1	7.2	5.5	12.8	10.8	0.6
11	**ALL CITIES**	3,623	1,247	853,635,709	73.1	77.0	36.0	37.0	1.1	184.1	194.1	84.7	83.5	2.2	6.80	7.18	3.98	3.87	0.11	51.4	54.2	25.7	24.7	0.7	21.7	22.8	25.7	26.5	0.8
		median YearBuilt																											
Comparison		**LEED**	**nonLEED**		**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**
1	Boston	1980	1928		-16.9%	-13.8	-0.90	0.3658	15.3	-12.4%	-26.3	-0.58	0.5299	45.0	-13.1%	-0.83	-0.67	0.5052	1.25	-9.3%	-5.6	-0.38	0.6864	14.8	-38.0%	-8.2	-0.73	0.4914	11.2
2	Chicago	1971	1929		1.4%	1.2	0.15	0.8740	7.6	-1.0%	-2.0	-0.10	0.9278	18.7	-1.2%	-0.13	-0.12	0.9104	1.12	-2.7%	-1.5	-0.21	0.8157	7.1	10.2%	2.7	0.32	0.7576	8.5
3	Denver	1984	1981		7.6%	5.2	0.64	0.5256	8.0	7.9%	13.4	0.60	0.5558	22.4	3.9%	0.49	0.27	0.7836	1.84	8.2%	3.8	0.49	0.6207	7.9	6.5%	1.3	0.17	0.8666	7.6
4	LosAngeles	1986	1981		-4.1%	-2.2	-0.27	0.7755	8.1	2.8%	4.2	0.20	0.8240	20.9	-0.9%	-0.03	-0.06	0.9463	0.56	6.9%	3.1	0.49	0.5953	6.4	-66.4%	-5.3	-1.02	0.2269	5.2
5	Minneapolis	1953	1934		-17.8%	-14.5	-0.56	0.5414	26.0	-12.7%	-23.1	-0.34	0.6930	68.0	-8.8%	-0.91	-0.20	0.7903	4.48	-8.2%	-3.8	-0.18	0.8488	21.5	-30.2%	-10.7	-0.56	0.5590	19.3
6	NYC	1963	1926		-6.8%	-6.3	-0.53	0.5737	11.7	-2.5%	-5.3	-0.22	0.8260	24.2	-4.6%	-0.35	-0.42	0.6635	0.82	1.1%	0.6	0.09	0.9234	6.9	-19.3%	-6.9	-0.77	0.4009	8.9
7	Philadelphia	1987	1950		-16.3%	-13.2	-0.70	0.3978	18.8	-5.9%	-12.7	-0.23	0.7655	55.9	-6.6%	-0.51	-0.22	0.7568	2.29	0.9%	0.6	0.03	0.9625	17.8	-74.7%	-13.8	-1.27	0.1566	10.9
8	Portland	NA	NA		-7.4%	-4.9	-0.41	0.6502	11.9	-2.5%	-4.5	-0.14	0.8835	33.0	-12.3%	-0.68	-0.56	0.4749	1.22	0.6%	0.3	0.03	0.9727	10.8	-42.7%	-5.2	-0.71	0.4807	7.3
9	Seattle	1988	1968		15.0%	8.8	0.94	0.3357	9.3	17.4%	29.3	1.06	0.2742	27.5	11.7%	0.56	0.64	0.4958	0.87	18.8%	9.6	1.06	0.2757	9.0	-9.5%	-0.7	-0.13	0.8958	5.7
10	Washington	1989	1977		-7.4%	-4.9	-1.51	0.1294	3.3	-4.1%	-8.2	-0.85	0.3968	9.6	-5.7%	-0.45	-0.58	0.5748	0.78	-2.3%	-1.4	-0.46	0.6472	3.1	-63.2%	-3.5	-1.88	0.0534	1.9
11	**ALL CITIES**	1982	1963		-5.1%	-3.9	-0.89	0.3635	4.4	-2.5%	-4.8	-0.47	0.6261	10.1	-4.0%	-0.29	-0.73	0.4660	0.40	-0.6%	-0.3	-0.10	0.9128	3.1	-15.8%	-3.6	-1.01	0.2878	3.6

All	City	N	Neff	Tot. Area	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm
1	Boston	247	81	52,666,343	78.3	80.3	35.7	30.8	2.9	192.4	209.0	92.4	85.4	8.3	5.9	6.3	2.7	2.4	0.23	52.7	59.6	29.9	28.2	2.8	25.5	20.7	26.4	22.2	2.1
2	Chicago	269	94	104,352,451	83.0	82.3	26.4	23.9	2.3	200.8	201.8	66.8	56.4	5.9	11.5	11.6	3.9	3.3	0.35	54.4	55.2	23.3	20.0	2.2	28.7	27.1	25.2	24.6	2.6
3	Denver	152	94	25,094,860	71.5	67.9	19.9	18.7	1.9	176.9	170.7	50.3	50.0	5.2	12.9	12.5	4.0	4.1	0.42	48.7	47.5	17.8	17.7	1.8	22.9	20.4	19.6	18.1	1.7
4	LosAngeles	701	253	171,206,639	55.3	53.0	23.7	19.2	1.0	156.5	150.0	64.2	50.8	2.5	4.1	4.0	1.7	1.4	0.07	47.1	45.1	19.8	15.8	0.8	8.3	7.9	12.0	11.2	0.7
5	Minneapolis	95	42	25,260,633	85.9	80.7	34.0	30.1	3.6	185.3	180.5	81.6	80.9	10.3	10.4	10.2	5.4	5.3	0.67	45.5	45.8	25.8	26.5	3.4	40.4	34.9	26.1	21.7	2.4
6	NYC	1,199	428	361,819,367	85.2	91.4	45.0	43.7	1.9	195.3	213.5	101.4	95.5	3.9	6.9	7.4	3.6	3.3	0.14	50.6	56.3	29.1	27.2	1.1	34.6	35.1	29.8	30.4	1.5
7	Philadelphia	178	77	59,498,262	82.5	79.8	38.9	32.7	3.4	216.9	214.5	106.7	91.1	10.3	8.0	7.7	4.8	3.8	0.39	62.4	62.5	33.9	29.0	3.3	20.1	17.3	23.0	18.5	1.7
8	Portland	138	74	20,071,127	65.7	66.0	24.1	22.1	2.2	177.9	182.3	67.4	61.9	6.1	5.3	5.5	2.3	2.2	0.23	52.1	54.1	21.7	20.0	2.0	13.5	12.0	14.4	13.7	1.5
9	Seattle	417	144	42,972,873	57.2	59.3	22.4	19.7	1.3	158.0	170.1	62.8	56.9	3.6	4.7	4.8	2.1	1.8	0.13	46.9	51.6	21.0	18.8	1.2	10.3	7.7	16.4	12.9	0.8
10	Washington	369	213	81,609,483	68.9	66.2	18.2	16.3	1.0	202.1	197.3	53.7	47.8	2.9	7.7	7.8	2.8	3.2	0.24	62.1	61.2	18.0	15.8	1.0	6.8	5.0	12.4	10.3	0.6
11	**ALL CITIES**	3,765	1,295	944,552,038	73.0	77.0	35.5	35.8	1.0	184.2	194.5	83.5	80.6	2.1	6.8	7.3	4.0	3.8	0.11	51.5	54.4	25.4	24.0	0.6	21.5	22.6	25.5	26.1	0.8

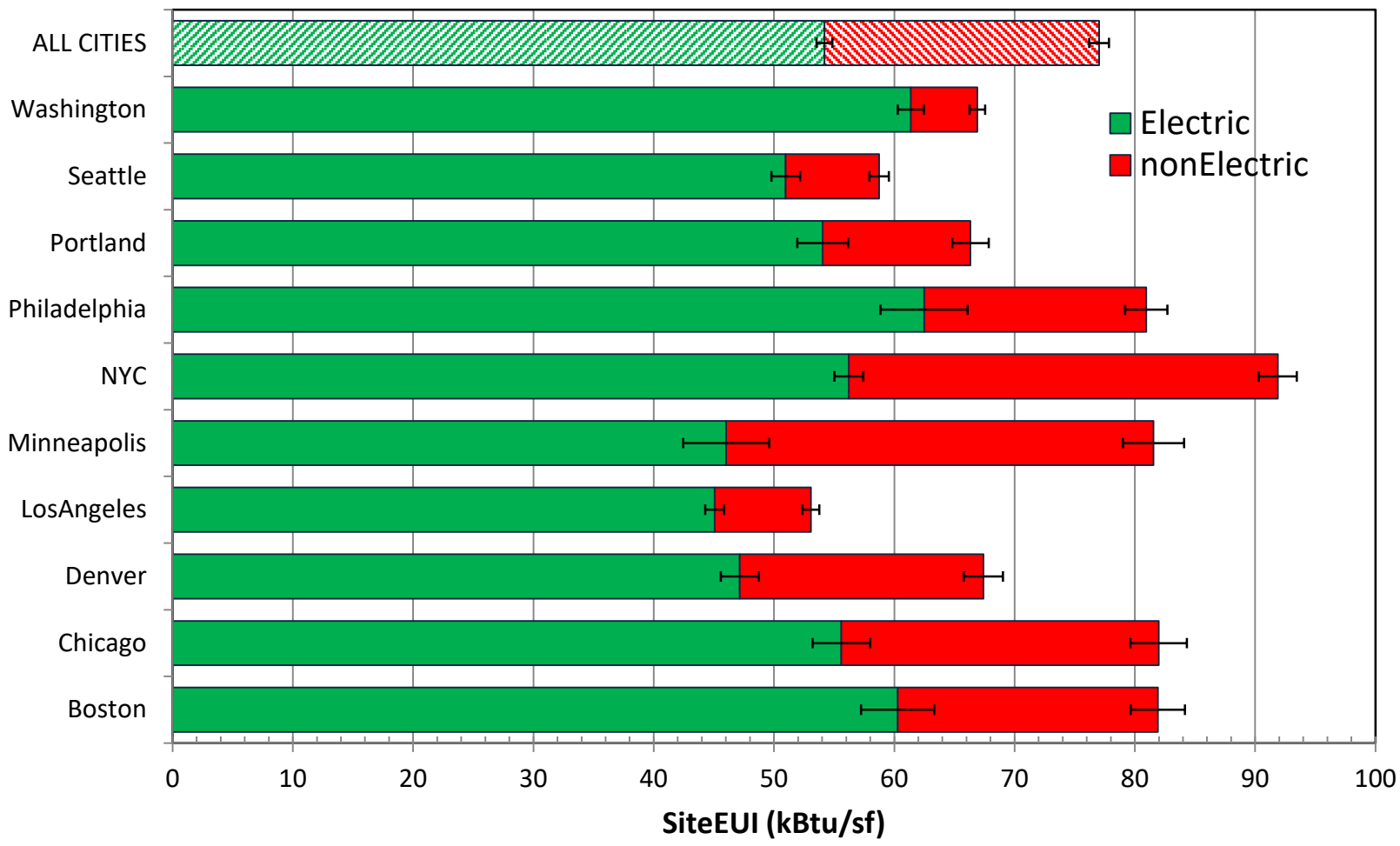
Office - LEED savings relative to nonLEED																			
	LEED		Base (nonLEED)		SiteEUI			ElectricEUI			nonElectricEUI			SourceEUI			GHGI (kg/ft^2)		
City	N	A ($10^6 ft^2$)	N	A ($10^6 ft^2$)	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p
Boston	8	6.1	239	46.6	82	17%	0.366	60	9%	0.686	22	38%	0.491	212	12%	0.530	6.4	13%	0.505
Chicago	25	27.1	244	77.3	82	-1%	0.874	56	3%	0.816	26	-10%	0.758	202	1%	0.928	11.7	1%	0.910
Denver	8	2.5	144	22.6	67	-8%	0.526	47	-8%	0.621	20	-6%	0.867	169	-8%	0.556	12.5	-4%	0.784
LosAngeles	10	3.6	691	167.6	53	4%	0.776	45	-7%	0.595	8	66%	0.227	150	-3%	0.824	4.0	1%	0.946
Minneapolis	2	1.4	93	23.8	82	18%	0.541	46	8%	0.849	36	30%	0.559	182	13%	0.693	10.3	9%	0.790
NYC	33	29.0	1166	332.8	92	7%	0.574	56	-1%	0.923	36	19%	0.401	214	2%	0.826	7.5	5%	0.664
Philadelphia	5	5.1	173	54.4	81	16%	0.398	62	-1%	0.963	18	75%	0.157	216	6%	0.766	7.7	7%	0.757
Portland	5	1.2	133	18.8	66	7%	0.650	54	-1%	0.973	12	43%	0.481	183	2%	0.884	5.5	12%	0.475
Seattle	8	2.8	409	40.1	59	-15%	0.336	51	-19%	0.276	8	9%	0.896	168	-17%	0.274	4.8	-12%	0.496
Washington	38	12.1	331	69.5	67	7%	0.129	61	2%	0.647	6	63%	0.053	199	4%	0.397	7.9	6%	0.575
Aggregate	**142**	**90.9**	**3623**	**853.6**	**77**	**5%**	**0.364**	**54**	**1%**	**0.913**	**23**	**16%**	**0.288**	**194**	**2%**	**0.626**	**7.2**	**4%**	**0.466**

													LEED savings "delta"									
			SiteEUI		ElectricEUI		nElectricEUI		SourceEUI		GHGI		SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston	247	52.7	80	3.6%	60	4.6%	21	10.2%	209	4.0%	6.3	3.7%										
nonLEED	239	46.6	82	3.9%	60	5.1%	22	10.4%	212	4.3%	6.4	4.0%	13.8	0.366	5.6	0.686	8.2	0.491	26	0.530	0.8	0.505
LEED	8	6.1	68	5.4%	55	8.8%	13	40.9%	186	6.1%	5.5	5.1%	17%		9%		38%		12%		13%	
Chicago	269	104.4	82	2.7%	55	4.0%	27	9.8%	202	2.9%	11.6	3.0%										
nonLEED	244	77.3	82	2.5%	56	4.3%	26	8.9%	202	3.2%	11.7	3.3%	-1.2	0.874	1.5	0.816	-2.7	0.758	2	0.928	0.1	0.910
LEED	25	27.1	83	7.6%	54	9.1%	29	25.5%	200	6.6%	11.5	6.6%	-1%		3%		-10%		1%		1%	
Denver	152	25.1	68	2.7%	48	3.9%	20	8.2%	171	3.1%	12.5	3.4%										
nonLEED	144	22.6	67	2.9%	47	3.3%	20	8.1%	169	2.8%	12.5	3.0%	-5.2	0.526	-3.8	0.621	-1.3	0.867	-13	0.556	-0.5	0.784
LEED	8	2.5	73	8.9%	51	22.6%	22	38.4%	183	16.2%	13.0	20.0%	-8%		-8%		-6%		-8%		-4%	
LosAngeles	701	171.2	53	2.0%	45	1.7%	8	8.7%	150	1.7%	4.0	1.8%										
nonLEED	691	167.6	53	2.0%	45	1.7%	8	9.0%	150	1.7%	4.0	1.8%	2.2	0.776	-3.1	0.595	5.3	0.227	-4	0.824	0.0	0.946
LEED	10	3.6	51	5.2%	48	3.8%	3	57.0%	154	4.1%	3.9	4.7%	4%		-7%		66%		-3%		1%	
Minneapolis	95	25.3	81	4.5%	46	7.5%	40	6.9%	181	5.7%	10.2	6.5%										
nonLEED	93	23.8	82	4.7%	46	7.8%	36	7.2%	182	6.0%	10.3	6.9%	14.5	0.541	3.8	0.849	10.7	0.559	23	0.693	0.9	0.790
LEED	2	1.4	67	15.1%	42	10.1%	25	24.0%	159	12.5%	9.4	12.1%	18%		8%		30%		13%		9%	
NYC	1,199	361.8	91	2.1%	56	2.0%	35	4.3%	214	1.8%	7.4	1.8%										
nonLEED	1,166	332.8	92	2.2%	56	2.1%	36	4.5%	214	1.9%	7.5	1.9%	6.3	0.574	-0.6	0.923	6.9	0.401	5	0.826	0.3	0.664
LEED	33	29.0	86	4.9%	57	4.8%	29	10.0%	209	4.5%	7.1	4.7%	7%		-1%		19%		2%		5%	
Philadelphia	178	59.5	80	4.3%	63	5.3%	17	9.9%	214	4.8%	7.7	5.1%										
nonLEED	173	54.4	81	4.6%	62	5.8%	18	9.5%	216	5.2%	7.7	5.5%	13.2	0.398	-0.6	0.963	13.8	0.157	13	0.766	0.5	0.757
LEED	5	5.1	68	4.5%	63	4.2%	5	69.1%	203	3.6%	7.2	3.0%	16%		-1%		75%		6%		7%	
Portland	138	20.1	66	3.3%	54	3.6%	12	12.2%	182	3.3%	5.5	4.1%										
nonLEED	133	18.8	66	3.5%	54	3.9%	12	12.3%	183	3.6%	5.5	4.3%	4.9	0.650	-0.3	0.973	5.2	0.481	5	0.884	0.7	0.475
LEED	5	1.2	61	5.1%	54	7.8%	7	71.1%	178	5.4%	4.8	12.2%	7%		-1%		43%		2%		12%	
Seattle	417	43.0	59	2.1%	52	2.3%	8	9.9%	170	2.1%	4.8	2.8%										
nonLEED	409	40.1	59	2.1%	51	2.3%	8	10.4%	168	2.1%	4.8	2.8%	-8.8	0.336	-9.6	0.276	0.7	0.896	-29	0.274	-0.6	0.496
LEED	8	2.8	68	9.8%	61	8.2%	7	37.1%	197	8.6%	5.3	11.0%	-15%		-19%		9%		-17%		-12%	
Washington	369	81.6	66	1.5%	61	1.6%	5	11.4%	197	1.5%	7.8	3.1%										
nonLEED	331	69.5	67	1.7%	61	1.8%	6	11.7%	199	1.7%	7.9	3.4%	4.9	0.129	1.4	0.647	3.5	0.053	8	0.397	0.5	0.575
LEED	38	12.1	62	2.8%	60	2.7%	2	38.7%	190	2.7%	7.4	5.6%	7%		2%		63%		4%		6%	
Aggregate	3,765	944.6	77	1.3%	54	1.1%	23	3.4%	194	1.1%	7.3	1.5%										
nonLEED	3,623	853.6	77	1.4%	54	1.2%	23	3.6%	194	1.2%	7.2	1.5%	3.9	0.364	0.3	0.913	3.6	0.288	5	0.626	0.3	0.466
LEED	142	90.9	77	3.5%	56	3.3%	21	13.6%	197	2.8%	8.3	4.7%	5%		1%		16%		2%		4%	

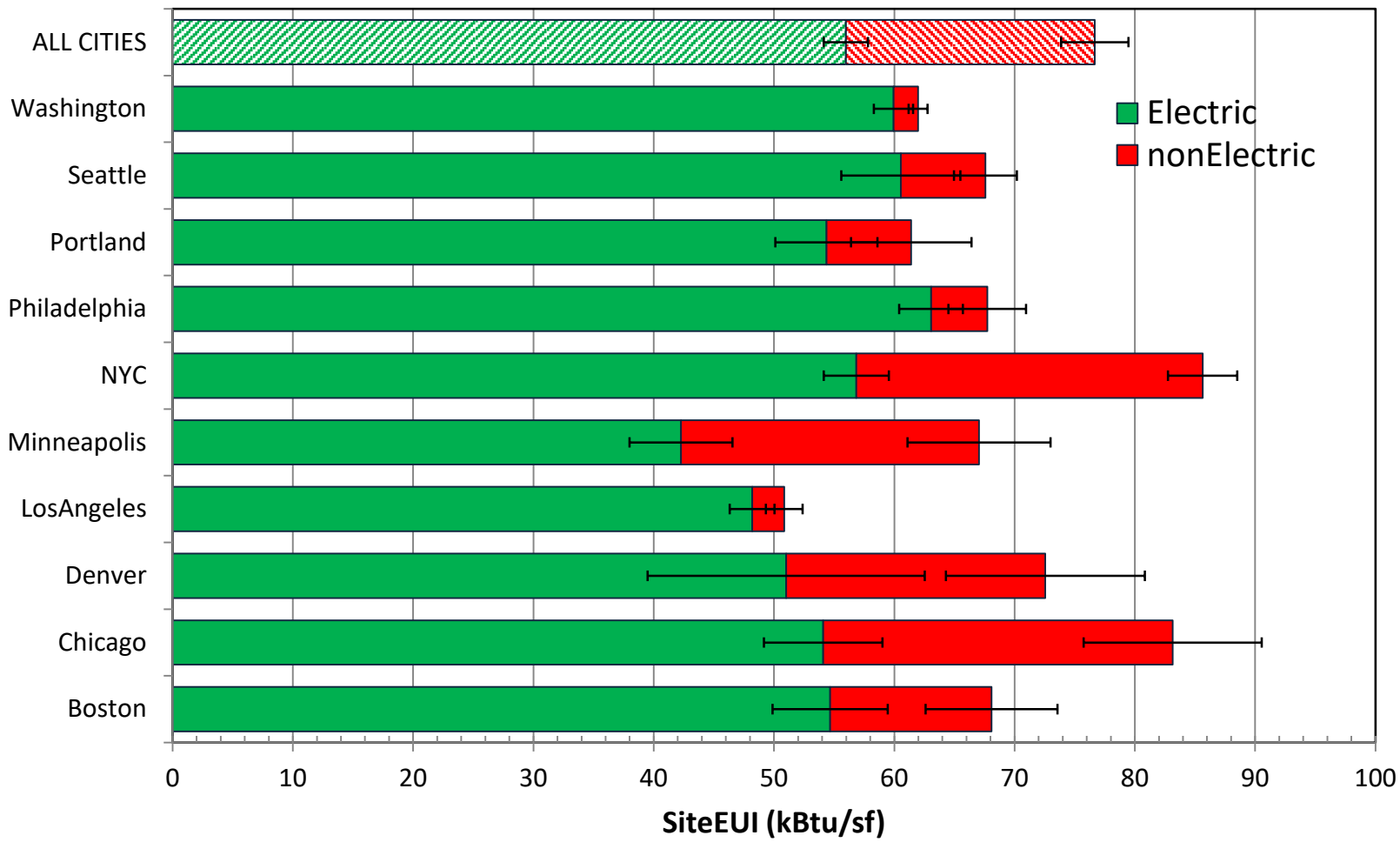
	ALL		nonLEED											
					SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE
Boston	247	52.7	239	46.6	82	4%	60	5%	22	10%	212	4%	6.4	4%
Chicago	269	104.4	244	77.3	82	3%	56	4%	26	9%	202	3%	11.7	3%
Denver	152	25.1	144	22.6	67	3%	47	3%	20	8%	169	3%	12.5	3%
LosAngeles	701	171.2	691	167.6	53	2%	45	2%	8.0	9%	150	2%	4.0	2%
Minneapolis	95	25.3	93	23.8	82	5%	46	8%	36	7%	182	6%	10.3	7%
NYC	1,199	361.8	1,166	332.8	92	2%	56	2%	36	4%	214	2%	7.5	2%
Philadelphia	178	59.5	173	54.4	81	5%	62	6%	18	10%	216	5%	7.7	5%
Portland	138	20.1	133	18.8	66	3%	54	4%	12	12%	183	4%	5.5	4%
Seattle	417	43.0	409	40.1	59	2%	51	2%	7.8	10%	168	2%	4.8	3%
Washington	369	81.6	331	69.5	67	2%	61	2%	5.5	12%	199	2%	7.9	3%
Aggregate	3,765	944.6	3,623	853.6	77	1%	54.2	1%	22.8	4%	194	1%	7.2	1%

		LEED		LEED savings "delta"									
City		N	A (Mft^2)	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston		8	6.1	13.8	0.366	5.6	0.686	8.2	0.491	26	0.530	0.8	0.505
Chicago		25	27.1	-1.2	0.874	1.5	0.816	-2.7	0.758	2	0.928	0.1	0.910
Denver		8	2.5	-5.2	0.526	-3.8	0.621	-1.3	0.867	-13	0.556	-0.5	0.784
LosAngeles		10	3.6	2.2	0.776	-3.1	0.595	5.3	0.227	-4	0.824	0.0	0.946
Minneapolis		2	1.4	14.5	0.541	3.8	0.849	10.7	0.559	23	0.693	0.9	0.790
NYC		33	29.0	6.3	0.574	-0.6	0.923	6.9	0.401	5	0.826	0.3	0.664
Philadelphia		5	5.1	13.2	0.398	-0.6	0.963	13.8	0.157	13	0.766	0.5	0.757
Portland		5	1.2	4.9	0.650	-0.3	0.973	5.2	0.481	5	0.884	0.7	0.475
Seattle		8	2.8	-8.8	0.336	-9.6	0.276	0.7	0.896	-29	0.274	-0.6	0.496
Washington		38	12.1	4.9	0.129	1.4	0.647	3.5	0.053	8	0.397	0.5	0.575
Aggregate		142	90.9	3.9	0.364	0.3	0.913	3.6	0.2878	5	0.626	0.3	0.466

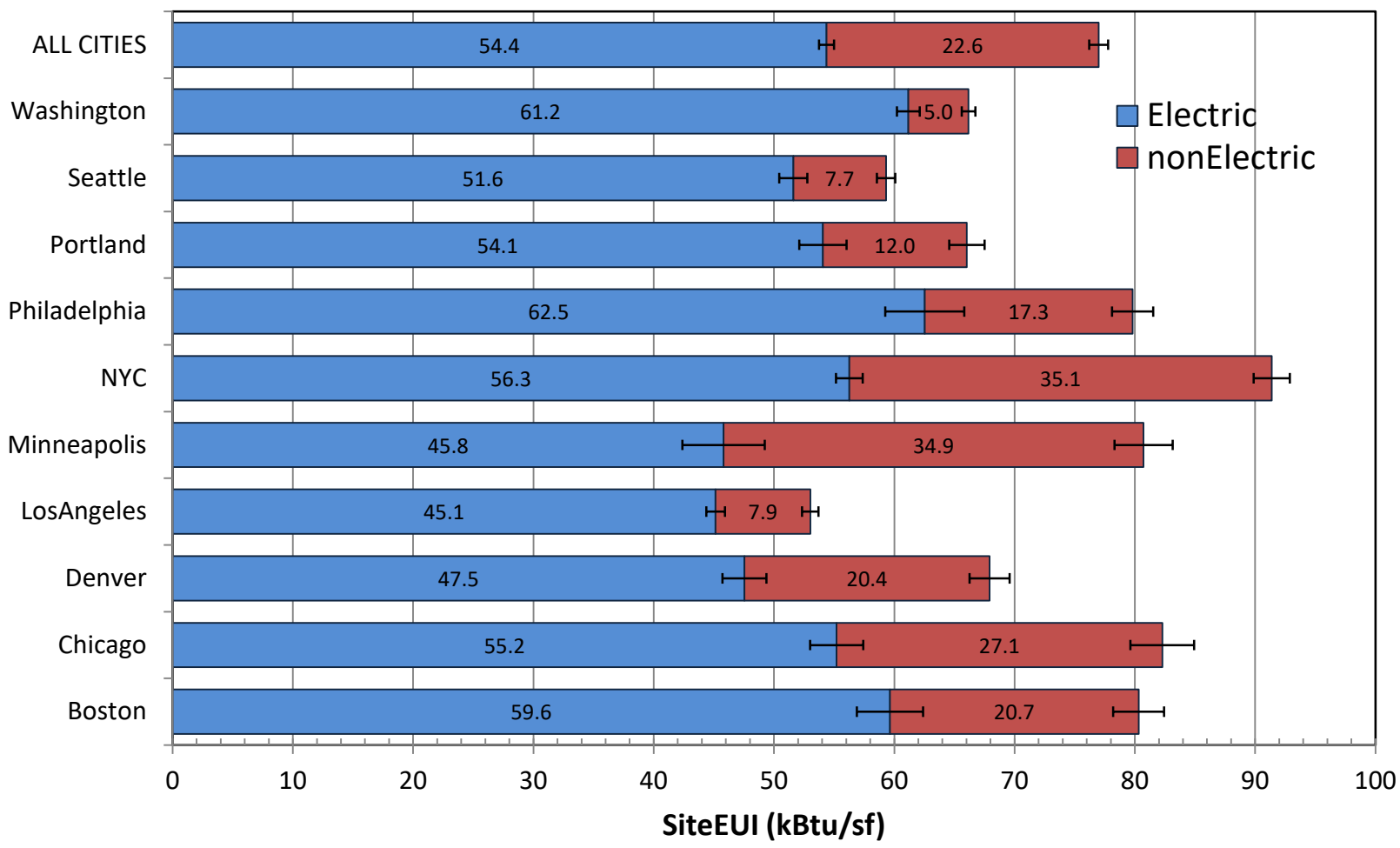
	LEED		nonLEED										LEED savings "delta"									
					SiteEUI		ElectricEUI		nElectricEUI		SourceEUI		GHGI		SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	N	A (Mft^2)	$kBtu/ft^2$	RSE	$kBtu/ft^2$	RSE	$kBtu/ft^2$	RSE	$kBtu/ft^2$	RSE	kg/ft^2	RSE	$kBtu/ft^2$	p	$kBtu/ft^2$	p	$kBtu/ft^2$	p	$kBtu/ft^2$	p	kg/ft^2	p
Boston	8	6.1	239	46.6	82	4%	60	5%	22	10%	212	4%	6.4	4%	13.8	0.366	5.6	0.686	8.2	0.491	26	0.5299	0.8	0.505
Chicago	25	27.1	244	77.3	82	3%	56	4%	26	9%	202	3%	11.7	3%	-1.2	0.874	1.5	0.816	-2.7	0.758	2	0.9278	0.1	0.910
Denver	8	2.5	144	22.6	67	3%	47	3%	20	8%	169	3%	12.5	3%	-5.2	0.526	-3.8	0.621	-1.3	0.867	-13	0.5558	-0.5	0.784
LosAngeles	10	3.6	691	167.6	53	2%	45	2%	8.0	9%	150	2%	4.0	2%	2.2	0.776	-3.1	0.595	5.3	0.227	-4	0.8240	0.0	0.946
Minneapolis	2	1.4	93	23.8	82	5%	46	8%	36	7%	182	6%	10.3	7%	14.5	0.541	3.8	0.849	10.7	0.559	23	0.6930	0.9	0.790
NYC	33	29.0	1,166	332.8	92	2%	56	2%	36	4%	214	2%	7.5	2%	6.3	0.574	-0.6	0.923	6.9	0.401	5	0.8260	0.3	0.664
Philadelphia	5	5.1	173	54.4	81	5%	62	6%	18	10%	216	5%	7.7	5%	13.2	0.398	-0.6	0.963	13.8	0.157	13	0.7655	0.5	0.757
Portland	5	1.2	133	18.8	66	3%	54	4%	12	12%	183	4%	5.5	4%	4.9	0.650	-0.3	0.973	5.2	0.481	5	0.8835	0.7	0.475
Seattle	8	2.8	409	40.1	59	2%	51	2%	7.8	10%	168	2%	4.8	3%	-8.8	0.336	-9.6	0.276	0.7	0.896	-29	0.2742	-0.6	0.496
Washington	38	12.1	331	69.5	67	2%	61	2%	5.5	12%	199	2%	7.9	3%	4.9	0.129	1.4	0.647	3.5	0.053	8	0.3968	0.5	0.575
Aggregate	142	90.9	3,623	853.6	77	1%	54.2	1%	22.8	4%	194	1%	7.2	1%	3.9	0.364	0.3	0.913	3.6	0.288	5	0.626	0.3	0.466

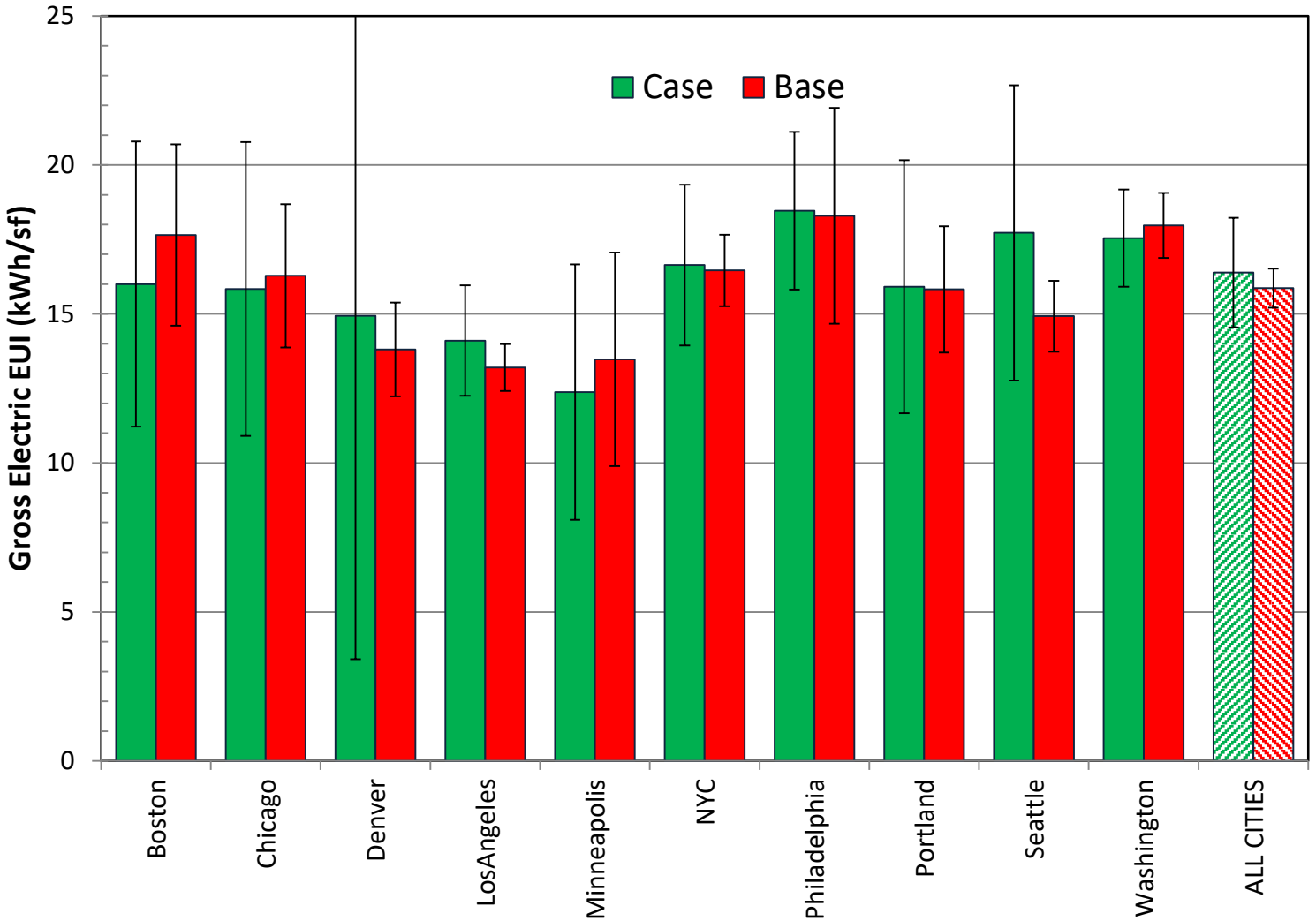


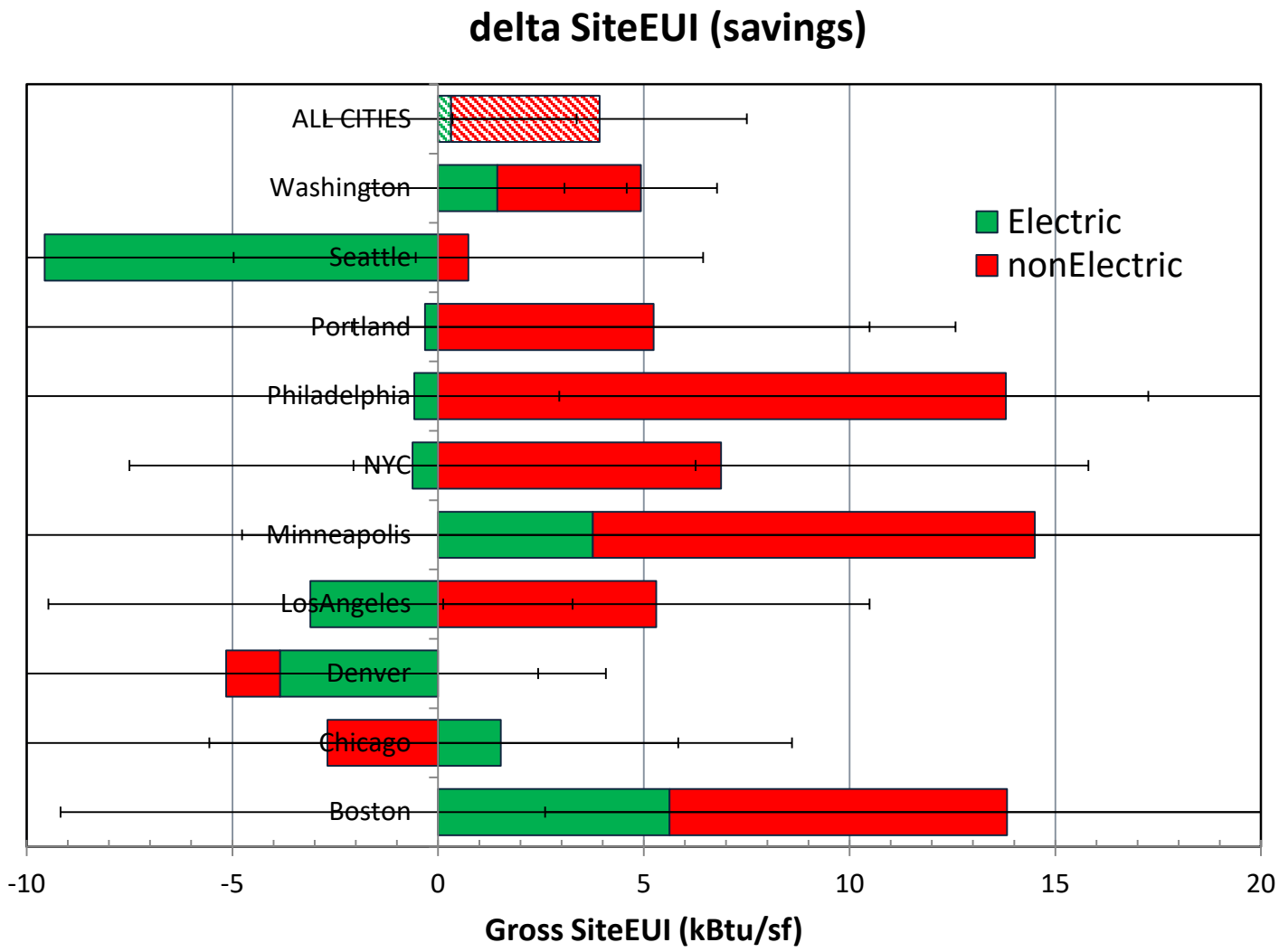
nonLEED Office

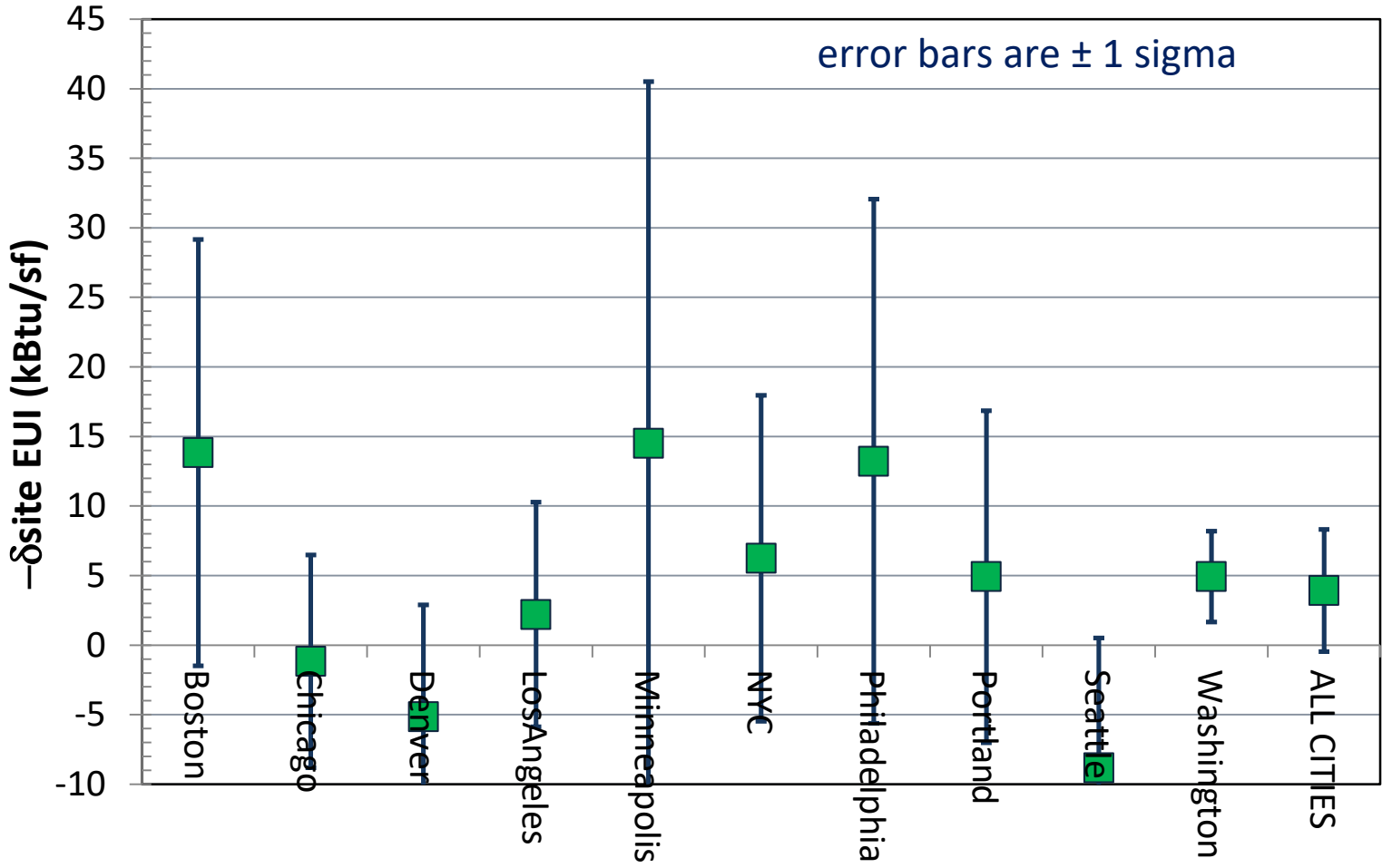

Gross SiteEUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
Electric
nonElectric
0
10
20
30
40
50
60
70
80
90
100
SiteEUI (kBtu/sf)

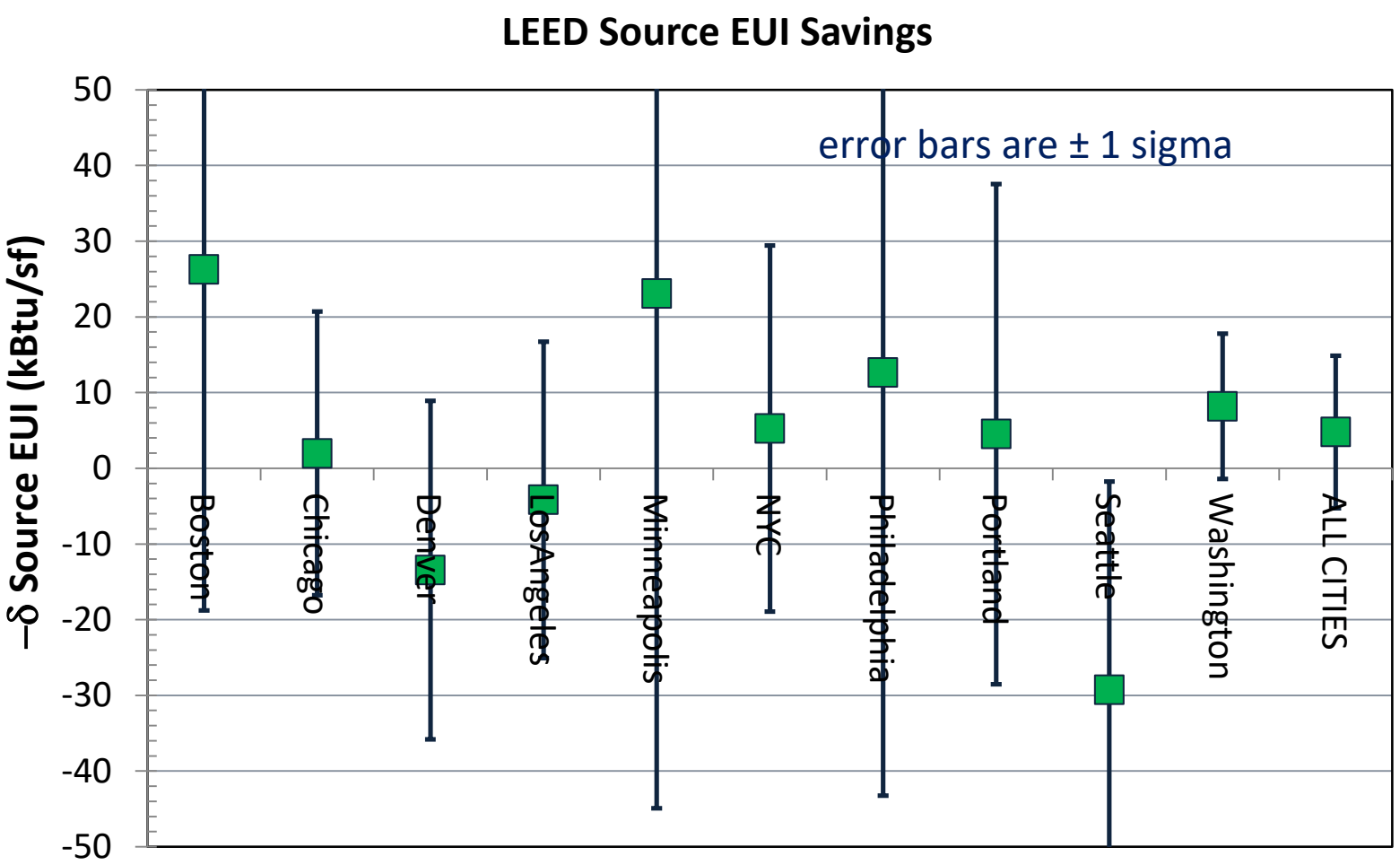
LEED Office

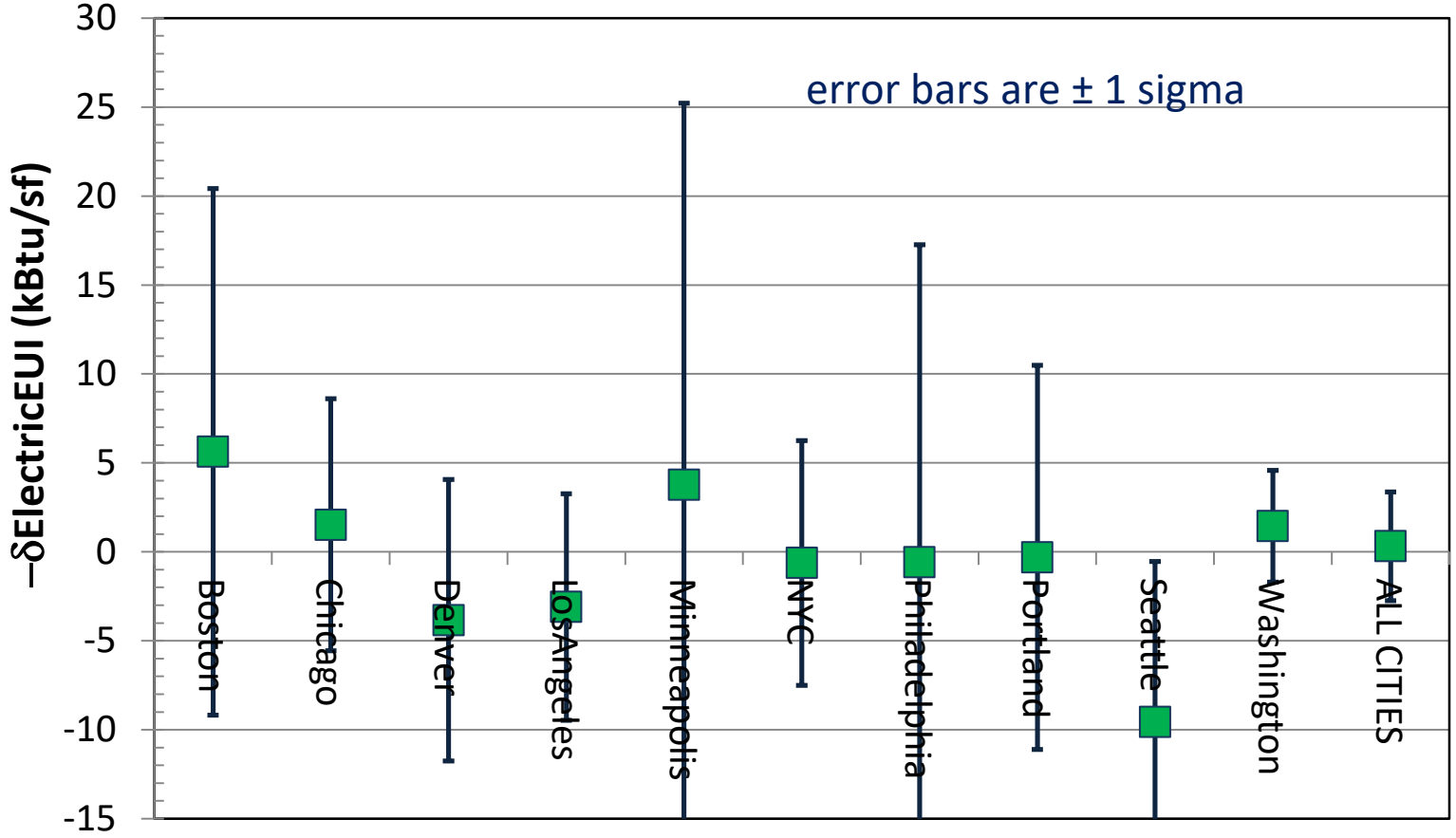

Gross SiteEUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
54.4
22.6
61.2
5.0
51.6
7.7
54.1
12.0
62.5
17.3
56.3
35.1
45.8
34.9
45.1
7.9
47.5
20.4
55.2
27.1
59.6
20.7
Electric
nonElectric
0
10
20
30
40
50
60
70
80
90
100
SiteEUI (kBtu/sf)

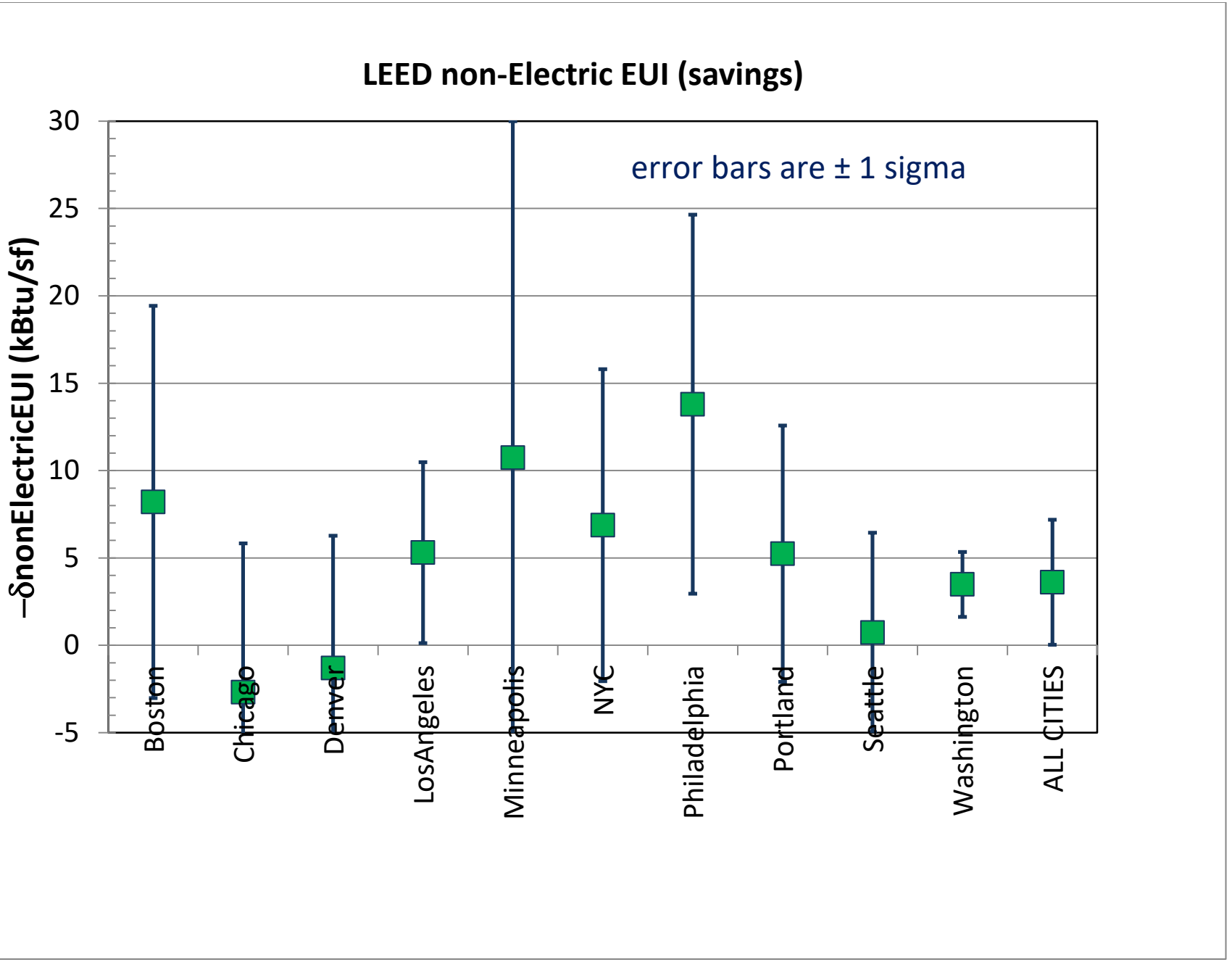

Electric Energy Use
Gross Electric EUI (kWh/sf)
25
20
15
10
5
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

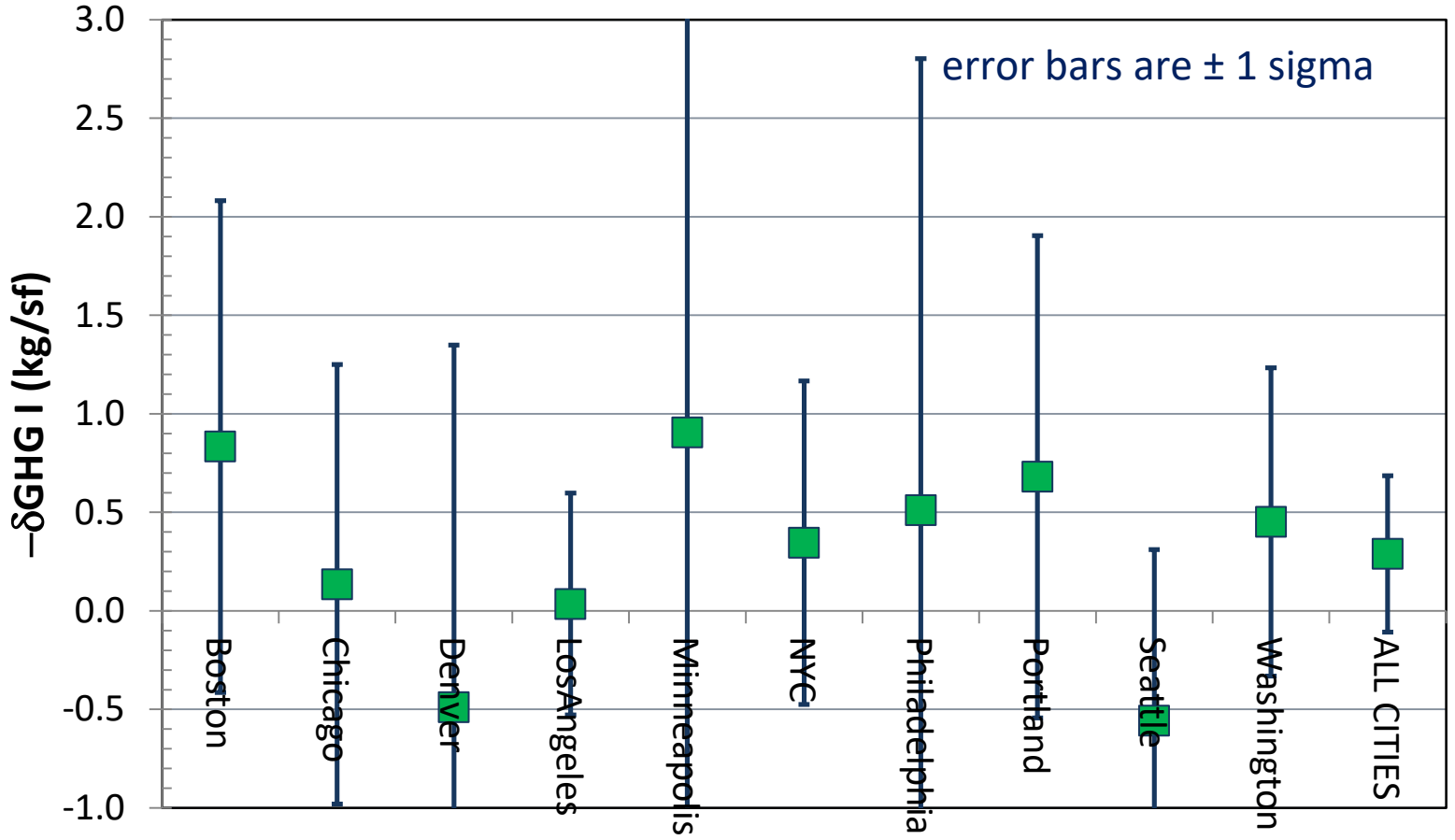

delta SiteEUI (savings)
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
Electric
nonElectric
-10
-5
0
5
10
15
20
Gross SiteEUI (kBtu/sf)

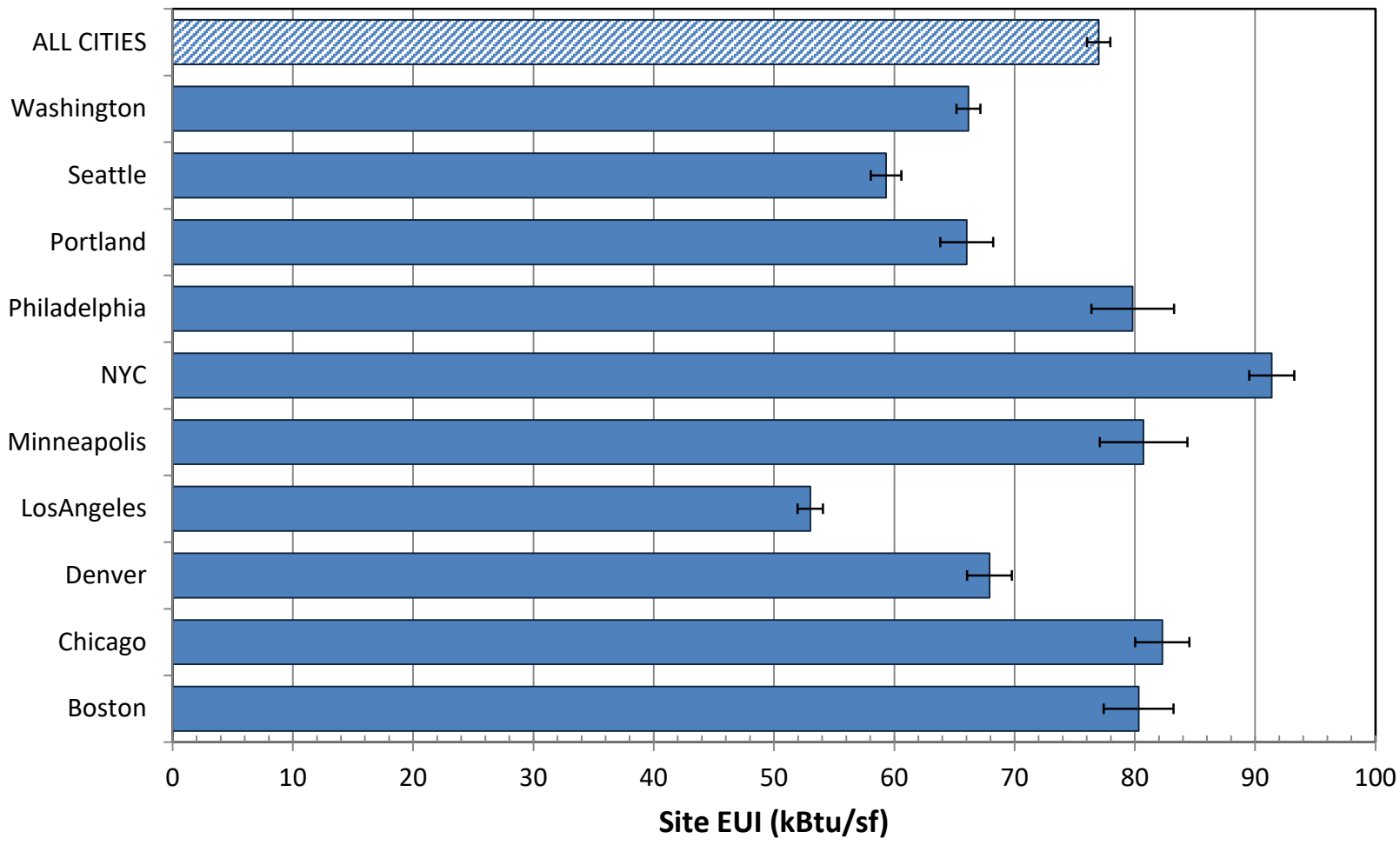

LEED Site EUI savings
error bars are ± 1 sigma
–δsite EUI (kBtu/sf)
45
40
35
30
25
20
15
10
5
0
-5
-10
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

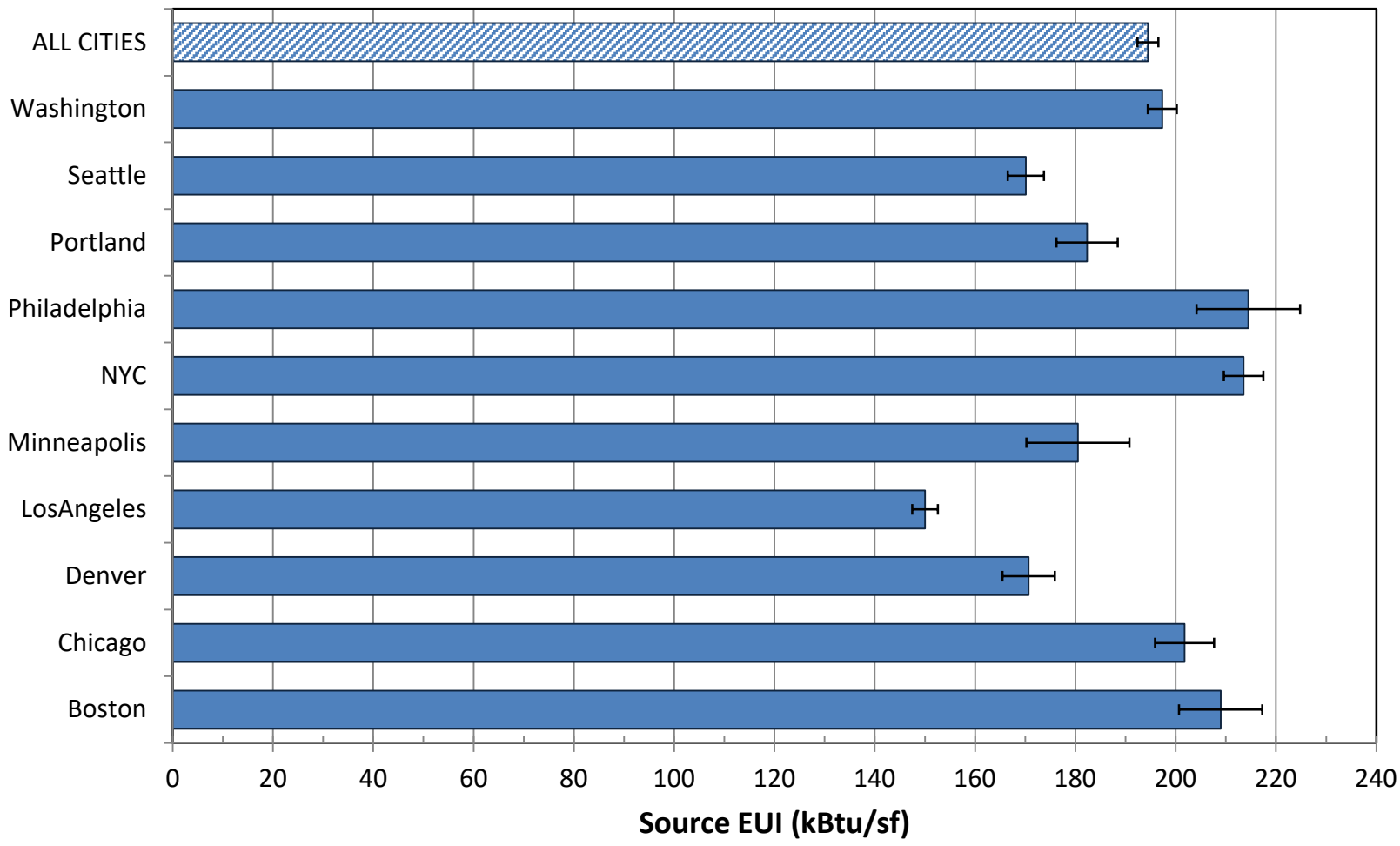

LEED Source EUI Savings
error bars are ± 1 sigma
–δ Source EUI (kBtu/sf)
50
40
30
20
10
0
-10
-20
-30
-40
-50
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

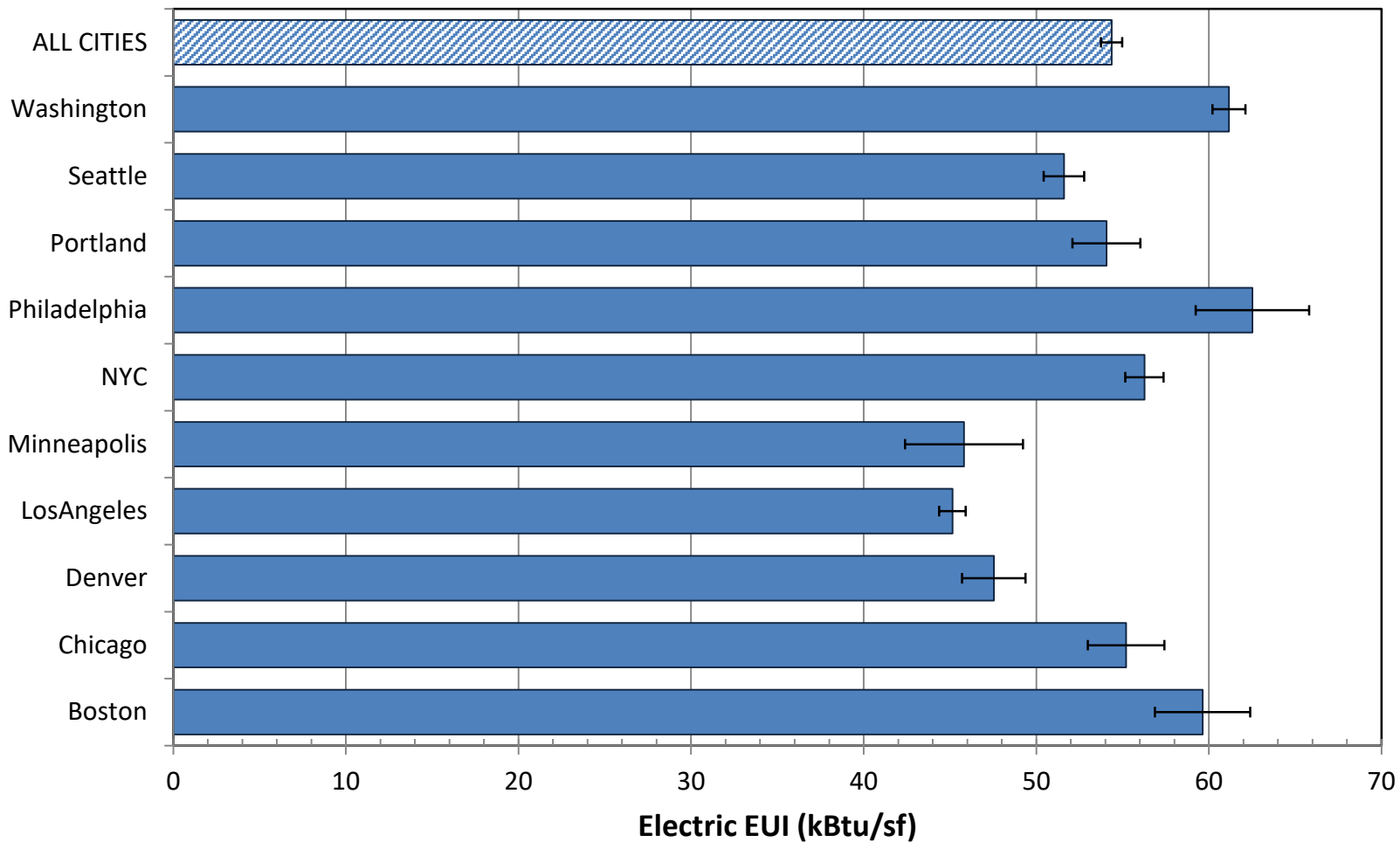

LEED Electric EUI (savings)
error bars are ± 1 sigma
–δElectricEUI (kBtu/sf)
30
25
20
15
10
5
0
-5
-10
-15
Boston
Chicago
Denver
Los Angeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

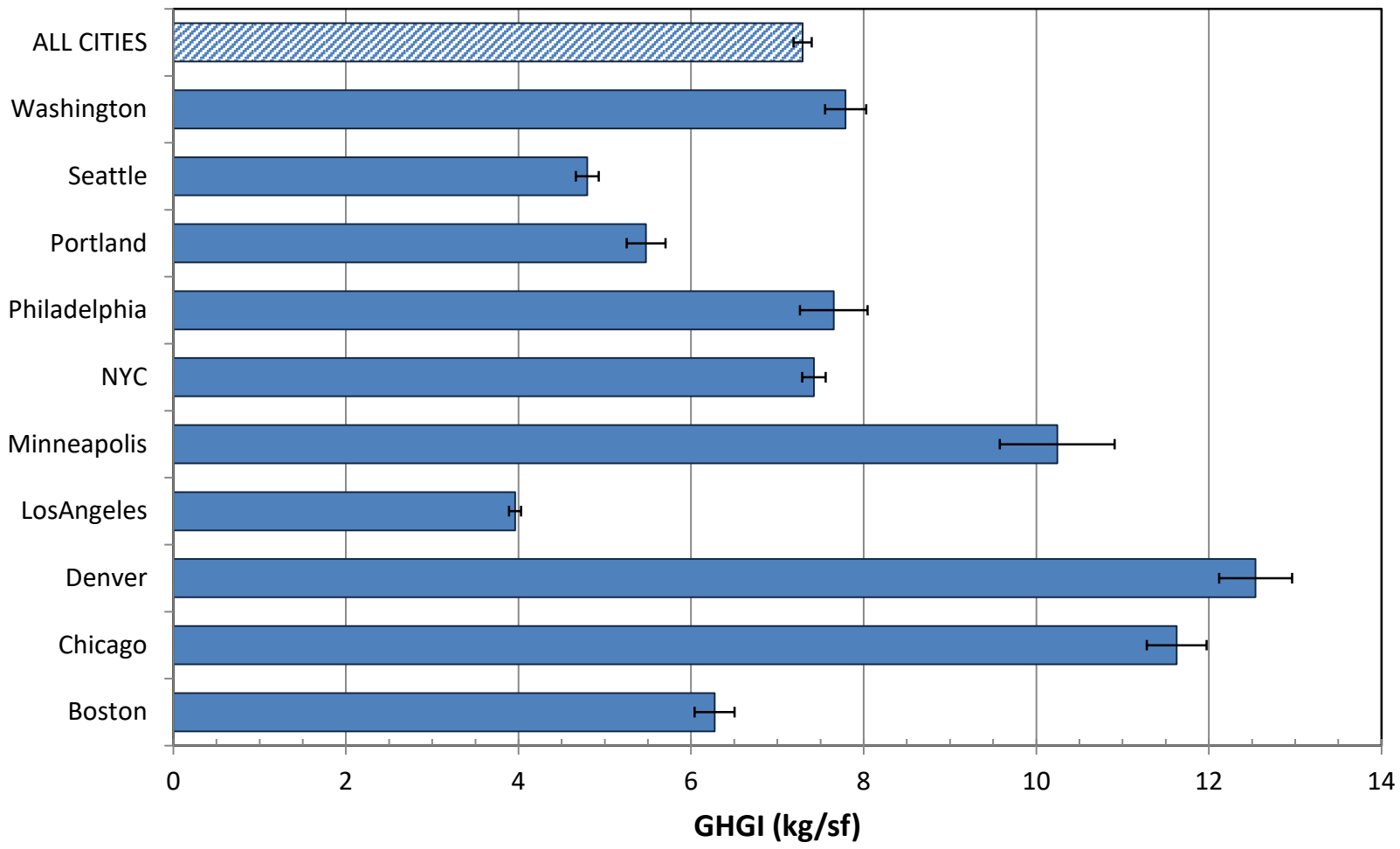

LEED non-Electric EUI (savings)
−δnonElectricEUI (kBtu/sf)
30
25
20
15
10
5
0
-5
error bars are ± 1 sigma
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

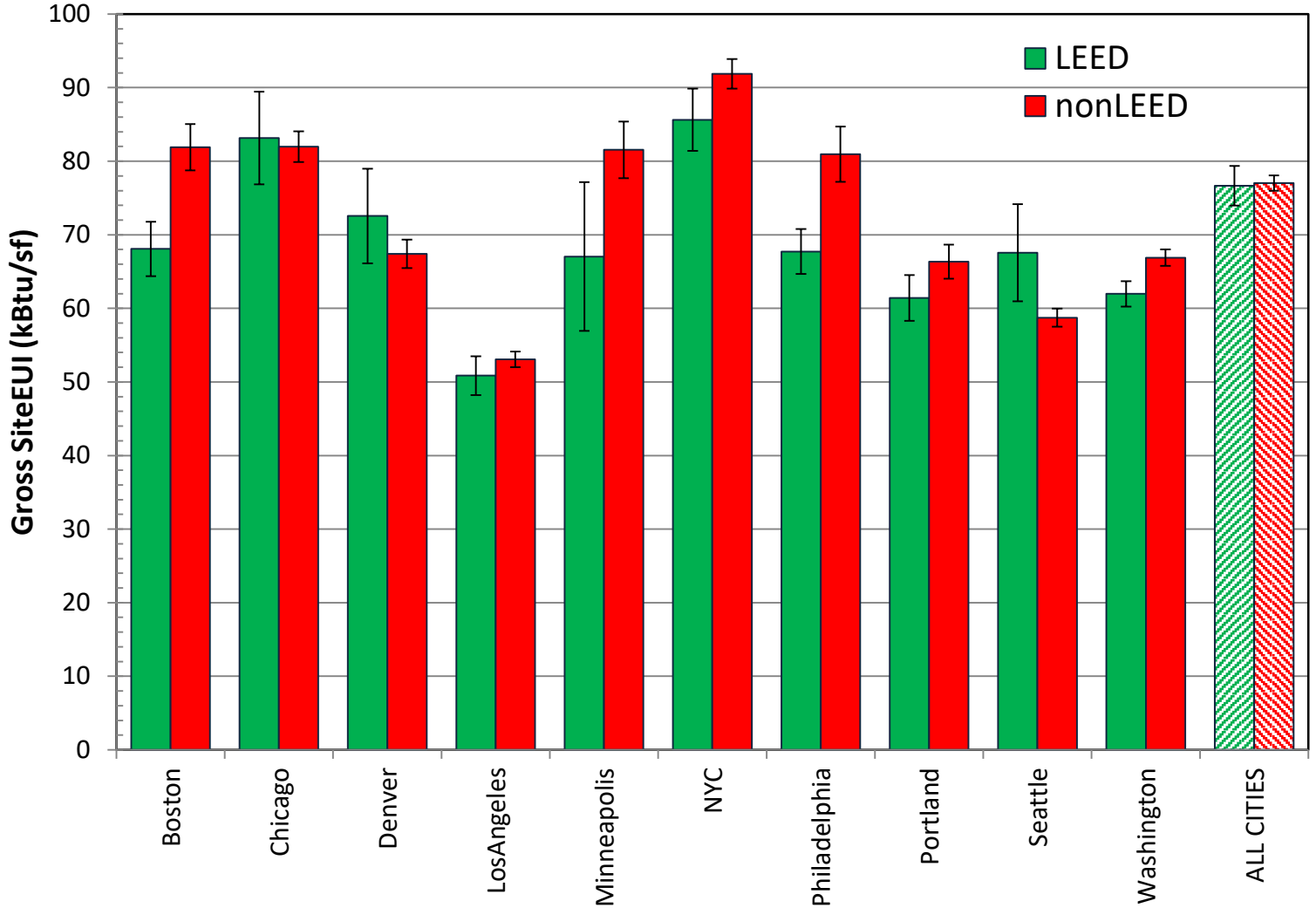

LEED GHG Intensity Savings
error bars are ± 1 sigma
−δGHG I (kg/sf)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

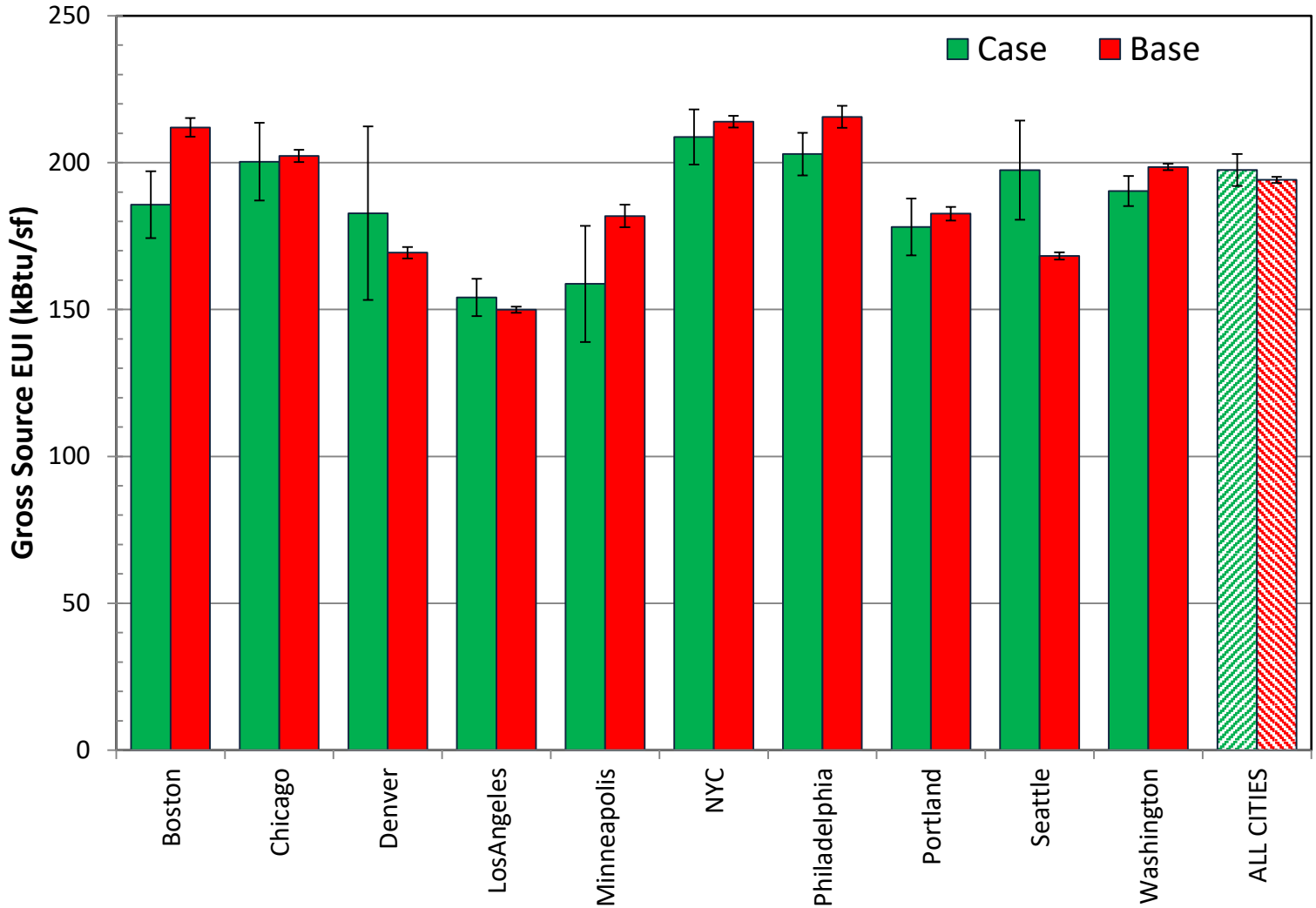

Gross Site EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
10
20
30
40
50
60
70
80
90
100
Site EUI (kBtu/sf)

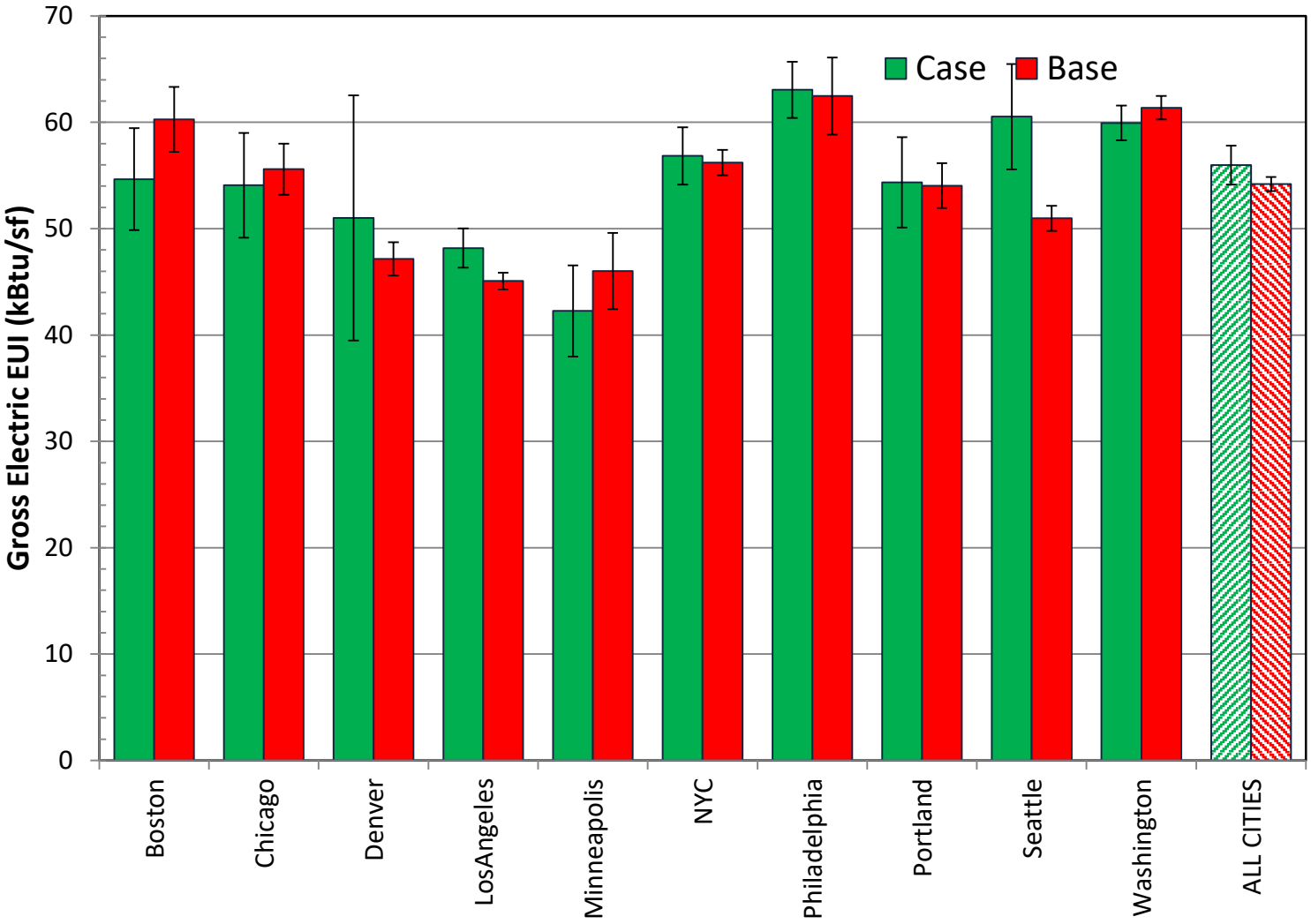

Gross Source EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
20
40
60
80
100
120
140
160
180
200
220
240
Source EUI (kBtu/sf)

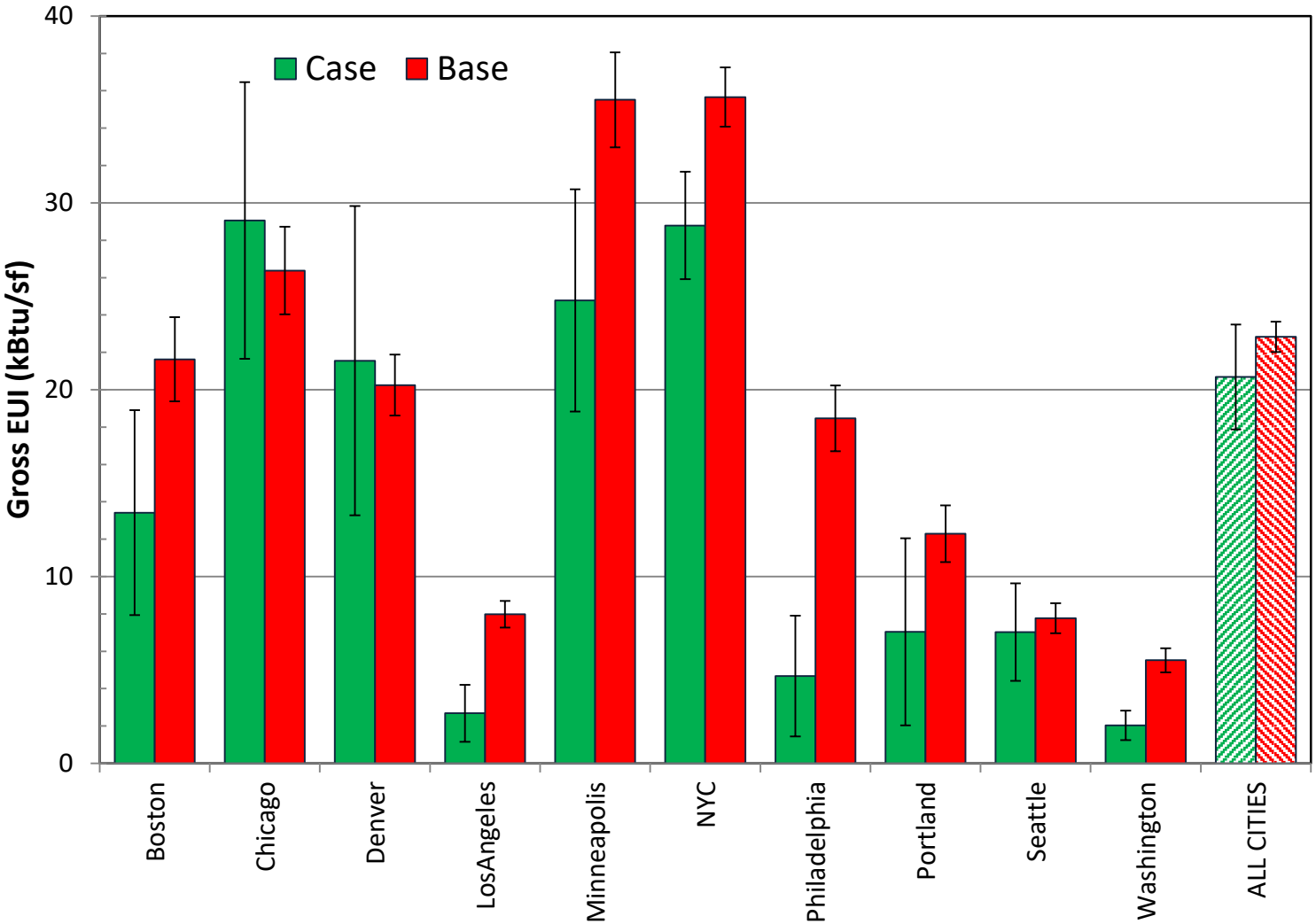

Gross Electric EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
10
20
30
40
50
60
70
Electric EUI (kBtu/sf)

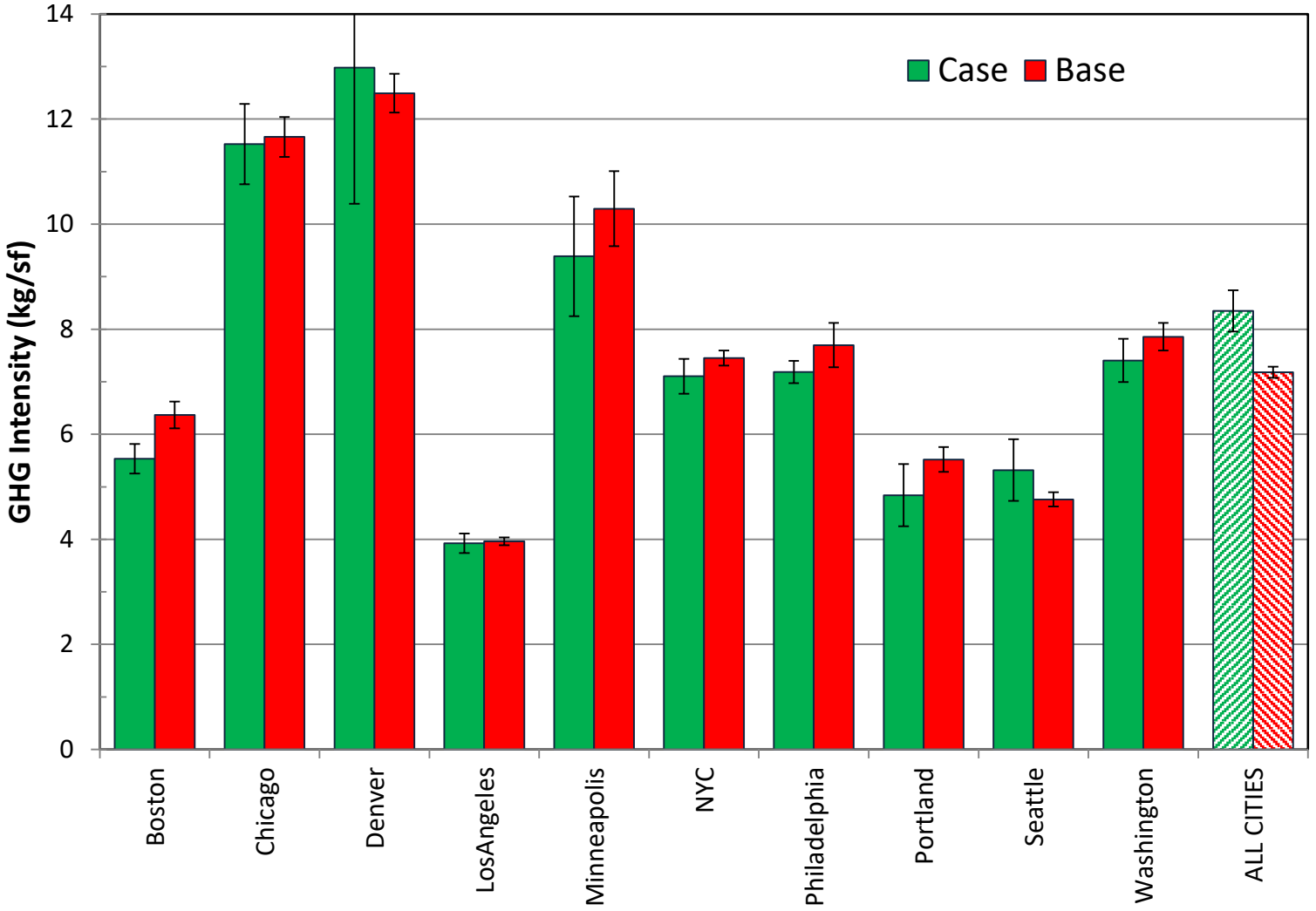

Gross GHGI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
2
4
6
8
10
12
14
GHGI (kg/sf)


Site Energy
Gross SiteEUI (kBtu/sf)
100
90
80
70
60
50
40
30
20
10
0
LEED
nonLEED
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


Source Energy
Gross Source EUI (kBtu/sf)
250
200
150
100
50
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


Electric Energy Use
Gross Electric EUI (kBtu/sf)
70
60
50
40
30
20
10
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


non-Electric Energy Use
Gross EUI (kBtu/sf)
40
30
20
10
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


GHG Emission
GHG Intensity (kg/sf)
14
12
10
8
6
4
2
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

					Site EUI (kBtu/sf)					Source EUI (kBtu/sf)					GHG intensity (kg/ft$_2$)					Electric Intensity (kBtu/sf)					nonElectric Intensity (kBtu/sf)				
Case	City	N	Neff	Tot. Area	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mearl	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm
1	Boston	19	14	12,250,406	74.5	70.3	25.4	16.5	3.7	193.1	180.6	62.9	44.8	9.3	6.09	5.96	2.28	2.18	0.60	55.0	51.1	20.1	15.3	3.2	19.5	19.1	19.4	14.1	3.4
2	Chicago	41	27	43,918,835	68.7	69.4	18.4	15.5	2.5	187.6	188.5	50.1	44.8	8.1	10.92	10.98	2.97	2.68	0.49	55.2	55.3	18.2	17.1	3.2	13.5	14.1	18.7	17.8	3.4
3	Denver	29	20	15,995,326	61.7	58.6	16.8	14.1	2.8	163.3	150.0	51.2	35.9	6.6	12.66	12.07	4.11	2.88	0.52	47.1	42.3	19.0	13.8	2.6	14.6	16.3	17.4	16.7	3.4
4	LosAngeles	23	11	17,794,580	47.5	45.2	12.2	11.2	3.3	132.5	126.9	30.3	22.7	6.5	3.37	3.34	1.12	0.76	0.22	39.5	38.0	10.0	6.9	1.8	8.0	7.2	10.1	9.7	2.6
5	Minneapolis	13	10	11,056,150	61.2	59.4	13.0	13.2	4.1	153.5	152.1	19.3	18.7	5.8	9.14	9.08	1.17	1.11	0.34	42.7	42.9	6.7	6.0	1.7	18.5	16.5	14.7	14.5	4.3
6	NYC	33	23	27,070,699	80.8	87.5	18.6	20.3	4.2	201.6	211.3	34.4	36.6	7.7	7.40	7.45	3.34	2.00	0.34	55.8	57.1	9.3	10.1	2.2	25.0	30.4	15.4	17.8	3.9
7	Philadelphia	7	5	5,408,531	71.5	73.5	8.7	9.1	4.4	206.1	207.2	32.2	30.4	14.1	7.32	7.06	1.65	1.90	0.95	62.7	62.2	11.6	10.4	4.6	8.8	11.3	6.9	5.0	2.1
8	Portland	18	10	5,860,975	58.2	60.1	13.7	12.9	3.4	158.2	160.8	32.2	32.5	9.2	4.76	4.88	1.00	0.97	0.26	46.4	46.7	10.5	10.9	3.2	11.7	13.4	11.8	11.1	2.9
9	Seattle	27	15	10,134,027	57.8	51.9	20.8	12.8	2.5	160.1	151.5	36.3	29.2	5.7	4.82	4.45	1.30	1.08	0.26	47.6	46.4	11.0	8.8	1.6	10.2	5.5	20.3	9.3	1.6
10	Washington	93	64	29,111,839	59.4	59.6	12.1	12.1	1.4	179.9	179.2	34.2	32.5	3.6	7.07	6.90	3.43	2.84	0.26	56.3	55.8	11.1	10.4	1.1	3.1	3.7	7.4	7.9	1.0
11	**ALL CITIES**	303	162	178,601,368	63.4	65.4	18.2	19.2	1.6	175.4	175.6	43.9	44.1	3.5	7.58	7.96	3.88	3.55	0.27	52.1	51.2	14.5	14.3	1.1	11.3	14.3	15.8	16.6	1.4
Base																													
1	Boston	239	76	46,599,545	78.7	81.9	36.2	32.3	3.2	192.7	212.0	93.7	89.7	9.1	5.92	6.37	2.70	2.54	0.26	52.7	60.3	30.3	29.7	3.1	26.1	21.6	26.6	22.9	2.2
2	Chicago	244	85	77,253,811	83.5	82.0	26.8	23.8	2.1	202.2	202.3	68.6	58.5	6.3	11.63	11.66	4.04	3.45	0.38	54.8	55.6	23.8	20.4	2.4	28.7	26.4	25.1	23.1	2.4
3	Denver	144	88	22,590,922	71.4	67.4	20.1	18.8	1.9	176.3	169.3	48.8	46.1	4.8	12.89	12.49	3.76	3.60	0.37	48.4	47.2	16.9	15.7	1.6	23.0	20.2	19.4	17.5	1.6
4	LosAngeles	691	246	167,612,776	55.4	53.1	23.9	19.4	1.1	156.4	149.9	64.6	51.3	2.6	4.09	3.96	1.72	1.39	0.07	47.0	45.1	19.9	15.9	0.8	8.3	8.0	12.1	11.3	0.7
5	Minneapolis	93	40	23,831,087	86.4	81.5	34.1	30.6	3.9	186.0	181.8	82.3	82.9	10.9	10.45	10.29	5.40	5.45	0.72	45.6	46.0	26.0	27.2	3.6	40.8	35.5	26.2	22.1	2.5
6	NYC	1,166	414	332,797,339	85.4	91.9	45.5	45.1	2.0	195.4	214.0	102.5	98.7	4.1	6.95	7.45	3.63	3.39	0.14	50.6	56.2	29.4	28.1	1.2	34.9	35.7	30.1	31.3	1.6
7	Philadelphia	173	73	54,432,024	82.8	80.9	39.4	33.9	3.8	217.3	215.6	108.2	95.1	11.1	8.06	7.70	4.90	3.97	0.42	62.3	62.5	34.4	30.3	3.6	20.5	18.5	23.1	18.8	1.7
8	Portland	133	71	18,841,143	65.9	66.3	24.5	22.7	2.3	178.3	182.6	68.4	63.6	6.4	5.37	5.52	2.29	2.27	0.24	52.2	54.0	22.0	20.6	2.1	13.6	12.3	14.5	13.9	1.5
9	Seattle	409	141	40,135,019	57.1	58.7	22.5	19.8	1.2	157.4	168.2	63.0	57.4	3.6	4.72	4.76	2.09	1.85	0.14	46.7	51.0	21.0	19.1	1.2	10.4	7.8	16.5	13.2	0.8
10	Washington	331	183	69,542,043	69.7	66.9	18.7	17.0	1.1	203.7	198.5	55.6	50.2	3.3	7.81	7.86	2.87	3.35	0.27	62.5	61.4	18.7	16.7	1.1	7.2	5.5	12.8	10.8	0.7
11	**ALL CITIES**	3,623	1,247	853,635,709	73.1	77.0	36.0	37.0	1.0	184.1	194.1	84.7	83.5	2.3	6.80	7.18	3.98	3.87	0.11	51.4	54.2	25.7	24.7	0.7	21.7	22.8	25.7	26.5	0.8
		median YearBuilt																											
Comparison		**LEED**	**nonLEED**		**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**
1	Boston	1984	1928		-14.2%	-11.7	-1.13	0.2575	10.3	-14.8%	-31.4	-1.05	0.2822	30.0	-6.5%	-0.41	-0.45	0.6530	0.91	-15.2%	-9.2	-0.92	0.3434	9.9	-11.5%	-2.5	-0.34	0.7521	7.4
2	Chicago	1983	1929		-15.3%	-12.6	-2.46	0.0100	5.1	-6.8%	-13.8	-0.94	0.3535	14.7	-5.8%	-0.68	-0.78	0.4276	0.87	-0.5%	-0.3	-0.05	0.9528	5.4	-46.6%	-12.3	-2.26	0.0215	5.4
3	Denver	1982	1981		-13.0%	-8.8	-1.85	0.0607	4.7	-11.4%	-19.3	-1.74	0.0826	11.1	-3.4%	-0.43	-0.52	0.6084	0.82	-10.2%	-4.8	-1.24	0.2183	3.9	-19.5%	-4.0	-0.86	0.3937	4.6
4	LosAngeles	1987	1981		-14.8%	-7.9	-1.38	0.1648	5.7	-15.3%	-23.0	-1.61	0.1050	14.3	-15.8%	-0.62	-1.59	0.1163	0.39	-15.7%	-7.1	-1.64	0.0976	4.3	-10.0%	-0.8	-0.21	0.8429	3.7
5	Minneapolis	1987	1934		-27.1%	-22.1	-2.09	0.0414	10.6	-16.4%	-29.7	-1.15	0.2066	25.9	-11.8%	-1.21	-0.74	0.4289	1.64	-6.8%	-3.1	-0.38	0.7187	8.3	-53.6%	-19.0	-2.29	0.0249	8.3
6	NYC	1959	1926		-4.7%	-4.3	-0.38	0.6940	11.4	-1.3%	-2.7	-0.11	0.9071	23.9	0.0%	0.00	0.00	0.9980	0.83	1.6%	0.9	0.13	0.8893	6.9	-14.7%	-5.2	-0.58	0.5244	9.0
7	Philadelphia	1981	1950		-9.2%	-7.4	-0.43	0.5922	17.1	-3.9%	-8.3	-0.17	0.8241	50.0	-8.2%	-0.63	-0.32	0.6717	1.97	-0.4%	-0.3	-0.02	0.9803	15.9	-38.9%	-7.2	-0.80	0.3565	9.0
8	Portland	NA	NA		-9.4%	-6.2	-1.01	0.3055	6.2	-11.9%	-21.8	-1.24	0.2020	17.6	-11.6%	-0.64	-1.05	0.2550	0.61	-13.5%	-7.3	-1.28	0.1994	5.7	8.8%	1.1	0.26	0.8035	4.1
9	Seattle	1998	1968		-11.6%	-6.8	-1.38	0.1612	4.9	-9.9%	-16.7	-1.22	0.2136	13.7	-6.5%	-0.31	-0.62	0.5271	0.49	-8.9%	-4.6	-1.04	0.2954	4.4	-29.3%	-2.3	-0.73	0.4489	3.1
10	Washington	1989	1977		-11.0%	-7.3	-3.38	0.0004	2.2	-9.7%	-19.3	-3.05	0.0027	6.3	-12.2%	-0.96	-1.96	0.0451	0.49	-9.0%	-5.5	-2.67	0.0077	2.1	-32.3%	-1.8	-1.35	0.1750	1.3
11	**ALL CITIES**	1984	1963		-12.3%	-9.5	-3.23	0.0019	2.9	-8.7%	-16.9	-2.52	0.0129	6.7	-8.2%	-0.59	-2.16	0.0304	0.27	-6.1%	-3.3	-1.62	0.1076	2.0	-27.2%	-6.2	-2.67	0.0108	2.3

All	City	N	Neff	Tot. Area	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm
1	Boston	258	89	58,849,951	78.4	79.5	35.5	30.1	2.7	192.7	205.5	91.7	83.4	7.7	5.9	6.3	2.7	2.5	0.24	52.8	58.4	29.6	27.6	2.6	25.6	21.1	26.2	21.4	1.9
2	Chicago	285	103	121,172,646	81.4	77.4	26.3	22.0	1.8	200.1	197.3	66.3	54.3	5.2	11.5	11.4	3.9	3.2	0.31	54.8	55.5	23.0	19.3	2.0	26.5	21.9	24.8	22.2	1.9
3	Denver	173	79	38,586,248	69.8	63.8	19.9	17.6	1.8	174.1	161.3	49.3	43.2	4.1	12.9	12.3	3.8	3.3	0.30	48.2	45.2	17.2	15.1	1.4	21.6	18.6	19.3	17.3	1.7
4	LosAngeles	714	241	185,407,356	55.1	52.3	23.6	18.9	1.0	155.7	147.7	63.9	49.7	2.5	4.1	3.9	1.7	1.4	0.07	46.8	44.4	19.7	15.4	0.8	8.3	7.9	12.0	11.1	0.7
5	Minneapolis	106	47	34,887,237	83.3	74.5	33.3	28.3	3.3	182.1	172.4	78.0	70.7	8.0	10.3	9.9	5.1	4.6	0.50	45.2	45.0	24.5	22.8	2.5	38.1	29.5	26.1	21.9	2.6
6	NYC	1,199	433	359,868,038	85.3	91.6	45.0	43.7	1.9	195.6	213.8	101.2	95.4	3.8	7.0	7.5	3.6	3.3	0.13	50.7	56.3	29.0	27.2	1.1	34.6	35.3	29.8	30.5	1.5
7	Philadelphia	180	77	59,840,555	82.4	80.3	38.7	32.5	3.4	216.9	214.8	106.3	91.2	10.2	8.0	7.6	4.8	3.8	0.40	62.4	62.5	33.8	29.1	3.3	20.0	17.8	22.8	18.1	1.6
8	Portland	151	73	24,702,118	64.9	64.9	23.5	20.9	1.9	175.9	177.4	65.4	58.5	5.5	5.3	5.4	2.2	2.1	0.20	51.5	52.3	21.0	19.0	1.9	13.4	12.5	14.2	13.3	1.3
9	Seattle	436	137	50,269,046	57.1	57.4	22.4	18.8	1.2	157.6	164.8	61.7	53.3	3.2	4.7	4.7	2.1	1.7	0.12	46.7	50.1	20.6	17.6	1.0	10.4	7.3	16.8	12.5	0.7
10	Washington	424	245	98,653,882	67.4	64.7	17.9	16.1	0.9	198.5	192.8	52.5	46.5	2.6	7.6	7.6	3.0	3.2	0.20	61.1	59.7	17.5	15.3	0.8	6.3	5.0	12.0	10.1	0.5
11	**ALL CITIES**	3,926	1,363	1,032,237,077	72.4	75.0	35.1	34.9	0.9	183.4	190.9	82.3	78.5	2.0	6.9	7.3	4.0	3.8	0.10	51.4	53.7	25.0	23.3	0.6	20.9	21.4	25.2	25.3	0.7

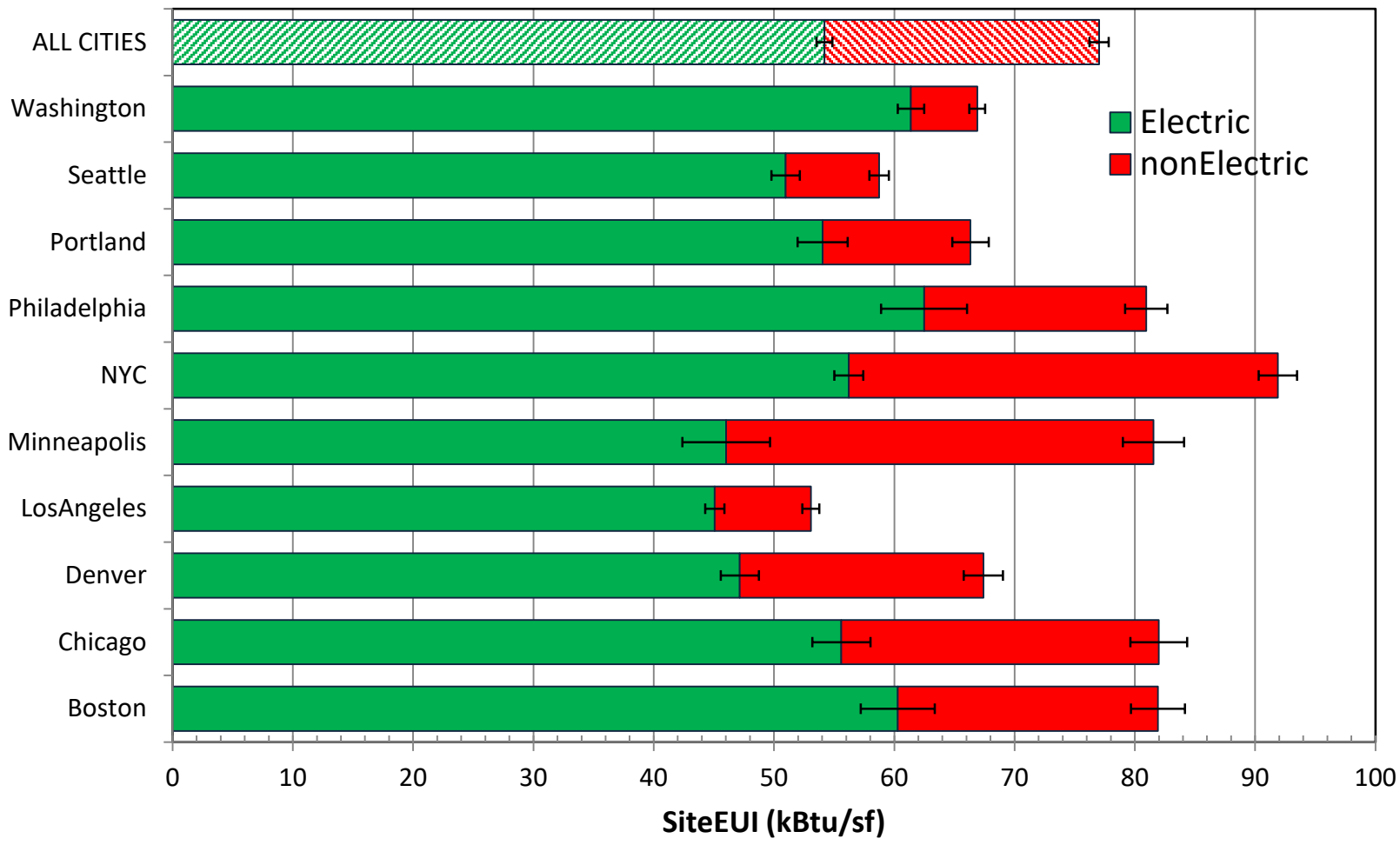
Office - LEED savings relative to nonLEED																			
	LEED		Base (nonLEED)		SiteEUI			ElectricEUI			nonElectricEUI			SourceEUI			GHGI (kg/ft^2)		
City	N	A ($10^6 ft^2$)	N	A ($10^6 ft^2$)	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p
Boston	19	12.3	239	46.6	82	14%	0.258	60	15%	0.343	22	12%	0.752	212	15%	0.282	6.4	6%	0.653
Chicago	41	43.9	244	77.3	82	15%	0.010	56	1%	0.953	26	47%	0.022	202	7%	0.354	11.7	6%	0.428
Denver	29	16.0	144	22.6	67	13%	0.061	47	10%	0.218	20	20%	0.394	169	11%	0.083	12.5	3%	0.608
LosAngeles	23	17.8	691	167.6	53	15%	0.165	45	16%	0.098	8	10%	0.843	150	15%	0.105	4.0	16%	0.116
Minneapolis	13	11.1	93	23.8	82	27%	0.041	46	7%	0.719	36	54%	0.025	182	16%	0.207	10.3	12%	0.429
NYC	33	27.1	1166	332.8	92	5%	0.694	56	-2%	0.889	36	15%	0.524	214	1%	0.907	7.5	0%	0.998
Philadelphia	7	5.4	173	54.4	81	9%	0.592	62	0%	0.980	18	39%	0.357	216	4%	0.824	7.7	8%	0.672
Portland	18	5.9	133	18.8	66	9%	0.306	54	14%	0.199	12	-9%	0.804	183	12%	0.202	5.5	12%	0.255
Seattle	27	10.1	409	40.1	59	12%	0.161	51	9%	0.295	8	29%	0.449	168	10%	0.214	4.8	6%	0.527
Washington	93	29.1	331	69.5	67	11%	0.000	61	9%	0.008	6	32%	0.175	199	10%	0.003	7.9	12%	0.045
Aggregate	**303**	**178.6**	**3623**	**853.6**	**77**	**12%**	**0.002**	**54**	**6%**	**0.108**	**23**	**27%**	**0.011**	**194**	**9%**	**0.013**	**7.2**	**8%**	**0.030**

													LEED savings "delta"									
			SiteEUI		ElectricEUI		nElectricEUI		SourceEUI		GHGI		SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	$kBtu/ft^2$	RSE	$kBtu/ft^2$	RSE	$kBtu/ft^2$	RSE	$kBtu/ft^2$	RSE	kg/ft^2	RSE	$kBtu/ft^2$	p	$kBtu/ft^2$	p	$kBtu/ft^2$	p	$kBtu/ft^2$	p	kg/ft^2	p
Boston	258	58.8	79	3.4%	58	4.4%	21	9.2%	205	3.7%	6.3	3.9%										
nonLEED	239	46.6	82	3.9%	60	5.1%	22	10.4%	212	4.3%	6.4	4.0%	11.7	0.258	9.2	0.343	2.5	0.752	31	0.282	0.4	0.653
LEED	19	12.3	70	5.3%	51	6.3%	19	17.7%	181	5.2%	6.0	10.1%	14%		15%		12%		15%		6%	
Chicago	285	121.2	77	2.3%	55	3.5%	22	8.7%	197	2.7%	11.4	2.7%										
nonLEED	244	77.3	82	2.5%	56	4.3%	26	8.9%	202	3.1%	11.7	3.3%	12.6	0.010	0.3	0.953	12.3	0.022	14	0.354	0.7	0.428
LEED	41	43.9	69	3.6%	55	5.8%	14	23.9%	188	4.3%	11.0	4.5%	15%		1%		47%		7%		6%	
Denver	173	38.6	64	2.7%	45	3.2%	19	9.3%	161	2.5%	12.3	2.5%										
nonLEED	144	22.6	67	2.8%	47	3.3%	20	8.1%	169	2.8%	12.5	2.9%	8.8	0.061	4.8	0.218	4.0	0.394	19	0.083	0.4	0.608
LEED	29	16.0	59	4.8%	42	6.0%	16	20.7%	150	4.4%	12.1	4.3%	13%		10%		20%		11%		3%	
LosAngeles	714	185.4	52	2.0%	44	1.7%	8	8.7%	148	1.7%	3.9	1.8%										
nonLEED	691	167.6	53	2.0%	45	1.8%	8	8.9%	150	1.7%	4.0	1.8%	7.9	0.165	7.1	0.098	0.8	0.843	23	0.105	0.6	0.116
LEED	23	17.8	45	7.4%	38	4.8%	7	36.8%	127	5.1%	3.3	6.5%	15%		16%		10%		15%		16%	
Minneapolis	106	34.9	75	4.5%	45	5.6%	38	8.9%	172	4.6%	9.9	5.1%										
nonLEED	93	23.8	82	4.7%	46	7.9%	36	7.2%	182	6.0%	10.3	7.0%	22.1	0.041	3.1	0.719	19.0	0.025	30	0.207	1.2	0.429
LEED	13	11.1	59	6.8%	43	4.0%	16	25.8%	152	3.8%	9.1	3.7%	27%		7%		54%		16%		12%	
NYC	1,199	359.9	92	2.1%	56	2.0%	35	4.3%	214	1.8%	7.5	1.8%										
nonLEED	1,166	332.8	92	2.2%	56	2.1%	36	4.5%	214	1.9%	7.5	1.9%	4.3	0.694	-0.9	0.889	5.2	0.524	3	0.907	0.0	0.998
LEED	33	27.1	88	4.8%	57	3.9%	30	12.8%	211	3.6%	7.4	4.5%	5%		-2%		15%		1%		0%	
Philadelphia	180	59.8	80	4.2%	62	5.3%	18	9.1%	215	4.7%	7.6	5.2%										
nonLEED	173	54.4	81	4.6%	62	5.7%	18	9.5%	216	5.2%	7.7	5.5%	7.4	0.592	0.3	0.980	7.2	0.357	8	0.824	0.6	0.672
LEED	7	5.4	74	6.0%	62	7.4%	11	19.0%	207	6.8%	7.1	13.4%	9%		0%		39%		4%		8%	
Portland	151	24.7	65	3.0%	52	3.5%	13	10.6%	177	3.1%	5.4	3.6%										
nonLEED	133	18.8	66	3.5%	54	3.9%	12	12.4%	183	3.5%	5.5	4.3%	6.2	0.306	7.3	0.199	-1.1	0.804	22	0.202	0.6	0.255
LEED	18	5.9	60	5.6%	47	6.8%	13	21.5%	161	5.7%	4.9	5.3%	9%		14%		-9%		12%		12%	
Seattle	436	50.3	57	2.1%	50	2.1%	7	10.1%	165	1.9%	4.7	2.6%										
nonLEED	409	40.1	59	2.1%	51	2.3%	8	10.4%	168	2.1%	4.8	2.9%	6.8	0.161	4.6	0.295	2.3	0.449	17	0.214	0.3	0.527
LEED	27	10.1	52	4.9%	46	3.5%	5	29.6%	152	3.7%	4.5	5.8%	12%		9%		29%		10%		6%	
Washington	424	98.7	65	1.4%	60	1.4%	5	10.8%	193	1.3%	7.6	2.7%										
nonLEED	331	69.5	67	1.7%	61	1.8%	6	11.9%	199	1.7%	7.9	3.4%	7.3	0.000	5.5	0.008	1.8	0.175	19	0.003	1.0	0.045
LEED	93	29.1	60	2.4%	56	2.0%	4	26.8%	179	2.0%	6.9	3.7%	11%		9%		32%		10%		12%	
Aggregate	3,926	1032.2	75	1.3%	54	1.1%	21	3.4%	191	1.0%	7.3	1.4%										
nonLEED	3,623	853.6	77	1.4%	54	1.2%	23	3.5%	194	1.2%	7.2	1.5%	9.5	0.002	3.3	0.108	6.2	0.011	17	0.013	0.6	0.030
LEED	303	178.6	65	2.4%	51	2.2%	14	9.5%	176	2.0%	8.0	3.4%	12%		6%		27%		9%		8%	

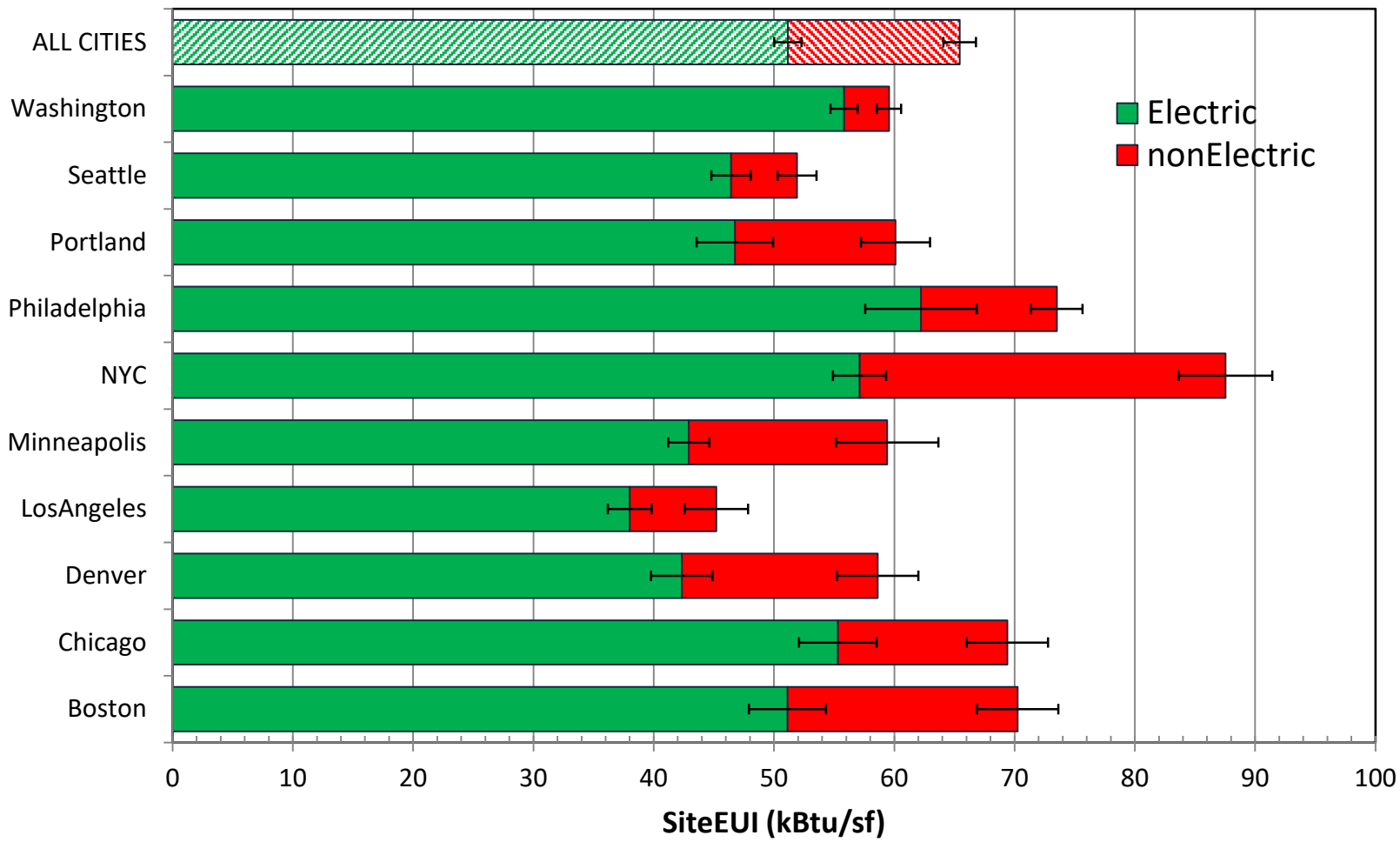
	ALL		nonLEED											
					SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE
Boston	258	58.8	239	46.6	82	4%	60	5%	22	10%	212	4%	6.4	4%
Chicago	285	121.2	244	77.3	82	3%	56	4%	26	9%	202	3%	11.7	3%
Denver	173	38.6	144	22.6	67	3%	47	3%	20	8%	169	3%	12.5	3%
LosAngeles	714	185.4	691	167.6	53	2%	45	2%	8.0	9%	150	2%	4.0	2%
Minneapolis	106	34.9	93	23.8	82	5%	46	8%	36	7%	182	6%	10.3	7%
NYC	1,199	359.9	1,166	332.8	92	2%	56	2%	36	4%	214	2%	7.5	2%
Philadelphia	180	59.8	173	54.4	81	5%	62	6%	18	9%	216	5%	7.7	5%
Portland	151	24.7	133	18.8	66	3%	54	4%	12	12%	183	4%	5.5	4%
Seattle	436	50.3	409	40.1	59	2%	51	2%	7.8	10%	168	2%	4.8	3%
Washington	424	98.7	331	69.5	67	2%	61	2%	5.5	12%	199	2%	7.9	3%
Aggregate	3,926	1,032.2	3,623	853.6	77	1%	54.2	1%	22.8	4%	194	1%	7.2	2%

		LEED		LEED savings "delta"									
City		N	A (Mft^2)	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston		19	12.3	11.7	0.258	9.2	0.343	2.5	0.752	31	0.282	0.4	0.653
Chicago		41	43.9	12.6	0.010	0.3	0.953	12.3	0.022	14	0.354	0.7	0.428
Denver		29	16.0	8.8	0.061	4.8	0.218	4.0	0.394	19	0.083	0.4	0.608
LosAngeles		23	17.8	7.9	0.165	7.1	0.098	0.8	0.843	23	0.105	0.6	0.116
Minneapolis		13	11.1	22.1	0.041	3.1	0.719	19.0	0.025	30	0.207	1.2	0.429
NYC		33	27.1	4.3	0.694	-0.9	0.889	5.2	0.524	3	0.907	0.0	0.998
Philadelphia		7	5.4	7.4	0.592	0.3	0.980	7.2	0.357	8	0.824	0.6	0.672
Portland		18	5.9	6.2	0.306	7.3	0.199	-1.1	0.804	22	0.202	0.6	0.255
Seattle		27	10.1	6.8	0.161	4.6	0.295	2.3	0.449	17	0.214	0.3	0.527
Washington		93	29.1	7.3	0.000	5.5	0.008	1.8	0.175	19	0.003	1.0	0.045
Aggregate		303	178.6	9.5	0.002	3.3	0.108	6.2	0.0108	17	0.013	0.6	0.030

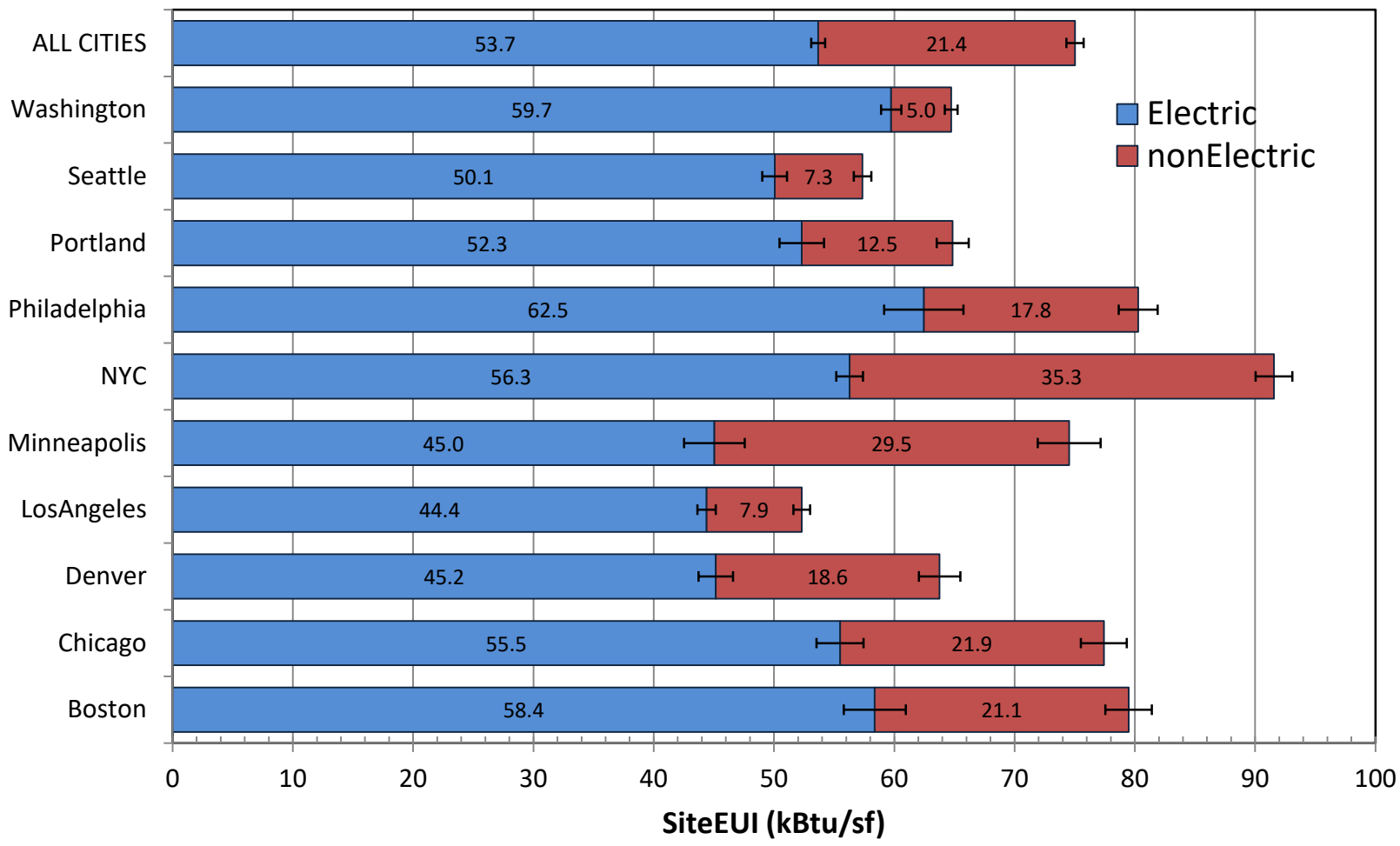
	LEED		nonLEED										LEED savings "delta"									
					SiteEUI		ElectricEUI		nElectricEUI		SourceEUI		GHGI		SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston	19	12.3	239	46.6	82	4%	60	5%	22	10%	212	4%	6.4	4%	11.7	0.258	9.2	0.343	2.5	0.752	31	0.2822	0.4	0.653
Chicago	41	43.9	244	77.3	82	3%	56	4%	26	9%	202	3%	11.7	3%	12.6	0.010	0.3	0.953	12.3	0.022	14	0.3535	0.7	0.428
Denver	29	16.0	144	22.6	67	3%	47	3%	20	8%	169	3%	12.5	3%	8.8	0.061	4.8	0.218	4.0	0.394	19	0.0826	0.4	0.608
LosAngeles	23	17.8	691	167.6	53	2%	45	2%	8.0	9%	150	2%	4.0	2%	7.9	0.165	7.1	0.098	0.8	0.843	23	0.1050	0.6	0.116
Minneapolis	13	11.1	93	23.8	82	5%	46	8%	36	7%	182	6%	10.3	7%	22.1	0.041	3.1	0.719	19.0	0.025	30	0.2066	1.2	0.429
NYC	33	27.1	1,166	332.8	92	2%	56	2%	36	4%	214	2%	7.5	2%	4.3	0.694	-0.9	0.889	5.2	0.524	3	0.9071	0.0	0.998
Philadelphia	7	5.4	173	54.4	81	5%	62	6%	18	9%	216	5%	7.7	5%	7.4	0.592	0.3	0.980	7.2	0.357	8	0.8241	0.6	0.672
Portland	18	5.9	133	18.8	66	3%	54	4%	12	12%	183	4%	5.5	4%	6.2	0.306	7.3	0.199	-1.1	0.804	22	0.2020	0.6	0.255
Seattle	27	10.1	409	40.1	59	2%	51	2%	7.8	10%	168	2%	4.8	3%	6.8	0.161	4.6	0.295	2.3	0.449	17	0.2136	0.3	0.527
Washington	93	29.1	331	69.5	67	2%	61	2%	5.5	12%	199	2%	7.9	3%	7.3	0.000	5.5	0.008	1.8	0.175	19	0.0027	1.0	0.045
Aggregate	303	178.6	3,623	853.6	77	1%	54.2	1%	22.8	4%	194	1%	7.2	2%	9.5	0.002	3.3	0.108	6.2	0.011	17	0.013	0.6	0.030

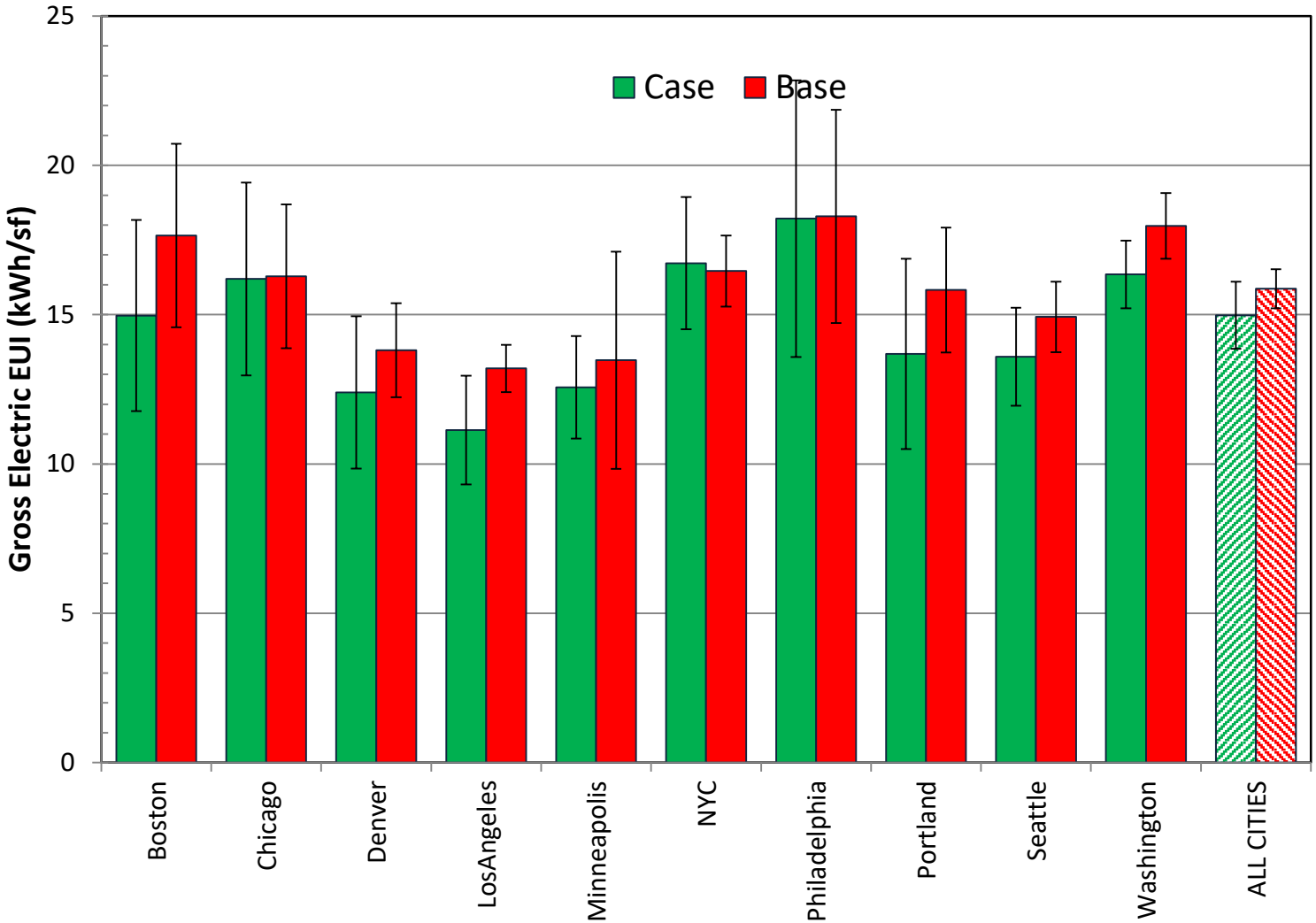


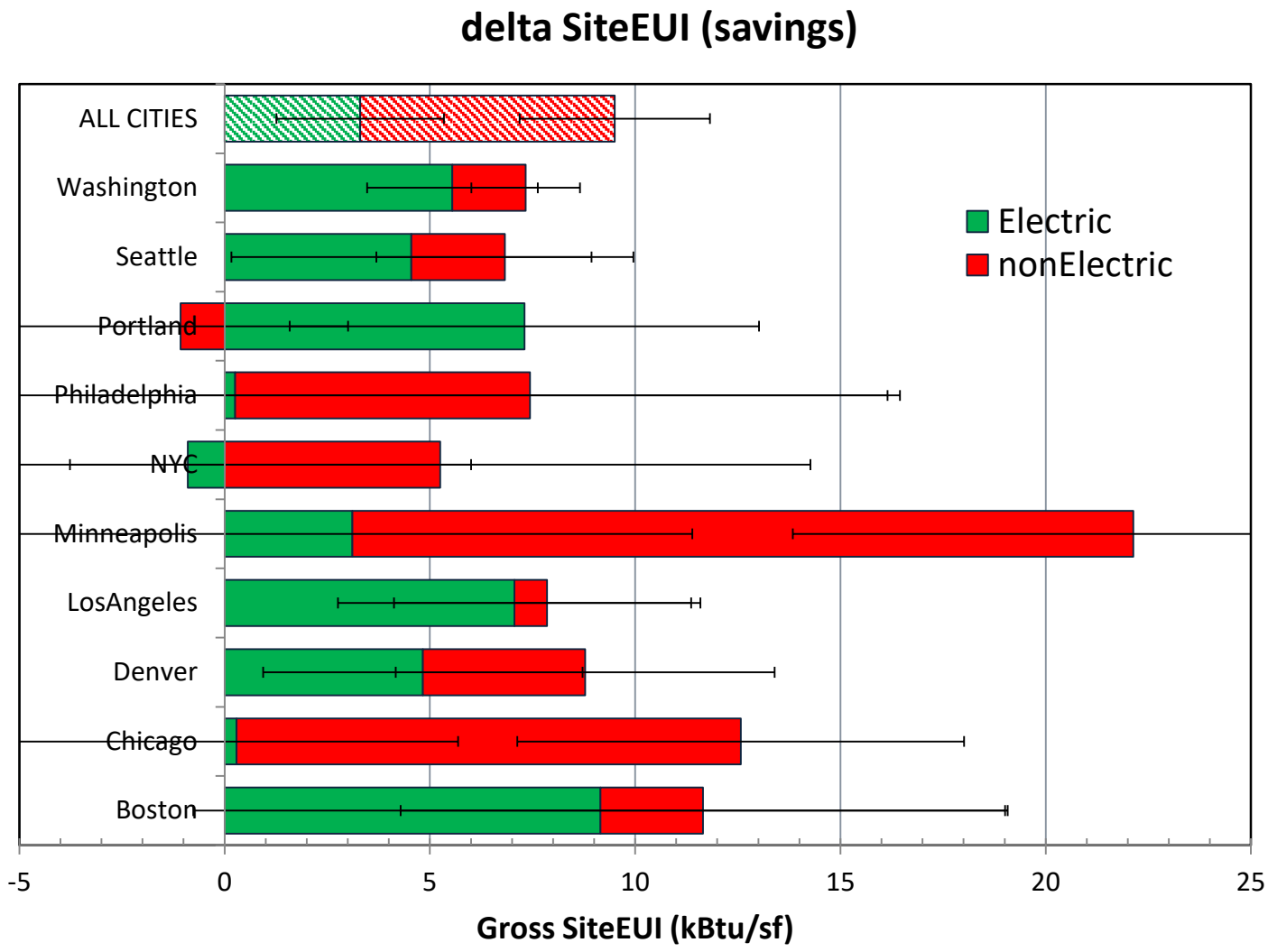
nonLEED Office

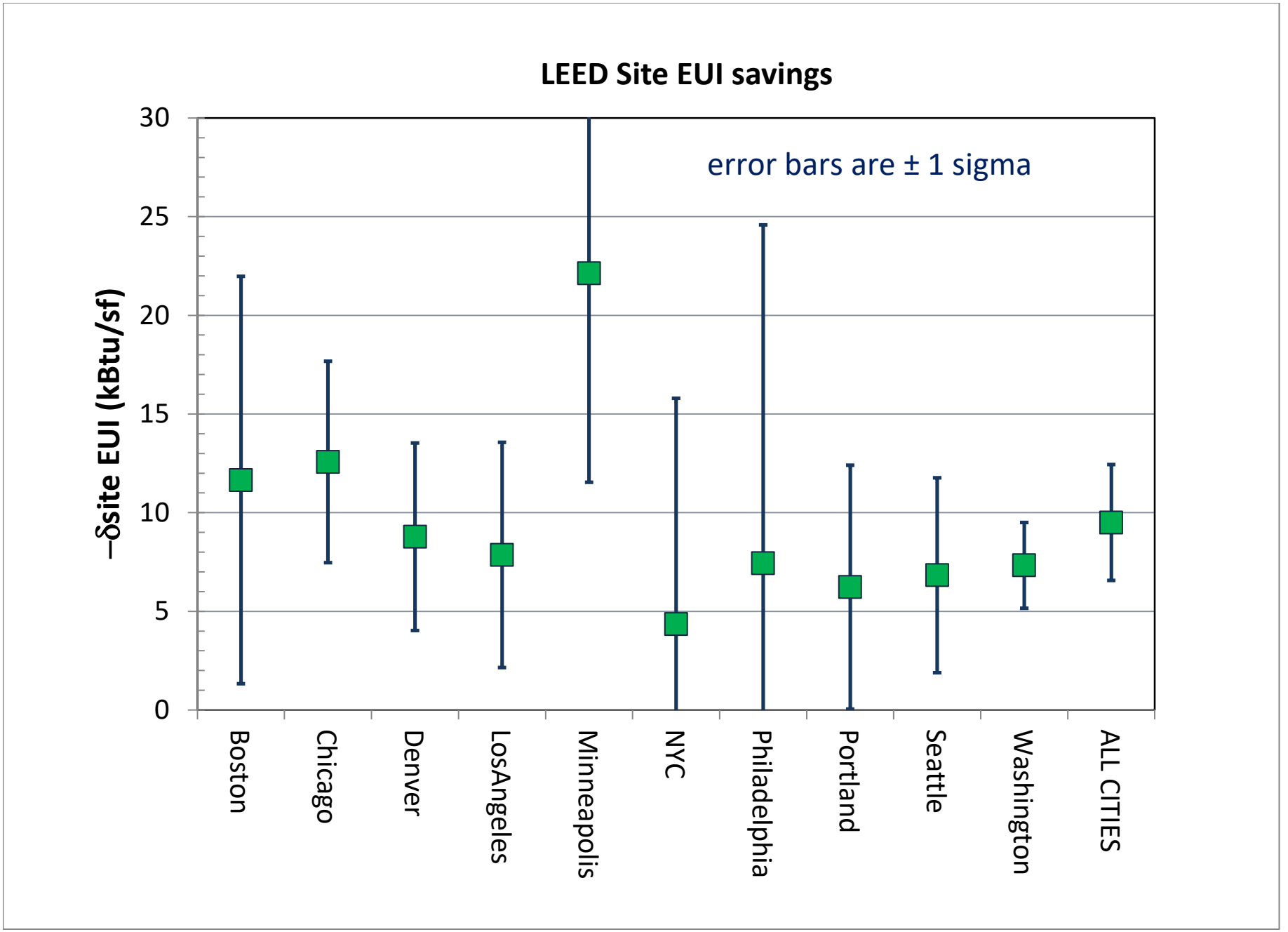

Gross SiteEUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
Electric
nonElectric
0
10
20
30
40
50
60
70
80
90
100
SiteEUI (kBtu/sf)

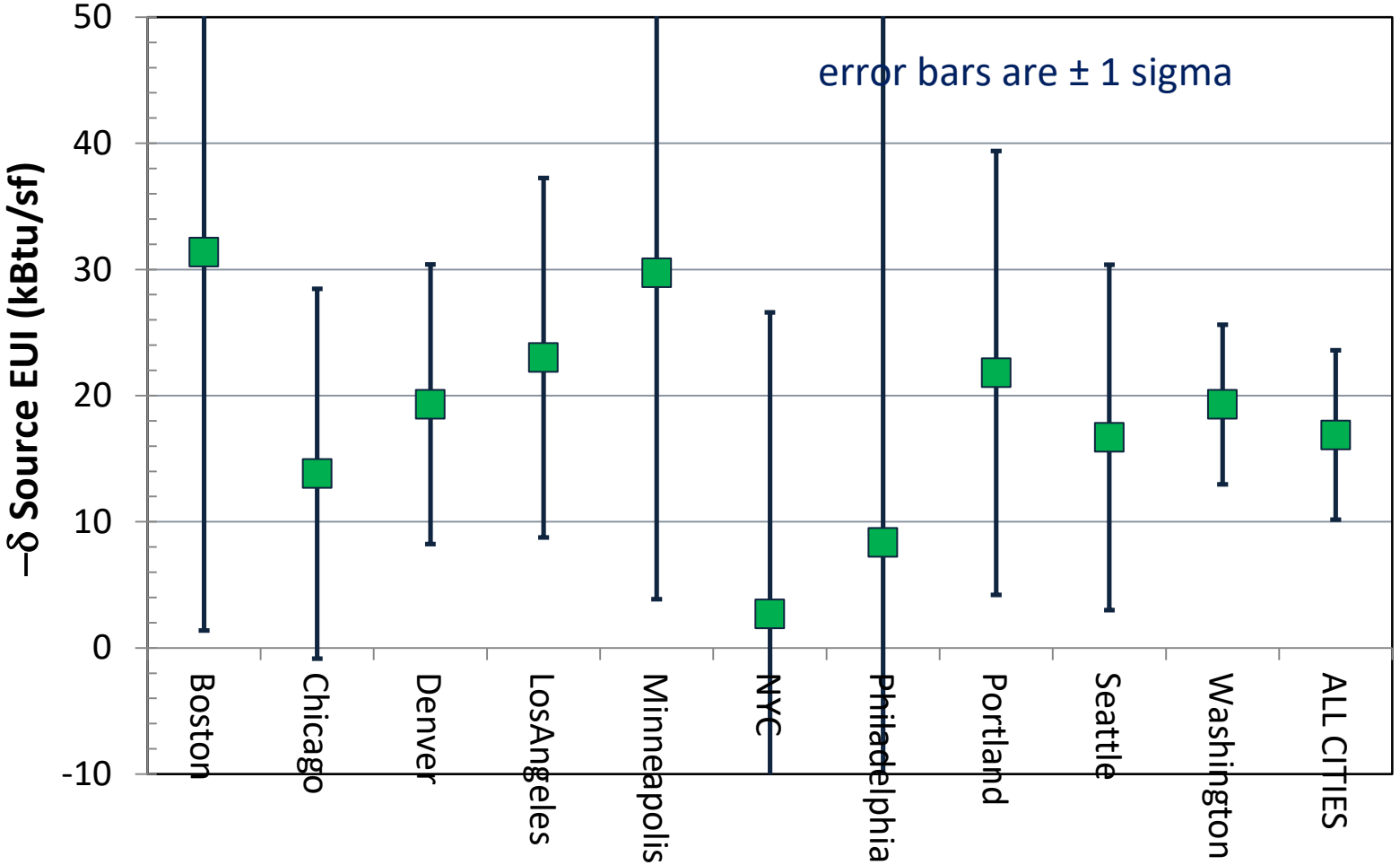
LEED Office

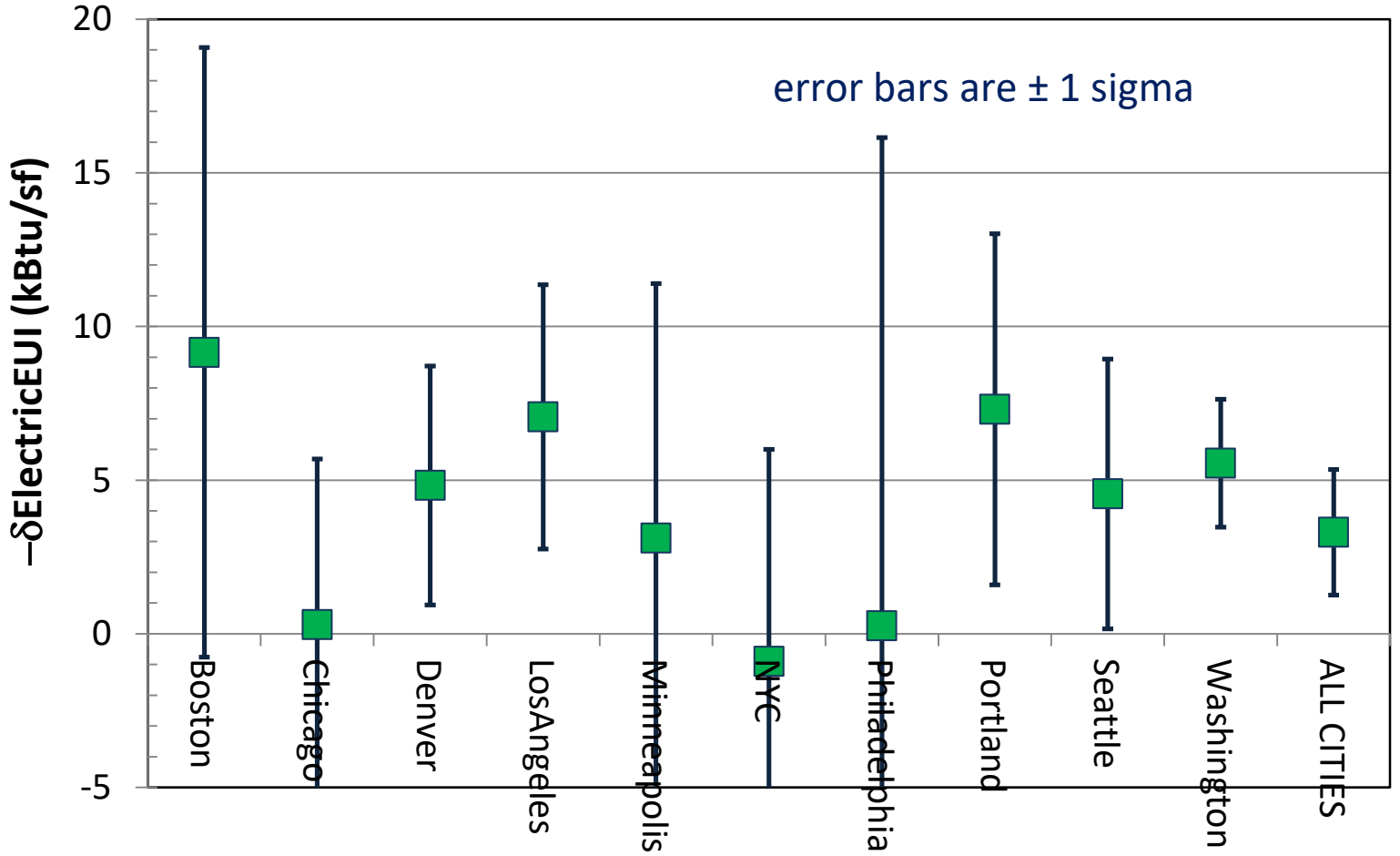

Gross SiteEUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
53.7
21.4
59.7
5.0
50.1
7.3
52.3
12.5
62.5
17.8
56.3
35.3
45.0
29.5
44.4
7.9
45.2
18.6
55.5
21.9
58.4
21.1
Electric
nonElectric
0
10
20
30
40
50
60
70
80
90
100
SiteEUI (kBtu/sf)

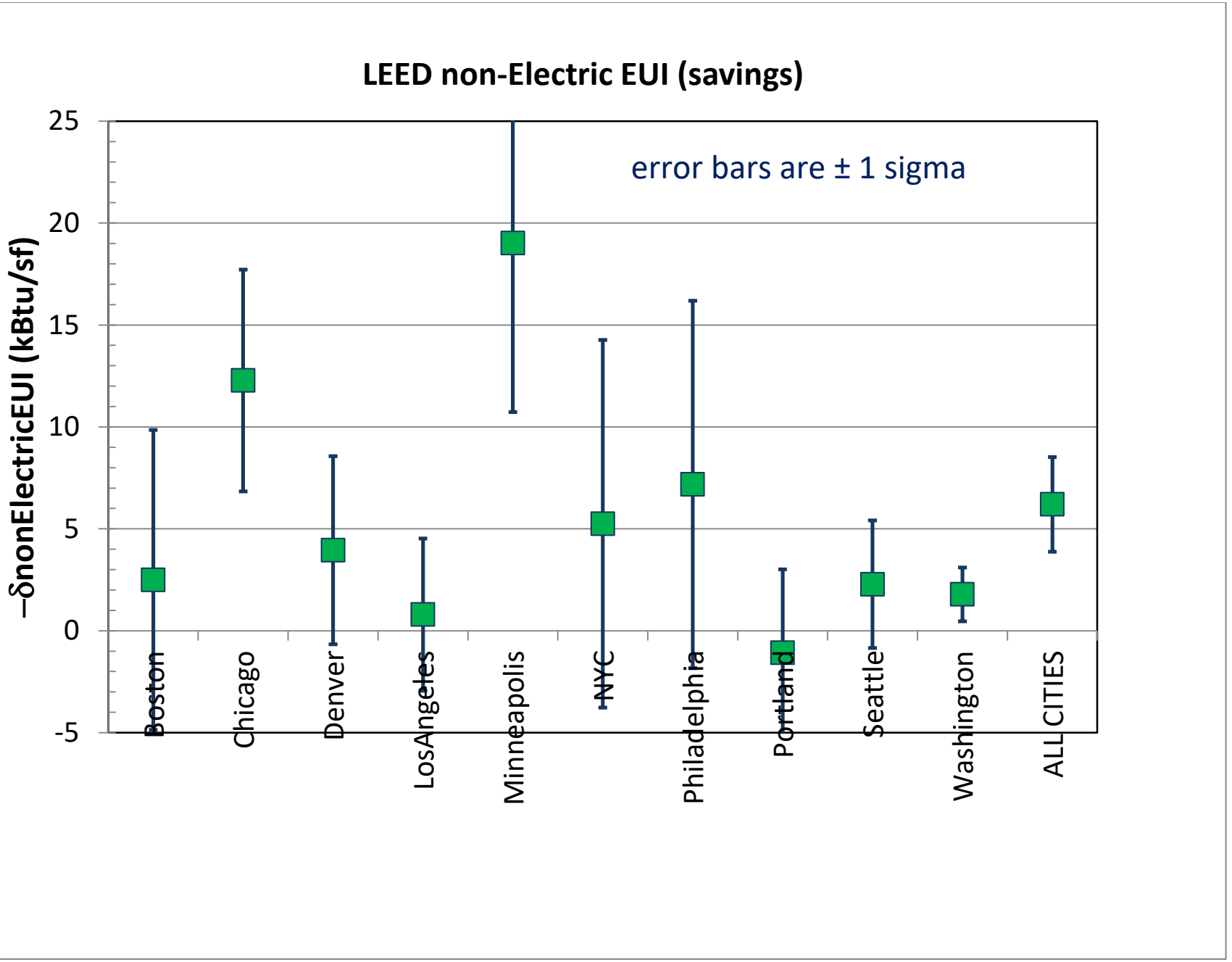

Electric Energy Use
Gross Electric EUI (kWh/sf)
25
20
15
10
5
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

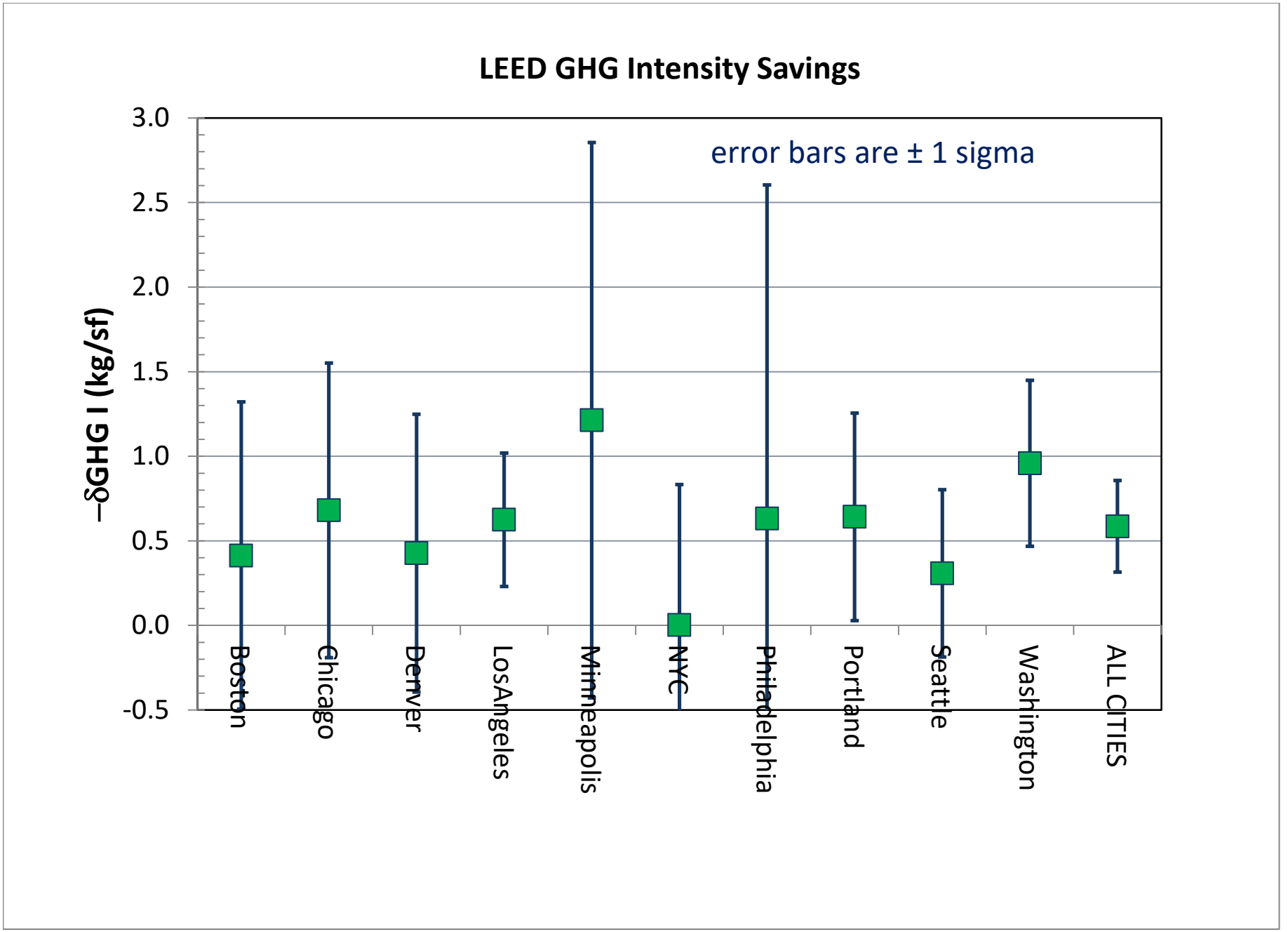

delta SiteEUI (savings)
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
Electric
nonElectric
-5
0
5
10
15
20
25
Gross SiteEUI (kBtu/sf)

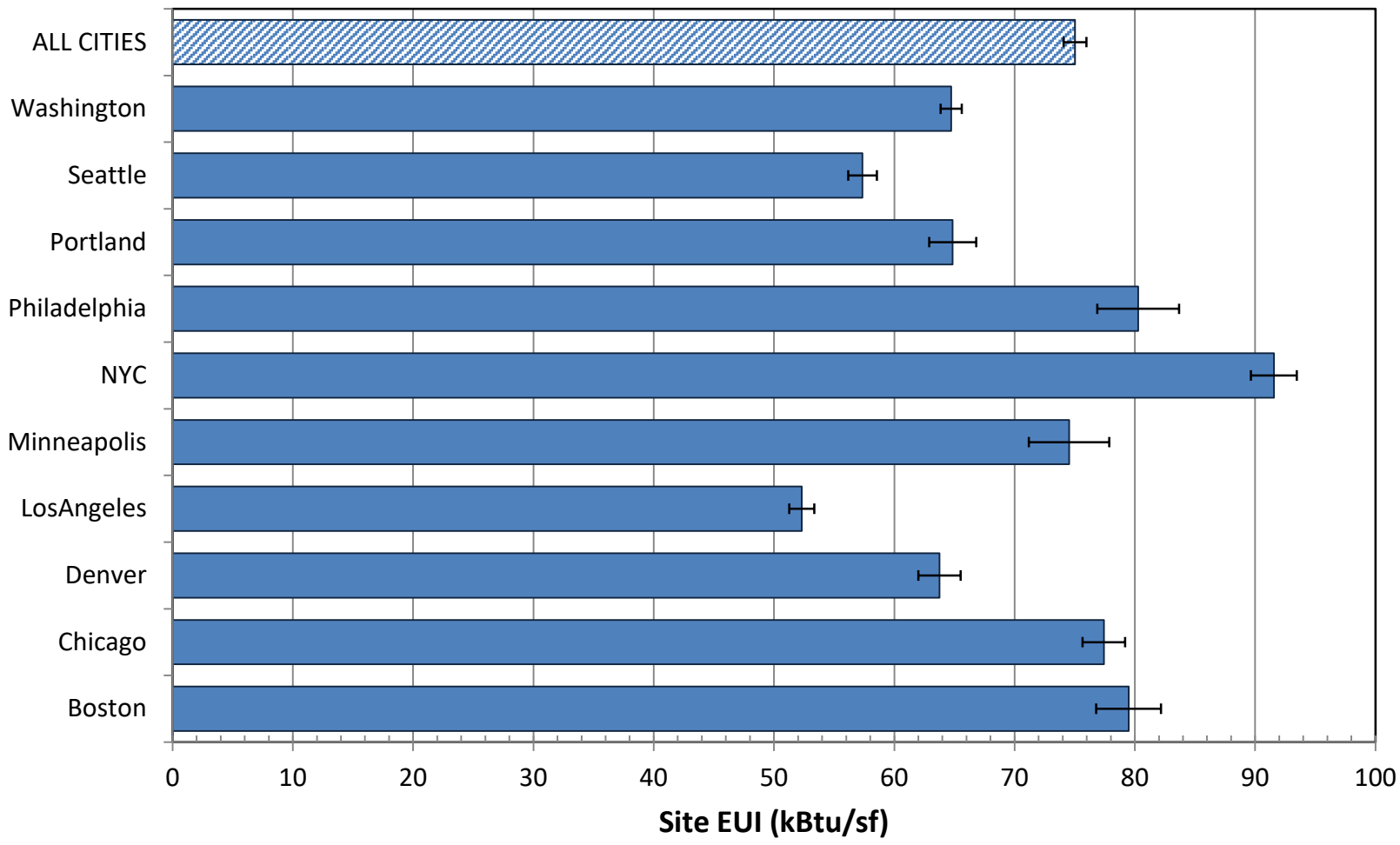

LEED Site EUI savings
error bars are ± 1 sigma
–δsite EUI (kBtu/sf)
30
25
20
15
10
5
0
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

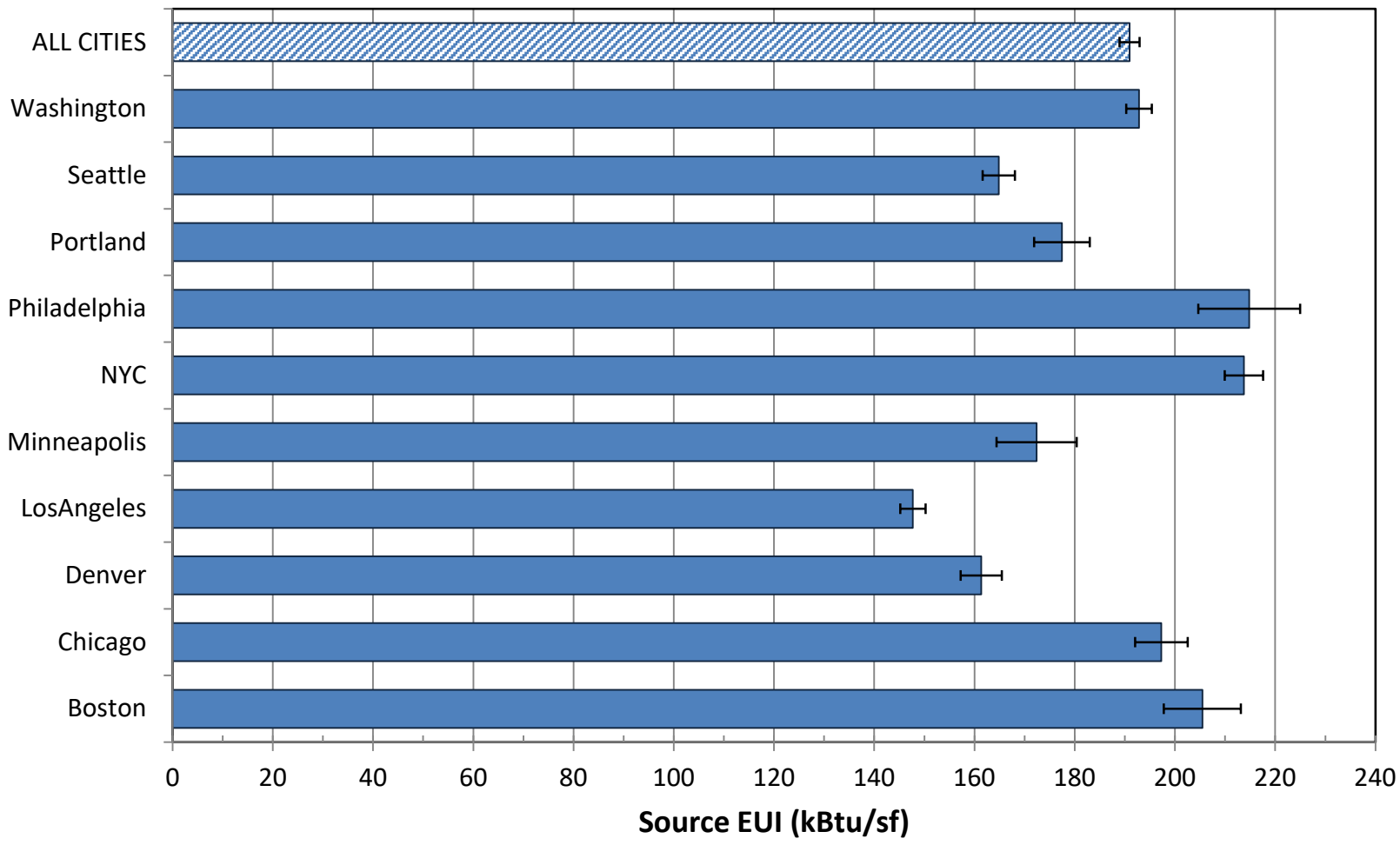

LEED Source EUI Savings
error bars are ± 1 sigma
–δ Source EUI (kBtu/sf)
50
40
30
20
10
0
-10
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

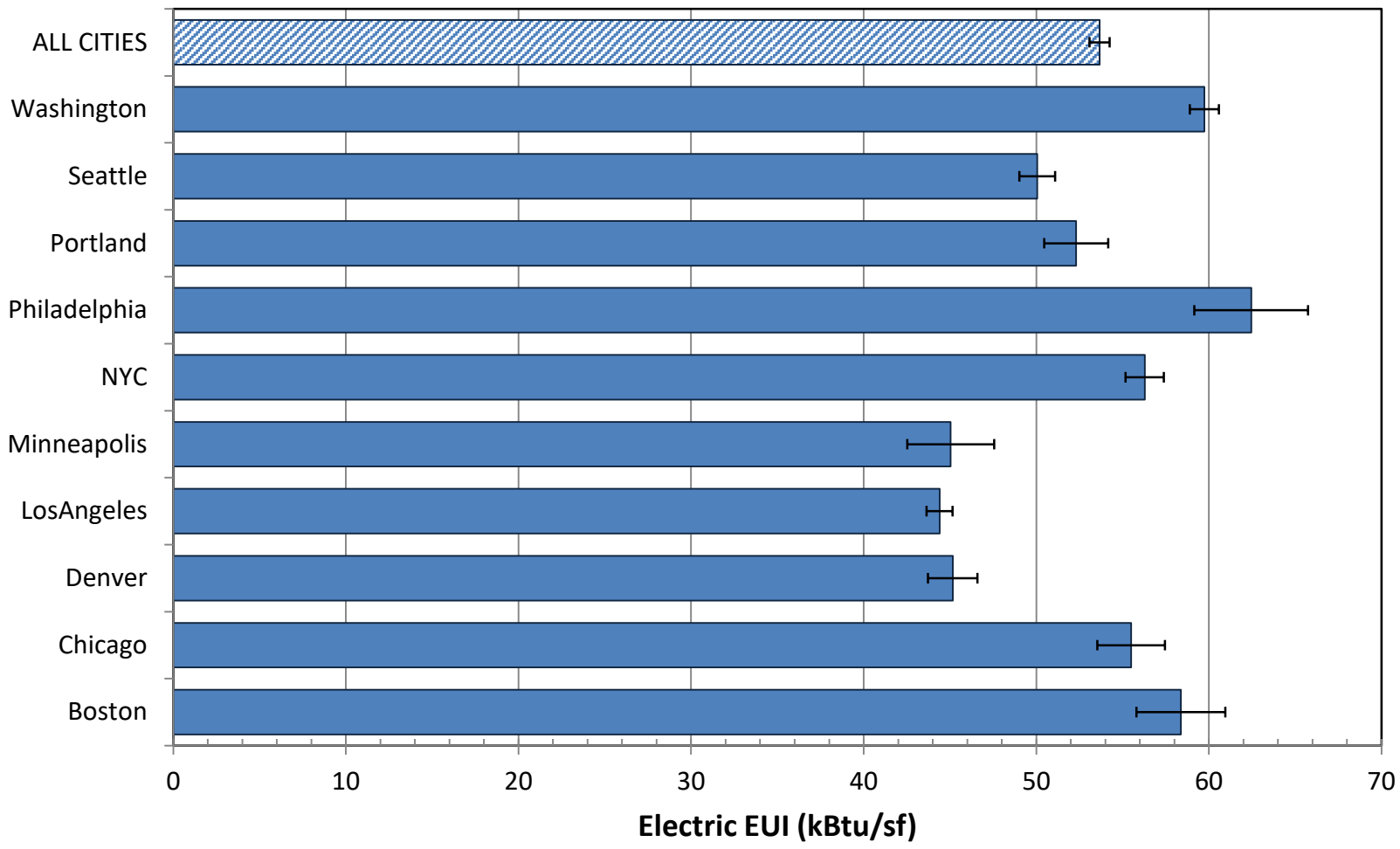

LEED Electric EUI (savings)
error bars are ± 1 sigma
–δElectricEUI (kBtu/sf)
20
15
10
5
0
-5
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

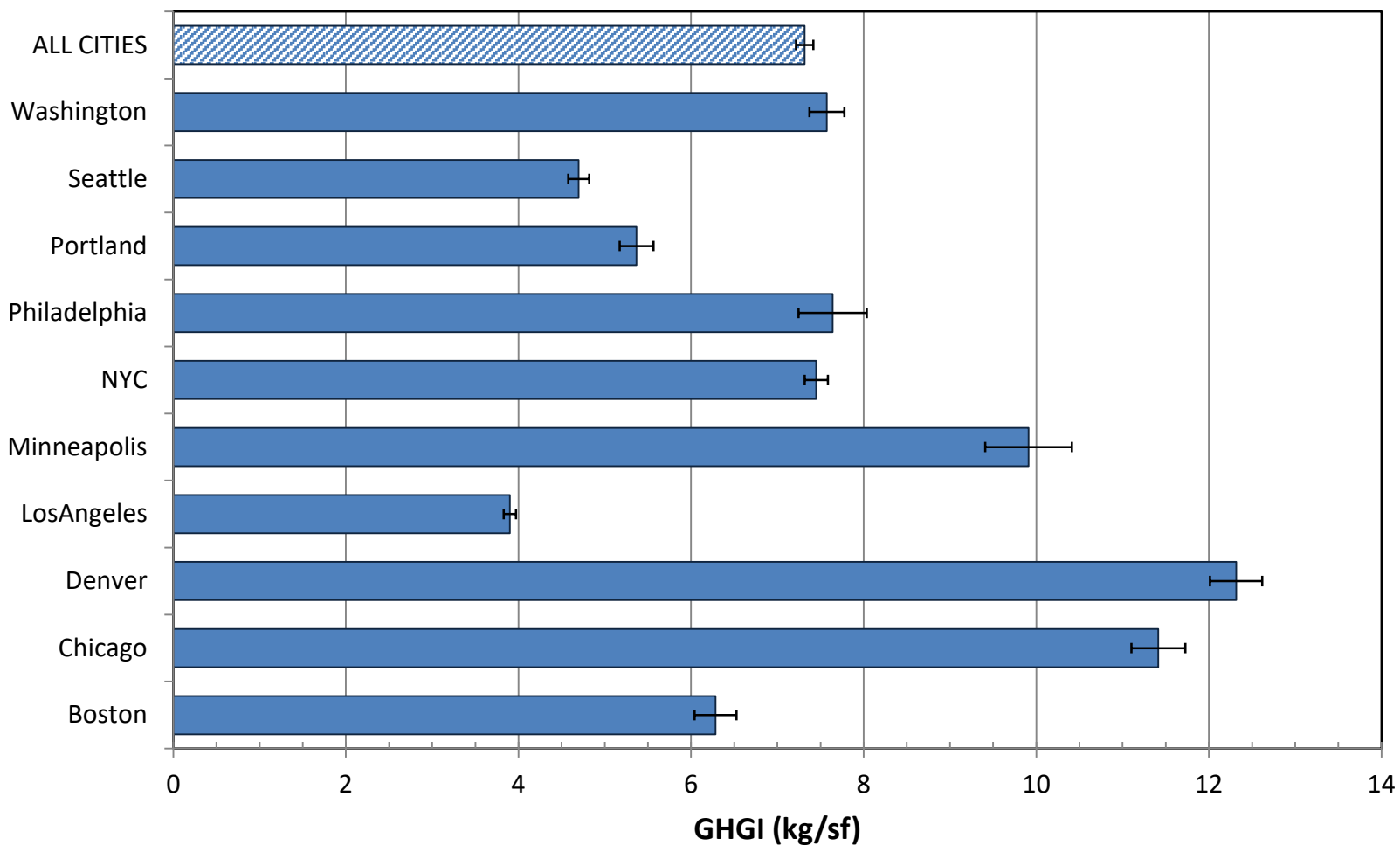

LEED non-Electric EUI (savings)
–δnonElectricEUI (kBtu/sf)
25
20
15
10
5
0
-5
error bars are ± 1 sigma
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

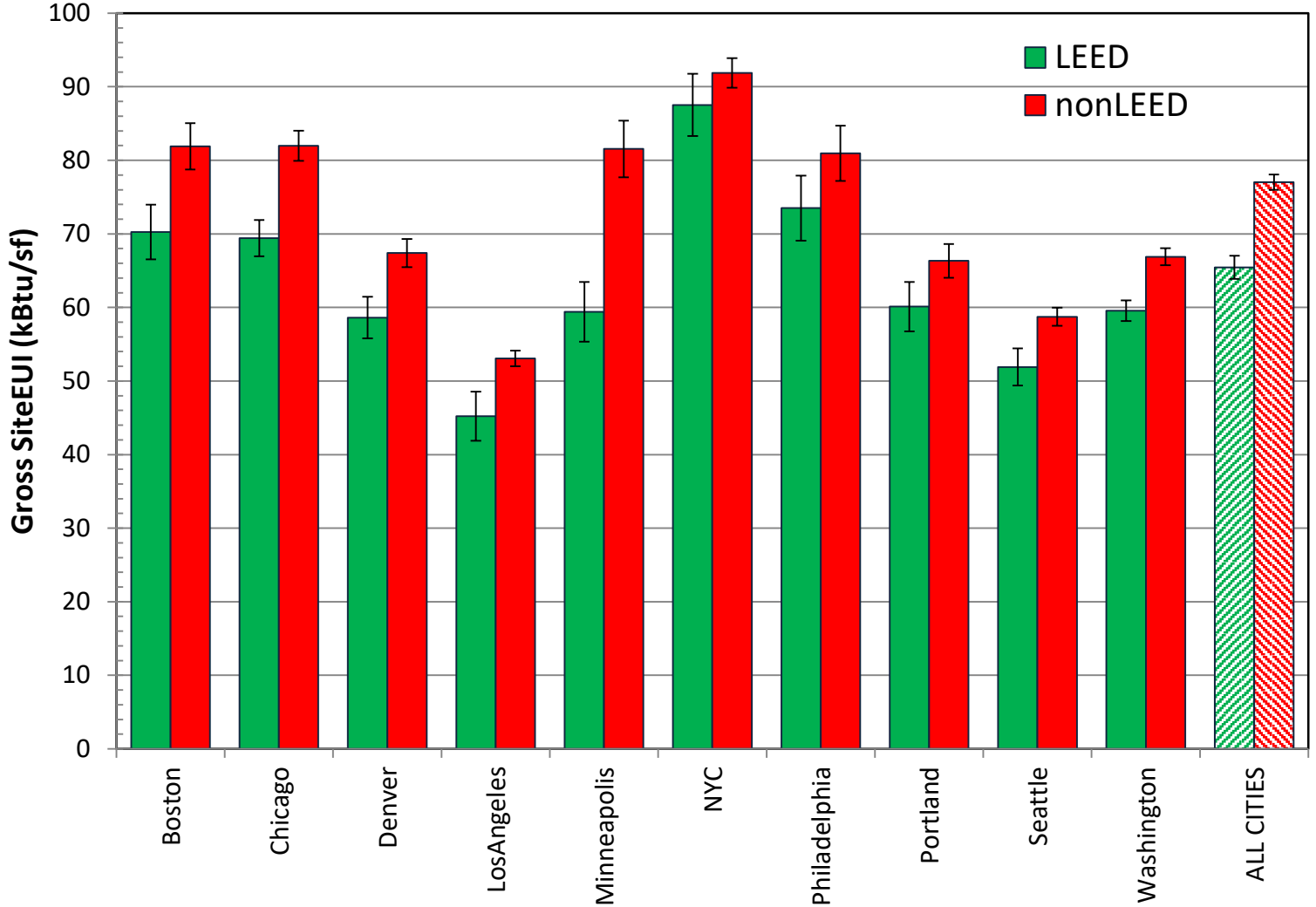

LEED GHG Intensity Savings
error bars are ± 1 sigma
−δGHG I (kg/sf)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

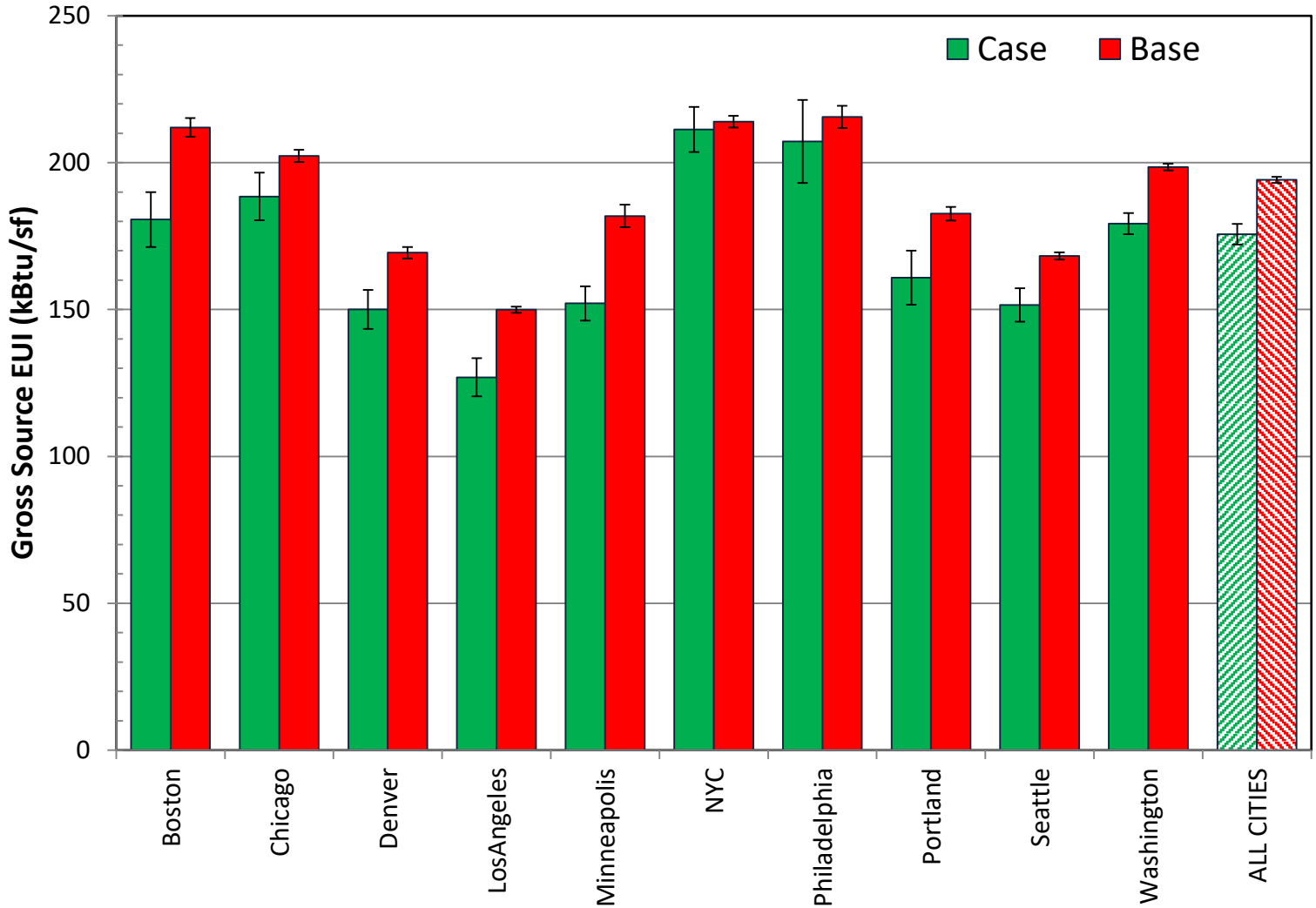

Gross Site EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
10
20
30
40
50
60
70
80
90
100
Site EUI (kBtu/sf)

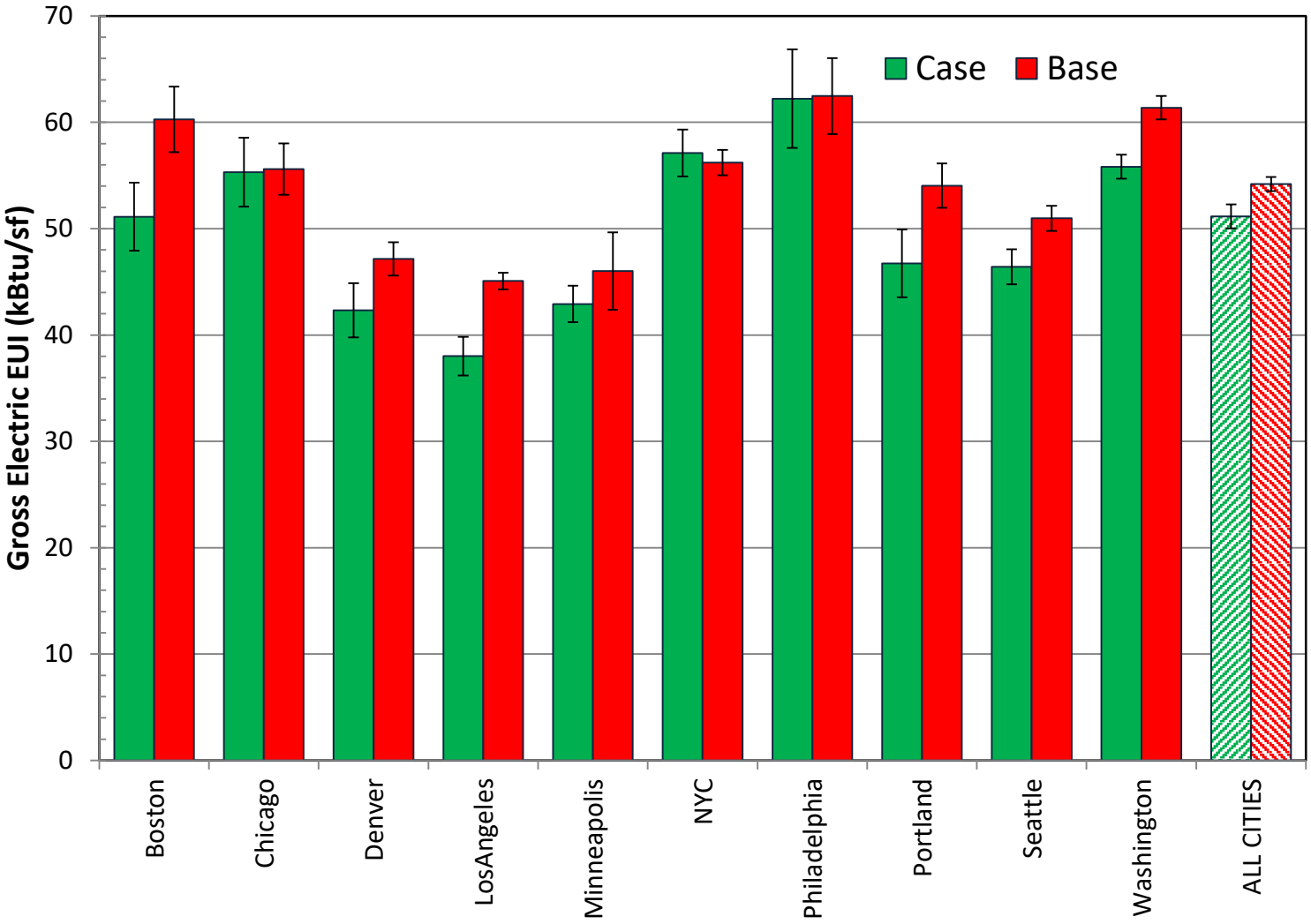

Gross Source EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
20
40
60
80
100
120
140
160
180
200
220
240
Source EUI (kBtu/sf)

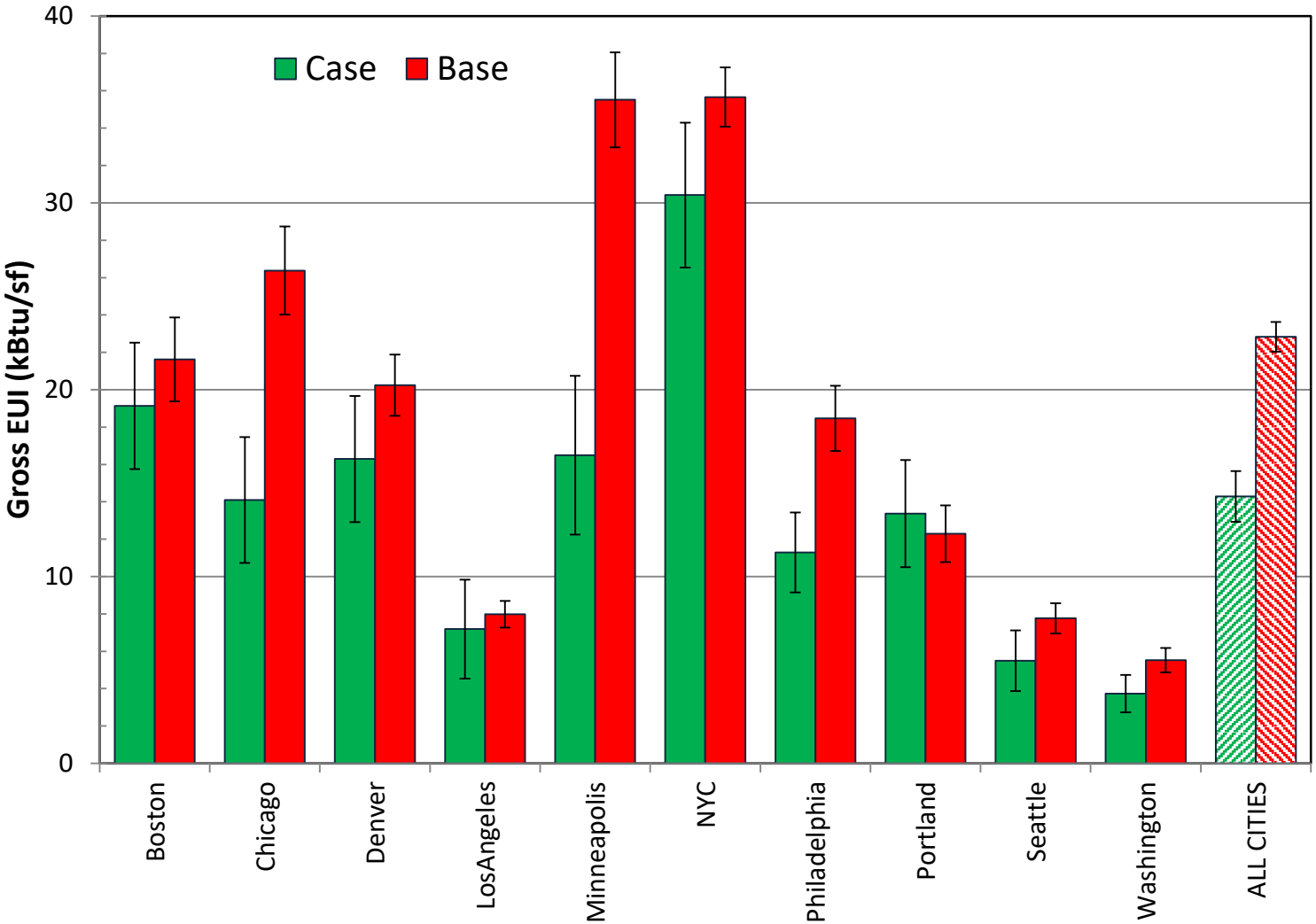

Gross Electric EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
10
20
30
40
50
60
70
Electric EUI (kBtu/sf)

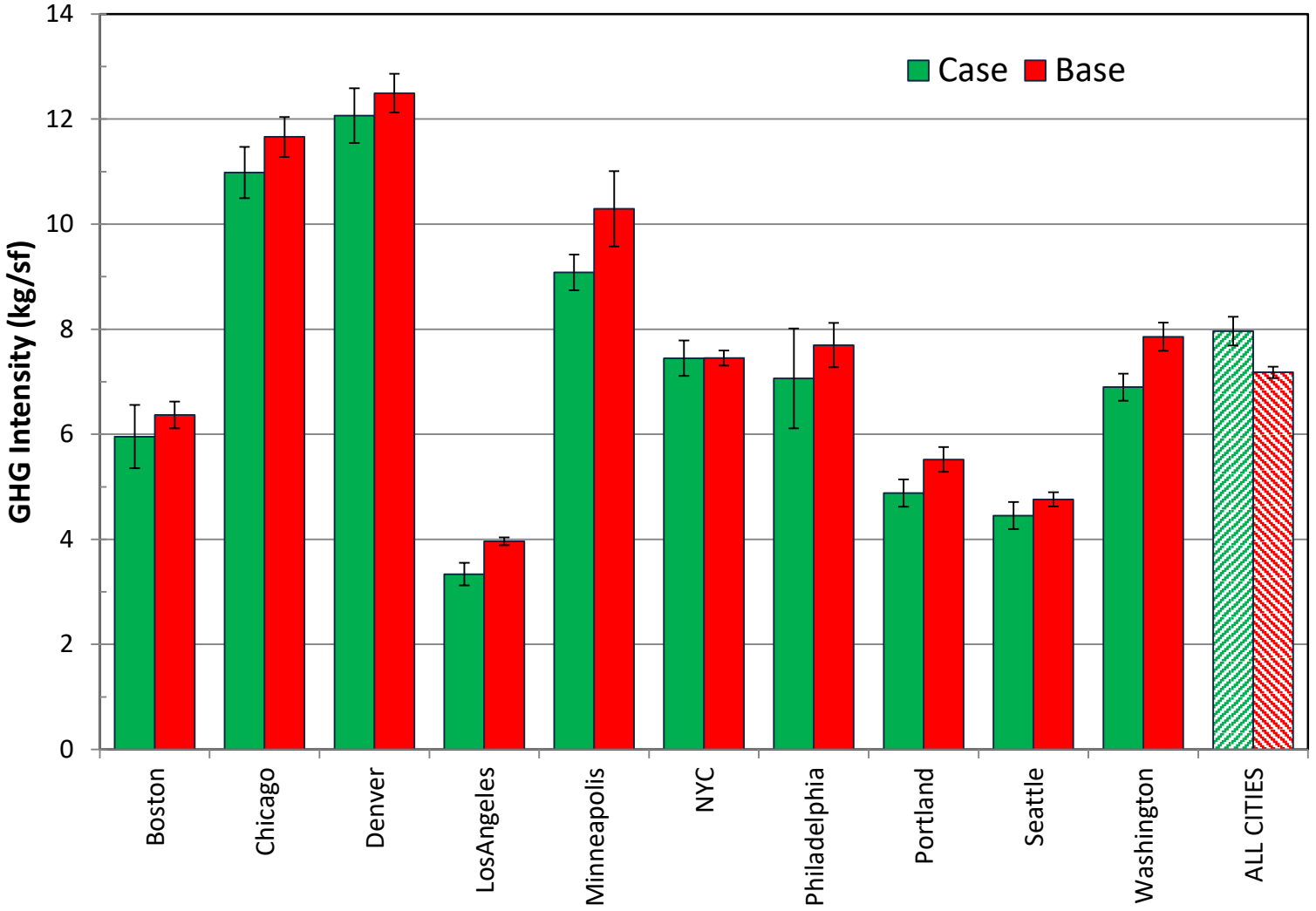

Gross GHGI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
2
4
6
8
10
12
14
GHGI (kg/sf)


Site Energy
Gross SiteEUI (kBtu/sf)
100
90
80
70
60
50
40
30
20
10
0
LEED
nonLEED
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


Source Energy
Gross Source EUI (kBtu/sf)
250
200
150
100
50
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


Electric Energy Use
Gross Electric EUI (kBtu/sf)
70
60
50
40
30
20
10
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


non-Electric Energy Use
Gross EUI (kBtu/sf)
40
30
20
10
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


GHG Emission
GHG Intensity (kg/sf)
Case
Base
0
2
4
6
8
10
12
14
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

					Site EUI (kBtu/sf)					Source EUI (kBtu/sf)					GHG intensity (kg/ft$_2$)					Electric Intensity (kBtu/sf)					nonElectric Intensity (kBtu/sf)				
Case	City	N	Neff	Tot. Area	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mearl	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm
1	Boston	5	5	3,936,741	70.3	74.2	17.6	16.9	8.1	183.8	188.0	28.4	23.9	10.6	5.46	5.75	1.28	1.18	0.56	52.6	52.7	10.5	9.0	4.1	17.7	21.6	20.7	20.3	10.0
2	Chicago	13	11	12,549,603	67.4	67.0	10.2	8.7	2.5	193.3	196.9	19.9	19.5	6.0	11.28	11.51	1.17	1.15	0.36	58.6	60.6	7.5	7.3	2.2	8.8	6.4	12.1	10.0	2.8
3	Denver	7	4	2,969,531	61.6	51.4	19.3	10.9	5.5	164.3	151.0	28.1	23.7	12.5	12.18	11.54	1.83	1.75	0.89	47.7	46.4	7.4	7.0	3.4	13.9	5.0	19.0	8.3	3.4
4	LosAngeles	6	5	5,544,425	42.2	41.2	10.0	9.1	3.9	125.4	125.2	27.1	26.2	11.6	3.25	3.20	0.69	0.69	0.31	38.8	39.2	8.6	8.4	3.7	3.4	2.0	6.3	4.4	1.6
5	Minneapolis	1	1	549,348	126.0	126.0	NA	0.0	0.0	272.0	272.0	NA	0.0	0.0	16.05	16.05	NA	0.00	0.00	66.8	66.8	NA	0.0	0.0	59.2	59.2	NA	0.0	0.0
6	NYC	0	NA	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	Philadelphia	2	2	283,823	53.7	52.9	4.8	3.3	2.4	151.1	152.6	8.5	5.8	4.3	4.00	3.65	2.01	1.38	1.02	45.3	46.4	6.5	4.4	3.3	8.4	6.5	11.3	7.7	5.7
8	Portland	2	1	469,988	51.8	57.0	11.2	5.9	6.2	140.1	142.2	4.4	2.3	2.4	4.22	4.44	0.47	0.25	0.26	41.0	39.4	3.5	1.9	1.9	10.8	17.7	14.7	7.8	8.1
9	Seattle	13	9	10,233,735	51.4	47.9	22.0	16.5	4.0	158.7	147.2	68.7	51.5	12.7	4.74	4.28	2.90	2.19	0.54	50.1	46.4	21.8	16.4	4.0	1.2	1.5	1.2	1.2	0.4
10	Washington	16	13	4,310,162	55.8	55.9	11.7	10.0	2.4	167.3	169.9	34.1	29.7	7.3	6.15	6.22	1.24	1.07	0.26	52.0	53.2	11.4	9.8	2.3	3.7	2.7	8.1	5.7	1.2
11	**ALL CITIES**	65	42	40,847,356	58.6	57.7	18.6	18.2	2.7	168.1	167.7	44.2	43.5	6.4	7.25	7.39	3.72	3.88	0.61	51.0	51.3	13.6	13.2	1.9	7.6	6.4	13.4	12.4	1.8
Base																													
1	Boston	239	76	46,599,545	78.7	81.9	36.2	32.3	3.2	192.7	212.0	93.7	89.7	9.2	5.92	6.37	2.70	2.54	0.25	52.7	60.3	30.3	29.7	3.1	26.1	21.6	26.6	22.9	2.3
2	Chicago	244	85	77,253,811	83.5	82.0	26.8	23.8	2.1	202.2	202.3	68.6	58.5	6.4	11.63	11.66	4.04	3.45	0.38	54.8	55.6	23.8	20.4	2.4	28.7	26.4	25.1	23.1	2.3
3	Denver	144	88	22,590,922	71.4	67.4	20.1	18.8	1.9	176.3	169.3	48.8	46.1	4.8	12.89	12.49	3.76	3.60	0.37	48.4	47.2	16.9	15.7	1.6	23.0	20.2	19.4	17.5	1.6
4	LosAngeles	691	246	167,612,776	55.4	53.1	23.9	19.4	1.1	156.4	149.9	64.6	51.3	2.6	4.09	3.96	1.72	1.39	0.07	47.0	45.1	19.9	15.9	0.8	8.3	8.0	12.1	11.3	0.7
5	Minneapolis	93	40	23,831,087	86.4	81.5	34.1	30.6	3.9	186.0	181.8	82.3	82.9	11.0	10.45	10.29	5.40	5.45	0.70	45.6	46.0	26.0	27.2	3.6	40.8	35.5	26.2	22.1	2.5
6	NYC	1,166	414	332,797,339	85.4	91.9	45.5	45.1	2.1	195.4	214.0	102.5	98.7	4.2	6.95	7.45	3.63	3.39	0.14	50.6	56.2	29.4	28.1	1.2	34.9	35.7	30.1	31.3	1.6
7	Philadelphia	173	73	54,432,024	82.8	80.9	39.4	33.9	3.7	217.3	215.6	108.2	95.1	11.1	8.06	7.70	4.90	3.97	0.43	62.3	62.5	34.4	30.3	3.6	20.5	18.5	23.1	18.8	1.8
8	Portland	133	71	18,841,143	65.9	66.3	24.5	22.7	2.3	178.3	182.6	68.4	63.6	6.5	5.37	5.52	2.29	2.27	0.24	52.2	54.0	22.0	20.6	2.1	13.6	12.3	14.5	13.9	1.5
9	Seattle	409	141	40,135,019	57.1	58.7	22.5	19.8	1.2	157.4	168.2	63.0	57.4	3.6	4.72	4.76	2.09	1.85	0.14	46.7	51.0	21.0	19.1	1.2	10.4	7.8	16.5	13.2	0.8
10	Washington	331	183	69,542,043	69.7	66.9	18.7	17.0	1.1	203.7	198.5	55.6	50.2	3.3	7.81	7.86	2.87	3.35	0.27	62.5	61.4	18.7	16.7	1.1	7.2	5.5	12.8	10.8	0.6
11	**ALL CITIES**	3,623	1,247	853,635,709	73.1	77.0	36.0	37.0	1.1	184.1	194.1	84.7	83.5	2.3	6.80	7.18	3.98	3.87	0.11	51.4	54.2	25.7	24.7	0.7	21.7	22.8	25.7	26.5	0.8
		median YearBuilt																											
Comparison		**LEED**	**nonLEED**		**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**
1	Boston	2004	1928		-9.4%	-7.7	-0.40	0.7272	19.1	-11.3%	-24.0	-0.44	0.6255	54.6	-9.7%	-0.62	-0.41	0.7160	1.51	-12.6%	-7.6	-0.42	0.6602	18.1	-0.2%	-0.1	0.00	0.9959	14.0
2	Chicago	2004	1929		-18.3%	-15.0	-1.69	0.0856	8.9	-2.7%	-5.4	-0.25	0.8093	21.4	-1.3%	-0.15	-0.12	0.9080	1.27	8.9%	5.0	0.64	0.4869	7.7	-75.7%	-20.0	-2.15	0.0284	9.3
3	Denver	1986	1981		-23.8%	-16.0	-1.81	0.0753	8.8	-10.8%	-18.3	-0.89	0.3986	20.7	-7.7%	-0.96	-0.60	0.5465	1.59	-1.5%	-0.7	-0.11	0.9195	6.8	-75.5%	-15.3	-1.95	0.0461	7.8
4	LosAngeles	1984	1981		-22.4%	-11.9	-1.17	0.2292	10.1	-16.5%	-24.7	-0.94	0.3046	26.4	-19.1%	-0.76	-1.05	0.2619	0.72	-13.0%	-5.9	-0.72	0.4212	8.1	-75.3%	-6.0	-0.98	0.2161	6.1
5	Minneapolis	1972	1934		54.5%	44.5	1.30	0.1490	34.3	49.6%	90.2	1.09	0.1803	83.1	55.9%	5.76	1.07	0.1805	5.40	45.2%	20.8	0.77	0.2848	27.0	66.6%	23.6	0.90	0.3383	26.2
6	NYC	NA	1926		0.0%	0.0	#DIV/0!	NA	0.0	0.0%	0.0	#DIV/0!	NA	0.0	0.0%	0.00	#DIV/0!	NA	0.00	0.0%	0.0	#DIV/0!	NA	0.0	0.0%	0.0	#DIV/0!	NA	0.0
7	Philadelphia	2009	1950		-34.7%	-28.1	-0.97	0.2293	28.9	-29.2%	-63.0	-0.82	0.2930	77.1	-52.5%	-4.04	-1.19	0.1301	3.39	-25.7%	-16.1	-0.66	0.4027	24.3	-65.1%	-12.0	-0.70	0.3405	17.1
8	Portland	NA	NA		-14.0%	-9.3	-0.52	0.5829	17.7	-22.2%	-40.4	-0.79	0.3724	51.0	-19.5%	-1.08	-0.61	0.4543	1.76	-27.2%	-14.7	-0.89	0.3020	16.6	44.0%	5.4	0.50	0.6204	10.9
9	Seattle	1988	1968		-18.5%	-10.8	-1.33	0.1687	8.1	-12.5%	-21.0	-0.89	0.3398	23.6	-10.0%	-0.48	-0.56	0.5170	0.84	-9.0%	-4.6	-0.60	0.5162	7.7	-80.4%	-6.2	-1.42	0.1154	4.4
10	Washington	2002	1977		-16.4%	-11.0	-2.15	0.0315	5.1	-14.4%	-28.6	-1.89	0.0577	15.1	-20.8%	-1.63	-1.39	0.1100	1.18	-13.3%	-8.2	-1.65	0.1012	4.9	-51.6%	-2.8	-0.96	0.3259	3.0
11	**ALL CITIES**	1998	1963		-15.2%	-11.7	-1.79	0.0676	6.5	-8.6%	-16.6	-1.11	0.2410	14.9	-7.4%	-0.53	-0.92	0.3400	0.58	-3.8%	-2.1	-0.46	0.6243	4.5	-42.2%	-9.6	-1.92	0.0543	5.0

All	City	N	Neff	Tot. Area	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm
1	Boston	244	81	50,536,286	78.6	81.3	35.9	31.4	3.0	192.5	210.1	92.9	86.7	8.4	5.9	6.3	2.7	2.5	0.24	52.6	59.7	30.0	28.7	2.8	25.9	21.6	26.5	22.7	2.2
2	Chicago	257	94	89,803,414	82.7	79.9	26.5	22.9	2.0	201.7	201.5	67.0	54.8	5.6	11.6	11.6	3.9	3.2	0.33	55.0	56.3	23.2	19.2	2.1	27.7	23.6	25.0	22.8	2.2
3	Denver	151	80	25,560,453	71.0	65.5	20.1	18.8	2.1	175.7	167.2	48.0	44.4	4.6	12.9	12.4	3.7	3.5	0.35	48.4	47.1	16.6	15.0	1.5	22.6	18.5	19.4	17.4	1.8
4	LosAngeles	697	250	173,157,201	55.3	52.7	23.8	19.3	1.1	156.2	149.1	64.4	50.8	2.6	4.1	3.9	1.7	1.4	0.07	47.0	44.9	19.9	15.8	0.8	8.3	7.8	12.0	11.2	0.7
5	Minneapolis	94	41	24,380,435	86.8	82.5	34.2	31.0	3.9	187.0	183.9	82.3	83.1	11.0	10.5	10.4	5.4	5.5	0.71	45.8	46.5	26.0	27.1	3.6	41.0	36.1	26.2	22.1	2.6
6	NYC	1,166	414	332,797,339	85.4	91.9	45.5	45.1	2.0	195.4	214.0	102.5	98.7	4.2	7.0	7.5	3.6	3.4	0.14	50.6	56.2	29.4	28.1	1.2	34.9	35.7	30.1	31.3	1.6
7	Philadelphia	175	74	54,715,847	82.5	80.8	39.3	33.8	3.7	216.5	215.2	107.8	94.9	11.1	8.0	7.7	4.9	4.0	0.42	62.2	62.4	34.3	30.3	3.6	20.4	18.4	23.1	18.8	1.8
8	Portland	135	72	19,311,131	65.7	66.1	24.4	22.5	2.3	177.7	181.6	68.1	63.1	6.4	5.4	5.5	2.3	2.2	0.23	52.0	53.7	21.9	20.4	2.1	13.6	12.4	14.5	13.8	1.5
9	Seattle	422	112	50,368,754	56.9	56.5	22.5	19.7	1.4	157.5	163.9	63.1	56.9	4.0	4.7	4.7	2.1	1.9	0.15	46.8	50.0	21.1	18.6	1.3	10.1	6.5	16.4	12.1	0.7
10	Washington	347	196	73,852,205	69.0	66.3	18.6	16.9	1.1	202.0	196.9	55.3	49.7	3.2	7.7	7.8	2.8	3.3	0.25	62.0	60.9	18.6	16.5	1.0	7.0	5.4	12.7	10.6	0.6
11	**ALL CITIES**	3,688	1,283	894,483,065	72.9	76.1	35.9	36.6	1.0	183.8	192.9	84.2	82.3	2.2	6.8	7.2	4.0	3.9	0.11	51.4	54.1	25.5	24.3	0.6	21.5	22.1	25.6	26.3	0.8

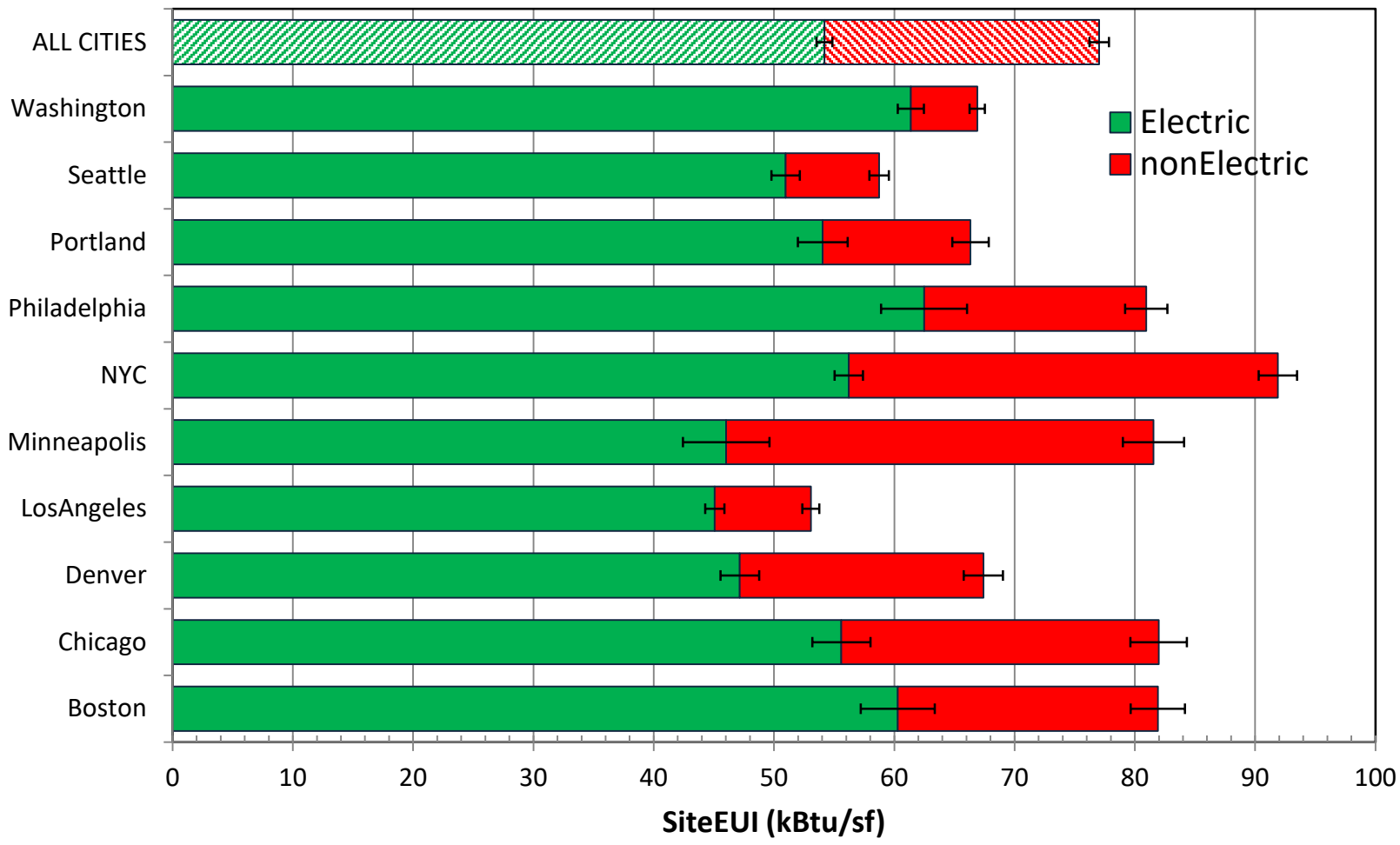
Office - LEED savings relative to nonLEED																			
	LEED		Base (nonLEED)		SiteEUI			ElectricEUI			nonElectricEUI			SourceEUI			GHGI (kg/ft^2)		
City	N	A ($10^6 ft^2$)	N	A ($10^6 ft^2$)	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p
Boston	5	3.9	239	46.6	82	9%	0.727	60	13%	0.660	22	0%	0.996	212	11%	0.626	6.4	10%	0.716
Chicago	13	12.5	244	77.3	82	18%	0.086	56	-9%	0.487	26	76%	0.028	202	3%	0.809	11.7	1%	0.908
Denver	7	3.0	144	22.6	67	24%	0.075	47	2%	0.920	20	76%	0.046	169	11%	0.399	12.5	8%	0.547
LosAngeles	6	5.5	691	167.6	53	22%	0.229	45	13%	0.421	8	75%	0.216	150	16%	0.305	4.0	19%	0.262
Minneapolis	1	0.5	93	23.8	82	-55%	0.149	46	-45%	0.285	36	-67%	0.338	182	-50%	0.180	10.3	-56%	0.181
NYC	0	0.0	1166	332.8	92	0%	NA	56	0%	NA	36	0%	NA	214	0%	NA	7.5	0%	NA
Philadelphia	2	0.3	173	54.4	81	35%	0.229	62	26%	0.403	18	65%	0.341	216	29%	0.293	7.7	53%	0.130
Portland	2	0.5	133	18.8	66	14%	0.583	54	27%	0.302	12	-44%	0.620	183	22%	0.372	5.5	20%	0.454
Seattle	13	10.2	409	40.1	59	18%	0.169	51	9%	0.516	8	80%	0.115	168	12%	0.340	4.8	10%	0.517
Washington	16	4.3	331	69.5	67	16%	0.032	61	13%	0.101	6	52%	0.326	199	14%	0.058	7.9	21%	0.110
Aggregate	**65**	**40.8**	**3623**	**853.6**	**77**	**15%**	**0.068**	**54**	**4%**	**0.624**	**23**	**42%**	**0.054**	**194**	**9%**	**0.241**	**7.2**	**7%**	**0.340**

													LEED savings "delta"									
			SiteEUI		ElectricEUI		nElectricEUI		SourceEUI		GHGI		SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston	244	50.5	81	3.7%	60	4.8%	22	10.3%	210	4.0%	6.3	3.8%										
nonLEED	239	46.6	82	3.9%	60	5.1%	22	10.5%	212	4.3%	6.4	4.0%	7.7	0.727	7.6	0.660	0.1	0.996	24	0.626	0.6	0.716
LEED	5	3.9	74	10.9%	53	7.7%	22	46.2%	188	5.7%	5.8	9.7%	9%		13%		0%		11%		10%	
Chicago	257	89.8	80	2.4%	56	3.7%	24	9.2%	202	2.8%	11.6	2.9%										
nonLEED	244	77.3	82	2.6%	56	4.4%	26	8.9%	202	3.2%	11.7	3.3%	15.0	0.086	-5.0	0.487	20.0	0.028	5	0.809	0.2	0.908
LEED	13	12.5	67	3.7%	61	3.7%	6	44.2%	197	3.0%	11.5	3.1%	18%		-9%		76%		3%		1%	
Denver	151	25.6	66	3.2%	47	3.1%	18	9.5%	167	2.8%	12.4	2.8%										
nonLEED	144	22.6	67	2.9%	47	3.4%	20	8.0%	169	2.8%	12.5	2.9%	16.0	0.075	0.7	0.920	15.3	0.046	18	0.399	1.0	0.547
LEED	7	3.0	51	10.7%	46	7.3%	5	67.9%	151	8.3%	11.5	7.7%	24%		2%		76%		11%		8%	
LosAngeles	697	173.2	53	2.0%	45	1.7%	8	8.8%	149	1.7%	3.9	1.8%										
nonLEED	691	167.6	53	2.0%	45	1.8%	8	8.9%	150	1.7%	4.0	1.8%	11.9	0.229	5.9	0.421	6.0	0.216	25	0.305	0.8	0.262
LEED	6	5.5	41	9.5%	39	9.5%	2	81.7%	125	9.3%	3.2	9.6%	22%		13%		75%		16%		19%	
Minneapolis	94	24.4	83	4.7%	46	7.8%	41	7.1%	184	6.0%	10.4	6.9%										
nonLEED	93	23.8	82	4.7%	46	7.8%	36	7.2%	182	6.1%	10.3	6.8%	-44.5	0.149	-20.8	0.285	-23.6	0.338	-90	0.180	-5.8	0.181
LEED	1	0.5	126	0.0%	67	0.0%	59	0.0%	272	0.0%	16.1	0.0%	-55%		-45%		-67%		-50%		-56%	
NYC	1,166	332.8	92	2.2%	56	2.1%	36	4.5%	214	1.9%	7.5	1.9%										
nonLEED	1,166	332.8	92	2.2%	56	2.1%	36	4.5%	214	2.0%	7.5	1.9%	0.0	NA	0.0	NA	0.0	NA	0	NA	0.0	NA
LEED	0	0.0	NA	######	NA	#####	NA	######	NA	#####	NA	#####	0%		0%		0%		0%		0%	
Philadelphia	175	54.7	81	4.6%	62	5.8%	18	9.6%	215	5.1%	7.7	5.5%										
nonLEED	173	54.4	81	4.6%	62	5.7%	18	9.5%	216	5.2%	7.7	5.6%	28.1	0.229	16.1	0.403	12.0	0.341	63	0.293	4.0	0.130
LEED	2	0.3	53	4.6%	46	7.1%	6	88.6%	153	2.8%	3.7	27.9%	35%		26%		65%		29%		53%	
Portland	135	19.3	66	3.4%	54	3.8%	12	11.8%	182	3.5%	5.5	4.2%										
nonLEED	133	18.8	66	3.5%	54	3.8%	12	12.4%	183	3.6%	5.5	4.3%	9.3	0.583	14.7	0.302	-5.4	0.620	40	0.372	1.1	0.454
LEED	2	0.5	57	10.9%	39	5.0%	18	45.7%	142	1.7%	4.4	5.8%	14%		27%		-44%		22%		20%	
Seattle	422	50.4	57	2.5%	50	2.5%	6	10.9%	164	2.5%	4.7	3.3%										
nonLEED	409	40.1	59	2.1%	51	2.3%	8	10.3%	168	2.1%	4.8	2.9%	10.8	0.169	4.6	0.516	6.2	0.115	21	0.340	0.5	0.517
LEED	13	10.2	48	8.4%	46	8.7%	2	26.4%	147	8.6%	4.3	12.6%	18%		9%		80%		12%		10%	
Washington	347	73.9	66	1.6%	61	1.7%	5	11.3%	197	1.6%	7.8	3.3%										
nonLEED	331	69.5	67	1.7%	61	1.8%	6	11.7%	199	1.7%	7.9	3.4%	11.0	0.032	8.2	0.101	2.8	0.326	29	0.058	1.6	0.110
LEED	16	4.3	56	4.3%	53	4.4%	3	43.8%	170	4.3%	6.2	4.2%	16%		13%		52%		14%		21%	
Aggregate	3,688	894.5	76	1.3%	54	1.2%	22	3.5%	193	1.1%	7.2	1.5%										
nonLEED	3,623	853.6	77	1.4%	54	1.2%	23	3.5%	194	1.2%	7.2	1.5%	11.7	0.068	2.1	0.624	9.6	0.054	17	0.241	0.5	0.340
LEED	65	40.8	58	4.6%	51	3.8%	6	28.7%	168	3.8%	7.4	8.3%	15%		4%		42%		9%		7%	

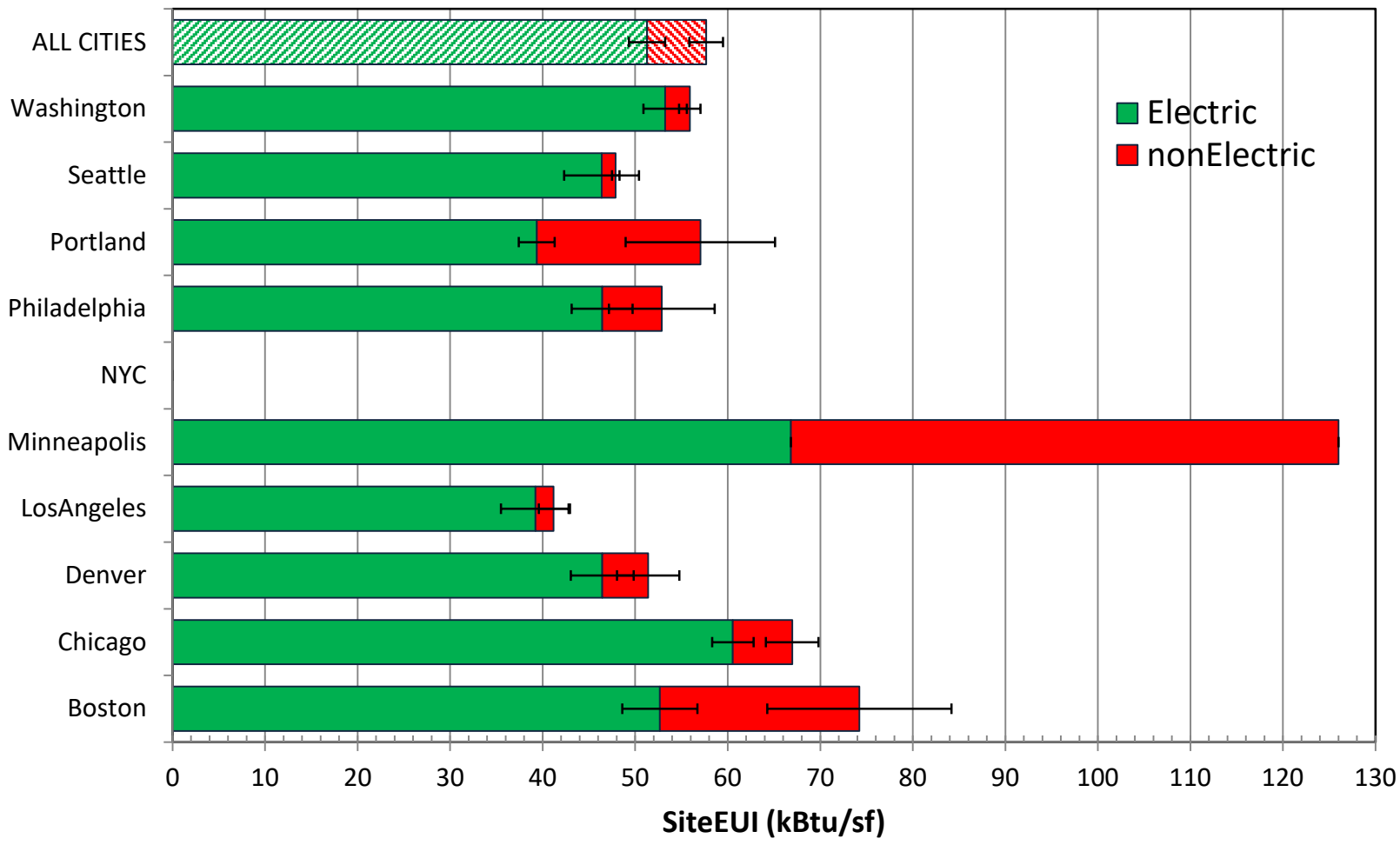
	ALL		nonLEED											
					SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE
Boston	244	50.5	239	46.6	82	4%	60	5%	22	10%	212	4%	6.4	4%
Chicago	257	89.8	244	77.3	82	3%	56	4%	26	9%	202	3%	11.7	3%
Denver	151	25.6	144	22.6	67	3%	47	3%	20	8%	169	3%	12.5	3%
LosAngeles	697	173.2	691	167.6	53	2%	45	2%	8.0	9%	150	2%	4.0	2%
Minneapolis	94	24.4	93	23.8	82	5%	46	8%	36	7%	182	6%	10.3	7%
NYC	1,166	332.8	1,166	332.8	92	2%	56	2%	36	4%	214	2%	7.5	2%
Philadelphia	175	54.7	173	54.4	81	5%	62	6%	18	10%	216	5%	7.7	6%
Portland	135	19.3	133	18.8	66	4%	54	4%	12	12%	183	4%	5.5	4%
Seattle	422	50.4	409	40.1	59	2%	51	2%	7.8	10%	168	2%	4.8	3%
Washington	347	73.9	331	69.5	67	2%	61	2%	5.5	12%	199	2%	7.9	3%
Aggregate	3,688	894.5	3,623	853.6	77	1%	54.2	1%	22.8	4%	194	1%	7.2	1%

		LEED		LEED savings "delta"									
City		N	A (Mft^2)	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston		5	3.9	7.7	0.727	7.6	0.660	0.1	0.996	24	0.626	0.6	0.716
Chicago		13	12.5	15.0	0.086	-5.0	0.487	20.0	0.028	5	0.809	0.2	0.908
Denver		7	3.0	16.0	0.075	0.7	0.920	15.3	0.046	18	0.399	1.0	0.547
LosAngeles		6	5.5	11.9	0.229	5.9	0.421	6.0	0.216	25	0.305	0.8	0.262
Minneapolis		1	0.5	-44.5	0.149	-20.8	0.285	-23.6	0.338	-90	0.180	-5.8	0.181
NYC		0	0.0	0.0	NA	0.0	NA	0.0	NA	0	NA	0.0	NA
Philadelphia		2	0.3	28.1	0.229	16.1	0.403	12.0	0.341	63	0.293	4.0	0.130
Portland		2	0.5	9.3	0.583	14.7	0.302	-5.4	0.620	40	0.372	1.1	0.454
Seattle		13	10.2	10.8	0.169	4.6	0.516	6.2	0.115	21	0.340	0.5	0.517
Washington		16	4.3	11.0	0.032	8.2	0.101	2.8	0.326	29	0.058	1.6	0.110
Aggregate		65	40.8	11.7	0.068	2.1	0.624	9.6	0.0543	17	0.241	0.5	0.340

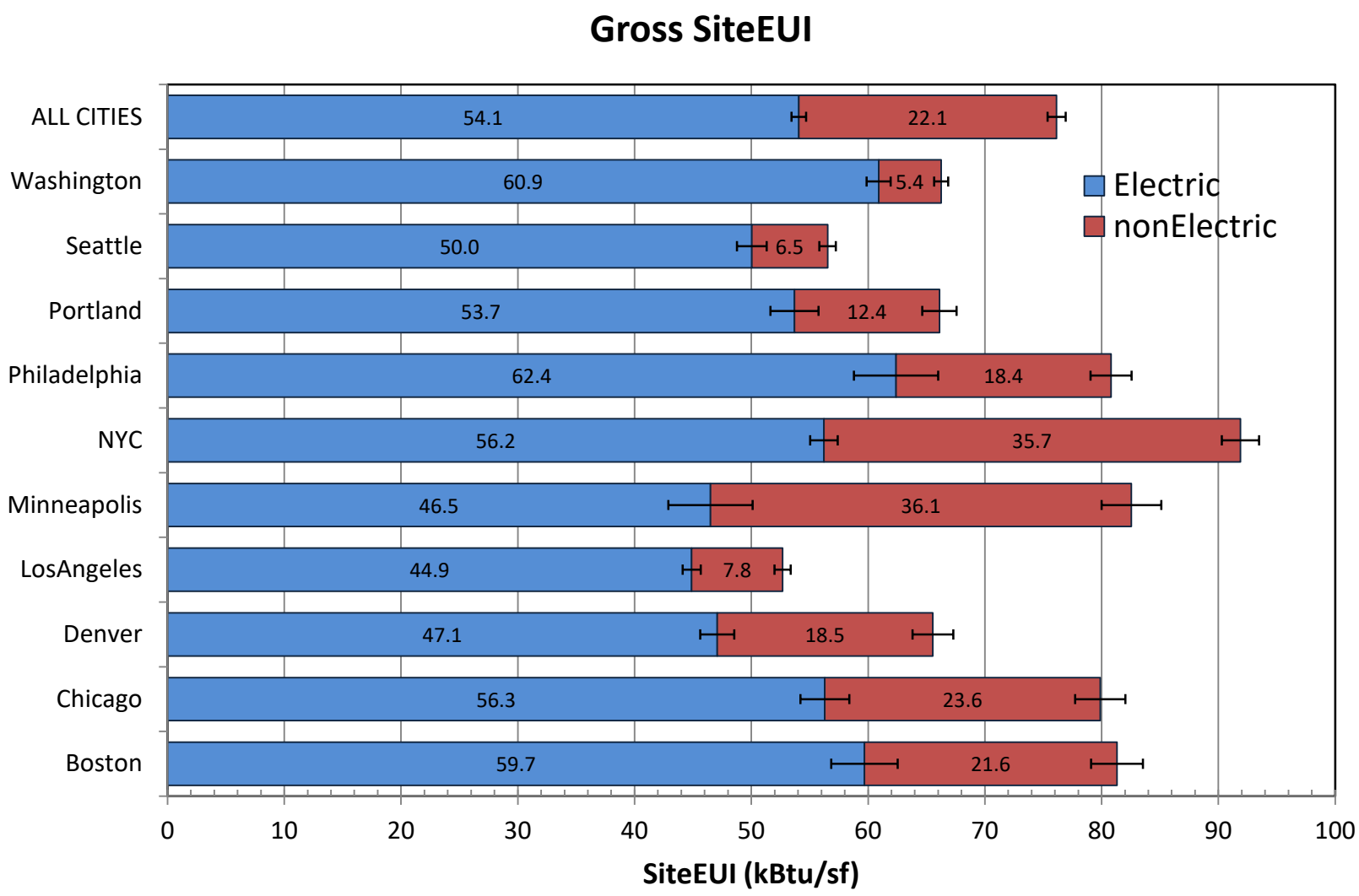
	LEED		nonLEED										LEED savings "delta"									
					SiteEUI		ElectricEUI		nElectricEUI		SourceEUI		GHGI		SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston	5	3.9	239	46.6	82	4%	60	5%	22	10%	212	4%	6.4	4%	7.7	0.727	7.6	0.660	0.1	0.996	24	0.6255	0.6	0.716
Chicago	13	12.5	244	77.3	82	3%	56	4%	26	9%	202	3%	11.7	3%	15.0	0.086	-5.0	0.487	20.0	0.028	5	0.8093	0.2	0.908
Denver	7	3.0	144	22.6	67	3%	47	3%	20	8%	169	3%	12.5	3%	16.0	0.075	0.7	0.920	15.3	0.046	18	0.3986	1.0	0.547
LosAngeles	6	5.5	691	167.6	53	2%	45	2%	8.0	9%	150	2%	4.0	2%	11.9	0.229	5.9	0.421	6.0	0.216	25	0.3046	0.8	0.262
Minneapolis	1	0.5	93	23.8	82	5%	46	8%	36	7%	182	6%	10.3	7%	-44.5	0.149	-20.8	0.285	-23.6	0.338	-90	0.1803	-5.8	0.181
NYC	0	0.0	1,166	332.8	92	2%	56	2%	36	4%	214	2%	7.5	2%	0.0	NA	0.0	NA	0.0	NA	0	NA	0.0	NA
Philadelphia	2	0.3	173	54.4	81	5%	62	6%	18	10%	216	5%	7.7	6%	28.1	0.229	16.1	0.403	12.0	0.341	63	0.2930	4.0	0.130
Portland	2	0.5	133	18.8	66	4%	54	4%	12	12%	183	4%	5.5	4%	9.3	0.583	14.7	0.302	-5.4	0.620	40	0.3724	1.1	0.454
Seattle	13	10.2	409	40.1	59	2%	51	2%	7.8	10%	168	2%	4.8	3%	10.8	0.169	4.6	0.516	6.2	0.115	21	0.3398	0.5	0.517
Washington	16	4.3	331	69.5	67	2%	61	2%	5.5	12%	199	2%	7.9	3%	11.0	0.032	8.2	0.101	2.8	0.326	29	0.0577	1.6	0.110
Aggregate	65	40.8	3,623	853.6	77	1%	54.2	1%	22.8	4%	194	1%	7.2	1%	11.7	0.068	2.1	0.624	9.6	0.054	17	0.241	0.5	0.340

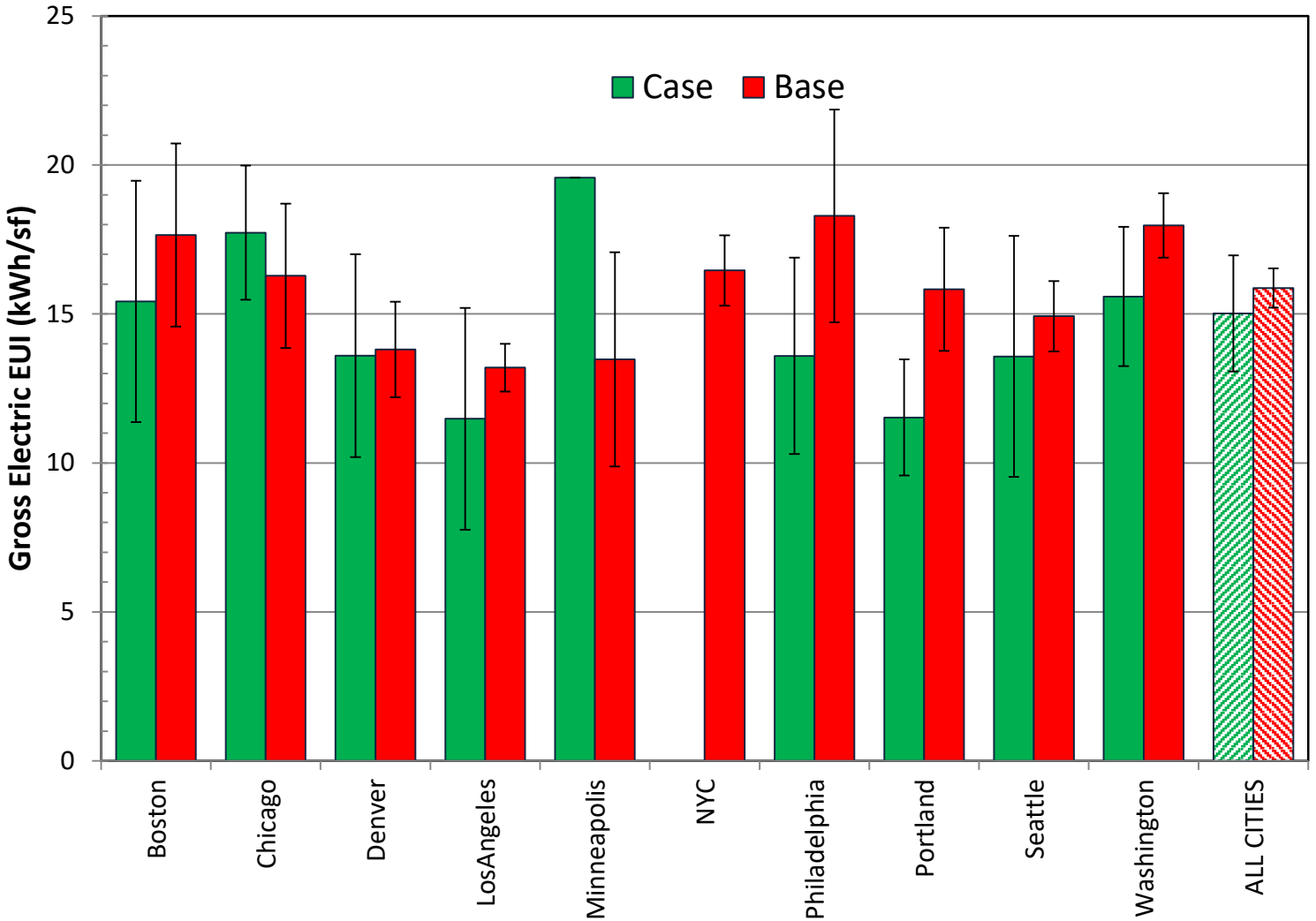


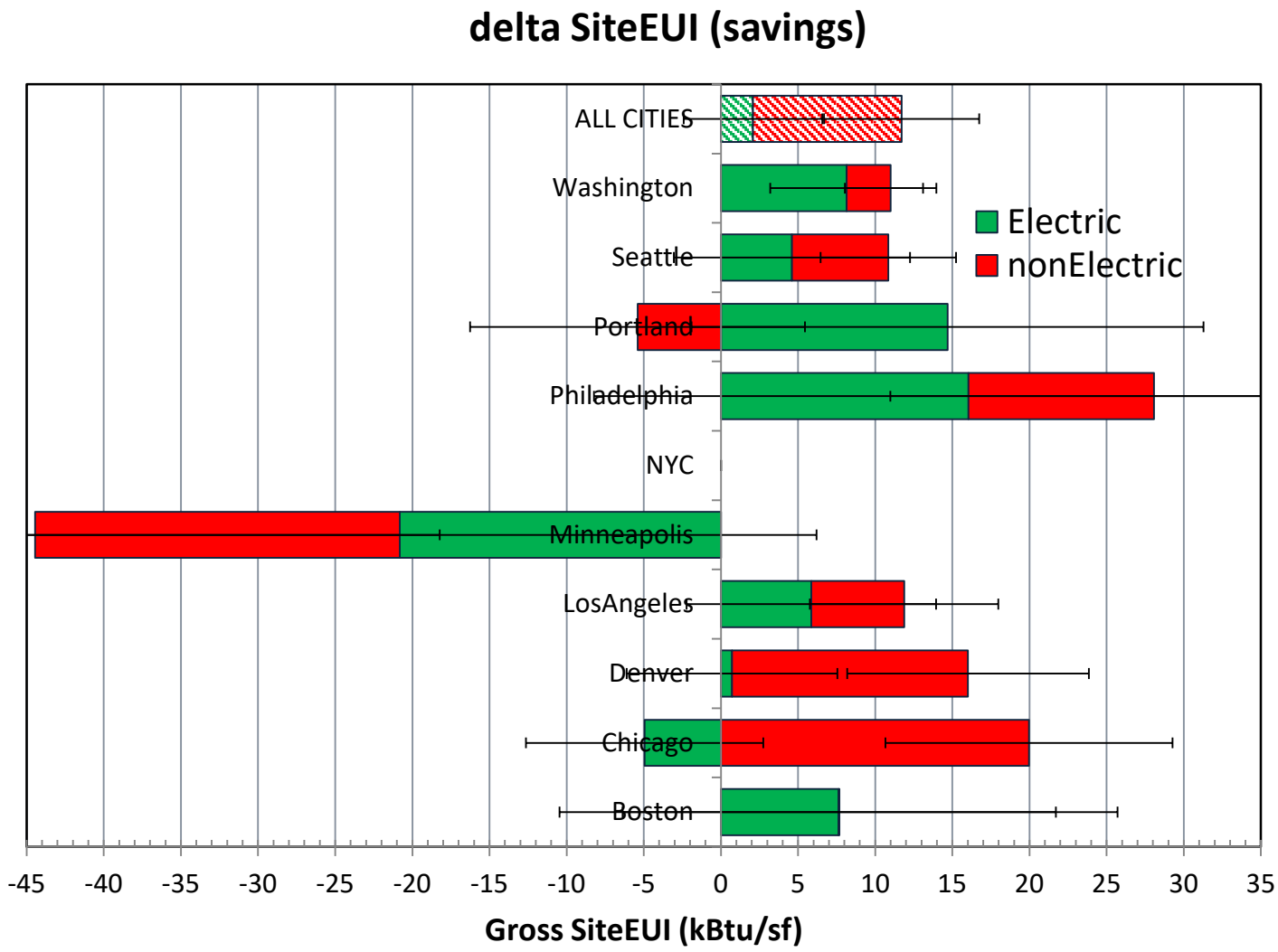
nonLEED Office

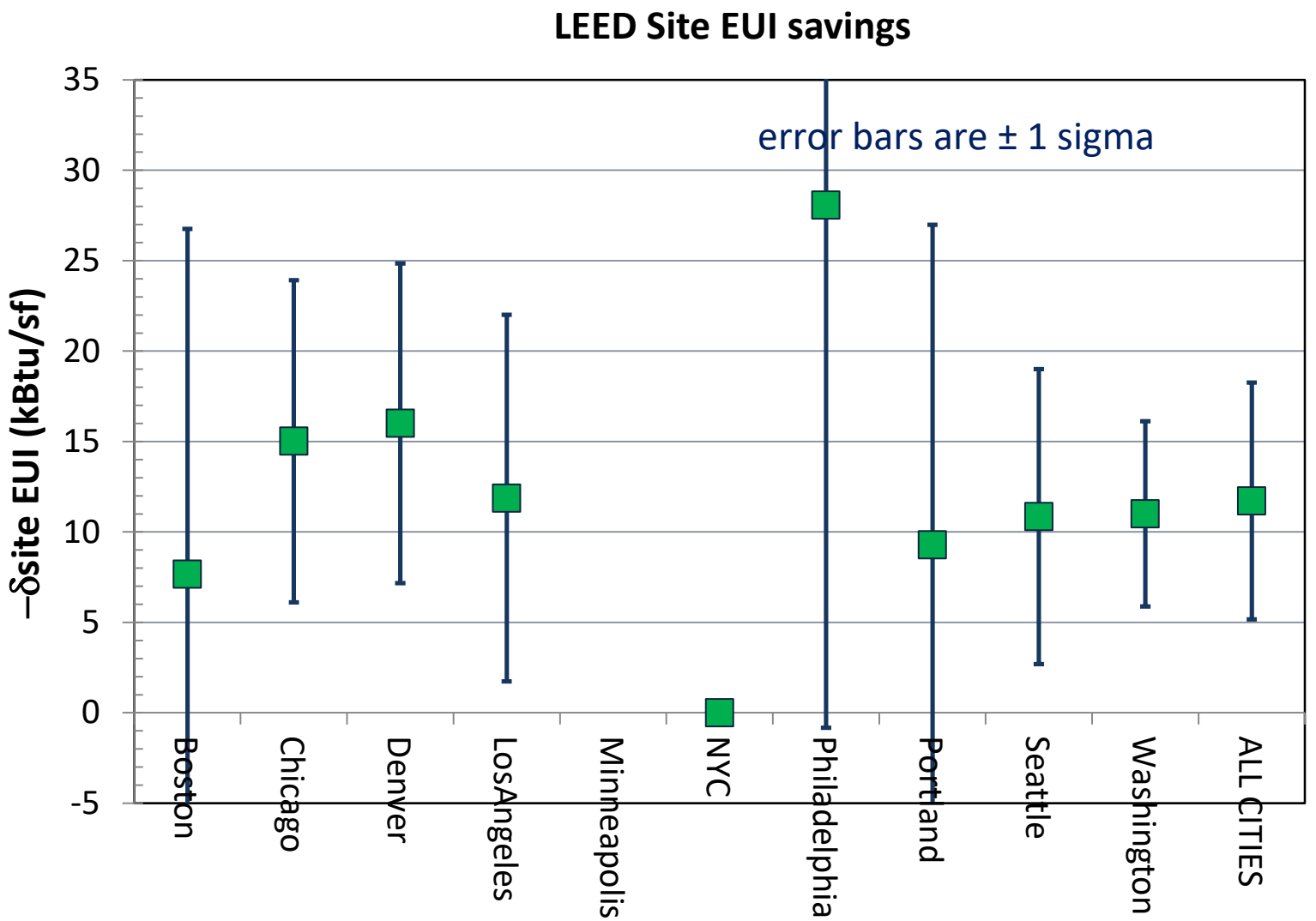

Gross SiteEUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
Electric
nonElectric
0
10
20
30
40
50
60
70
80
90
100
110
120
130
SiteEUI (kBtu/sf)

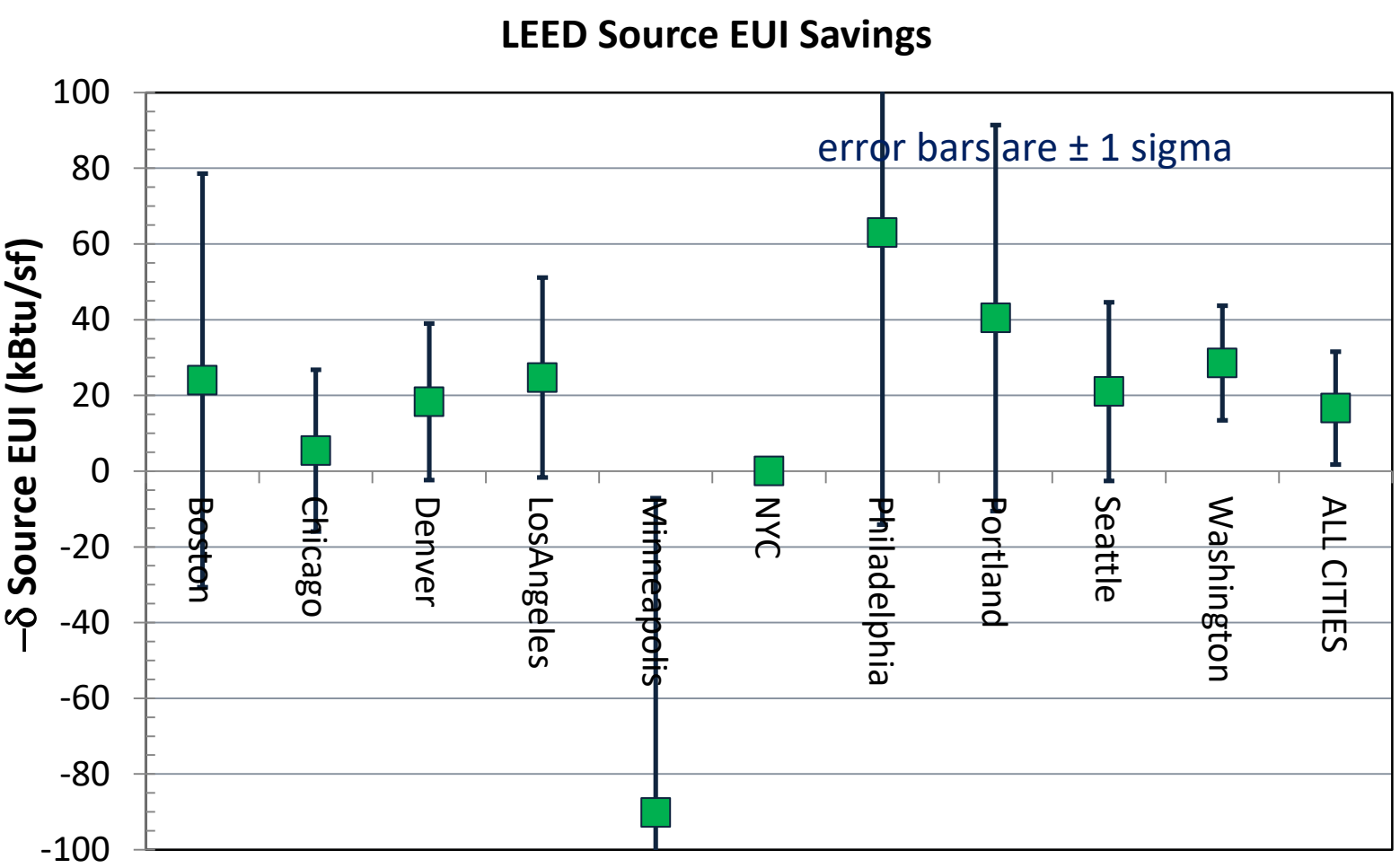
LEED Office

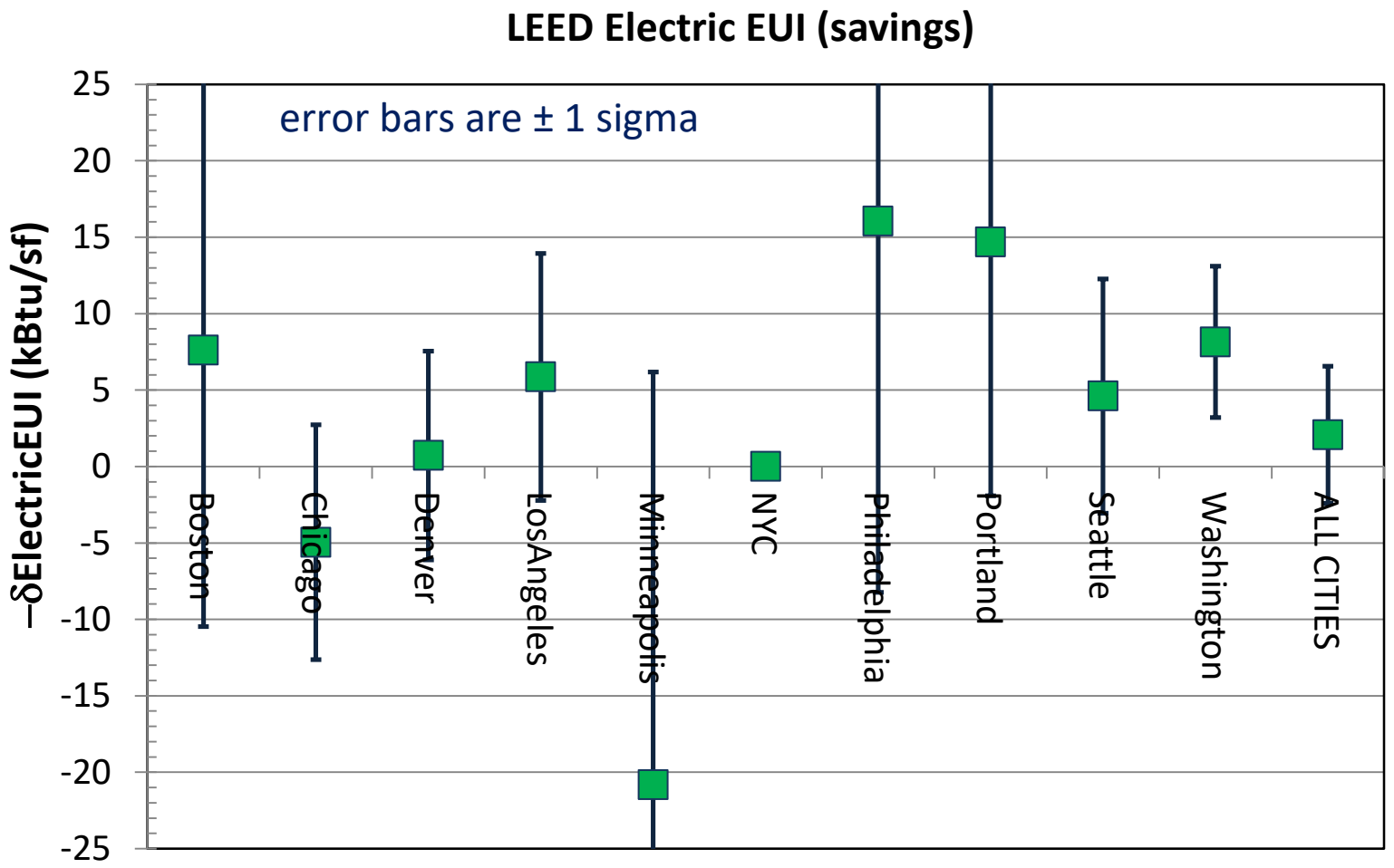

Gross SiteEUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
54.1
22.1
60.9
5.4
50.0
6.5
53.7
12.4
62.4
18.4
56.2
35.7
46.5
36.1
44.9
7.8
47.1
18.5
56.3
23.6
59.7
21.6
Electric
nonElectric
0
10
20
30
40
50
60
70
80
90
100
SiteEUI (kBtu/sf)

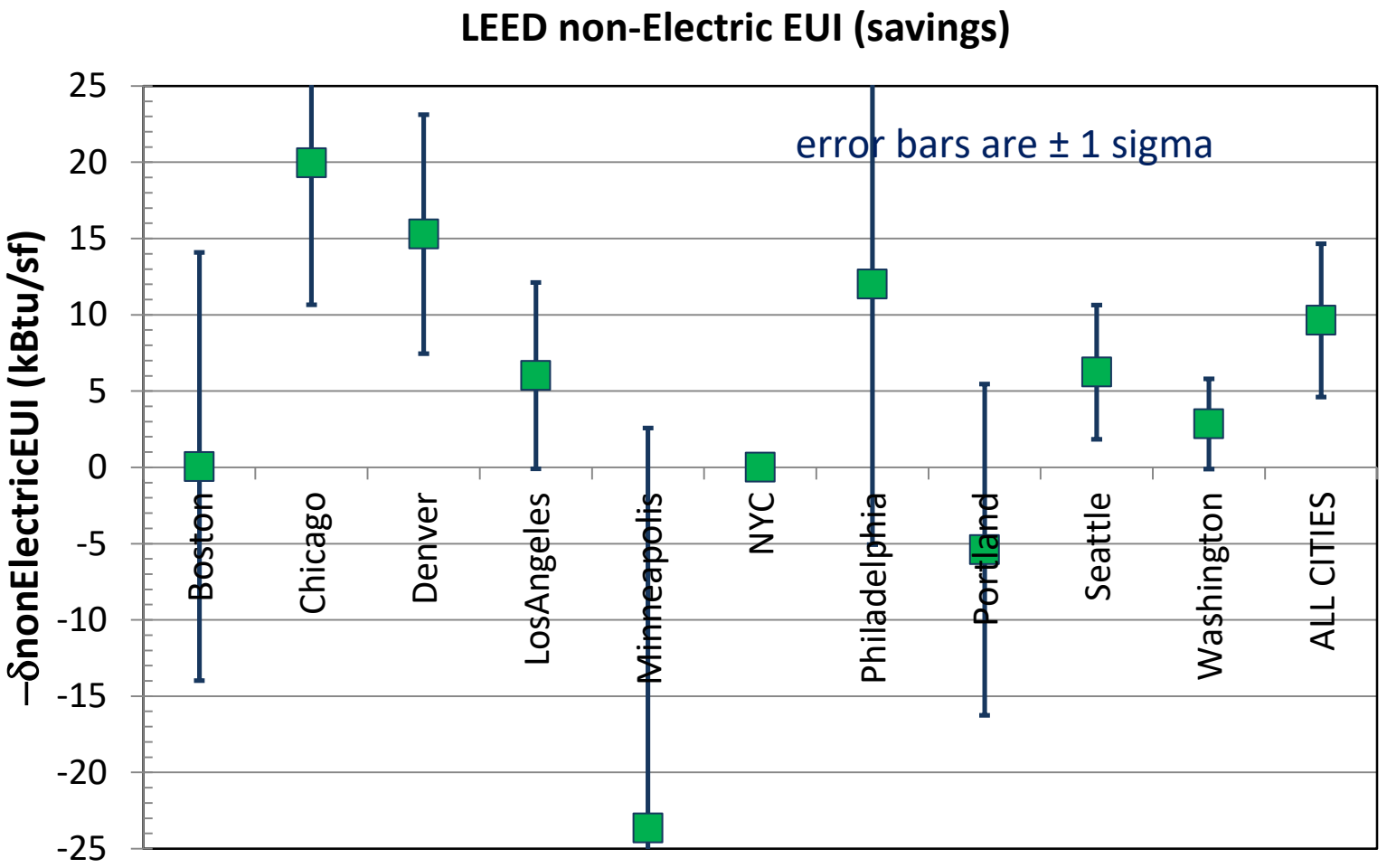

Electric Energy Use
Gross Electric EUI (kWh/sf)
25
20
15
10
5
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

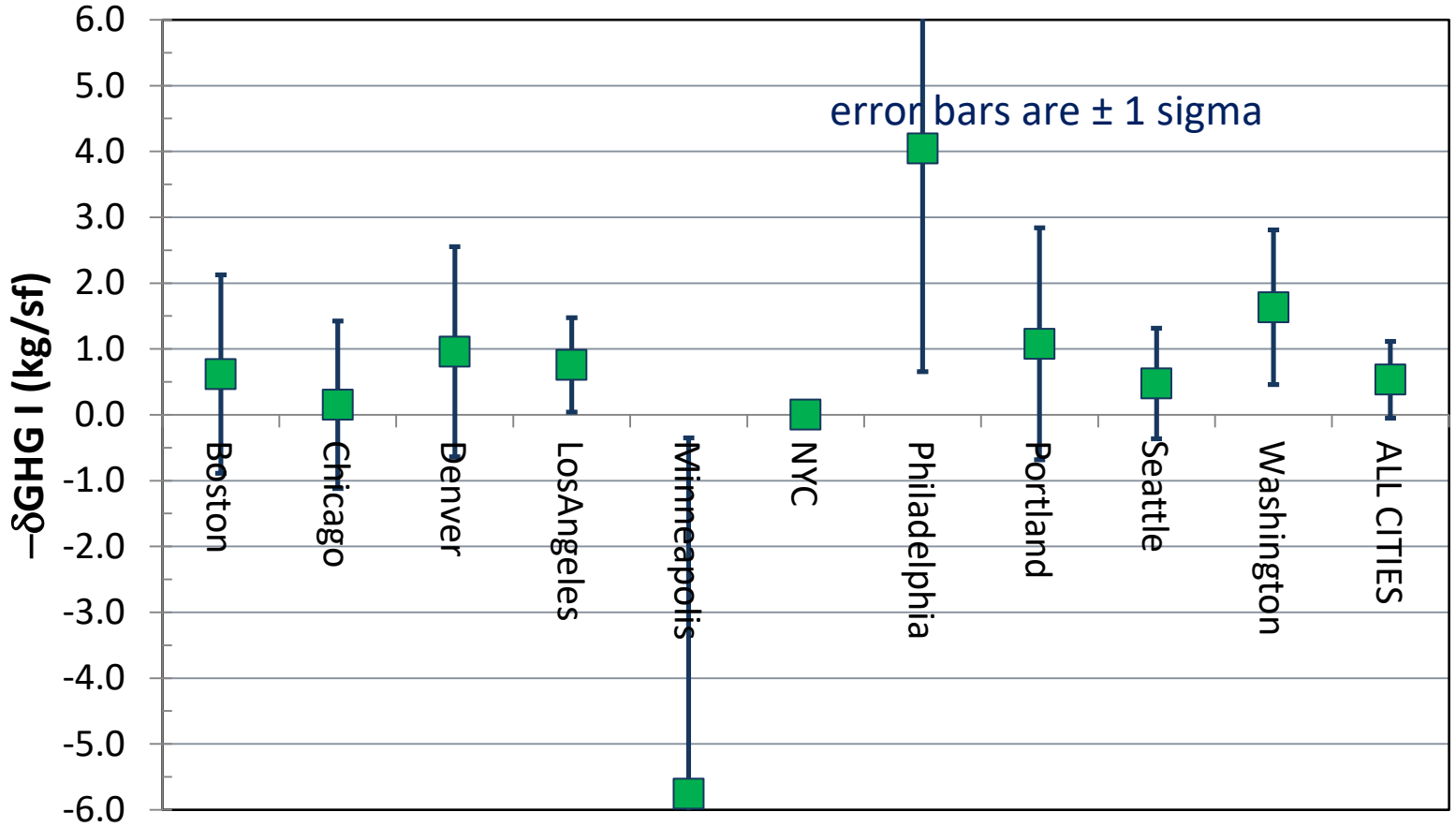

delta SiteEUI (savings)
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
Electric
nonElectric
-45 -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35
Gross SiteEUI (kBtu/sf)

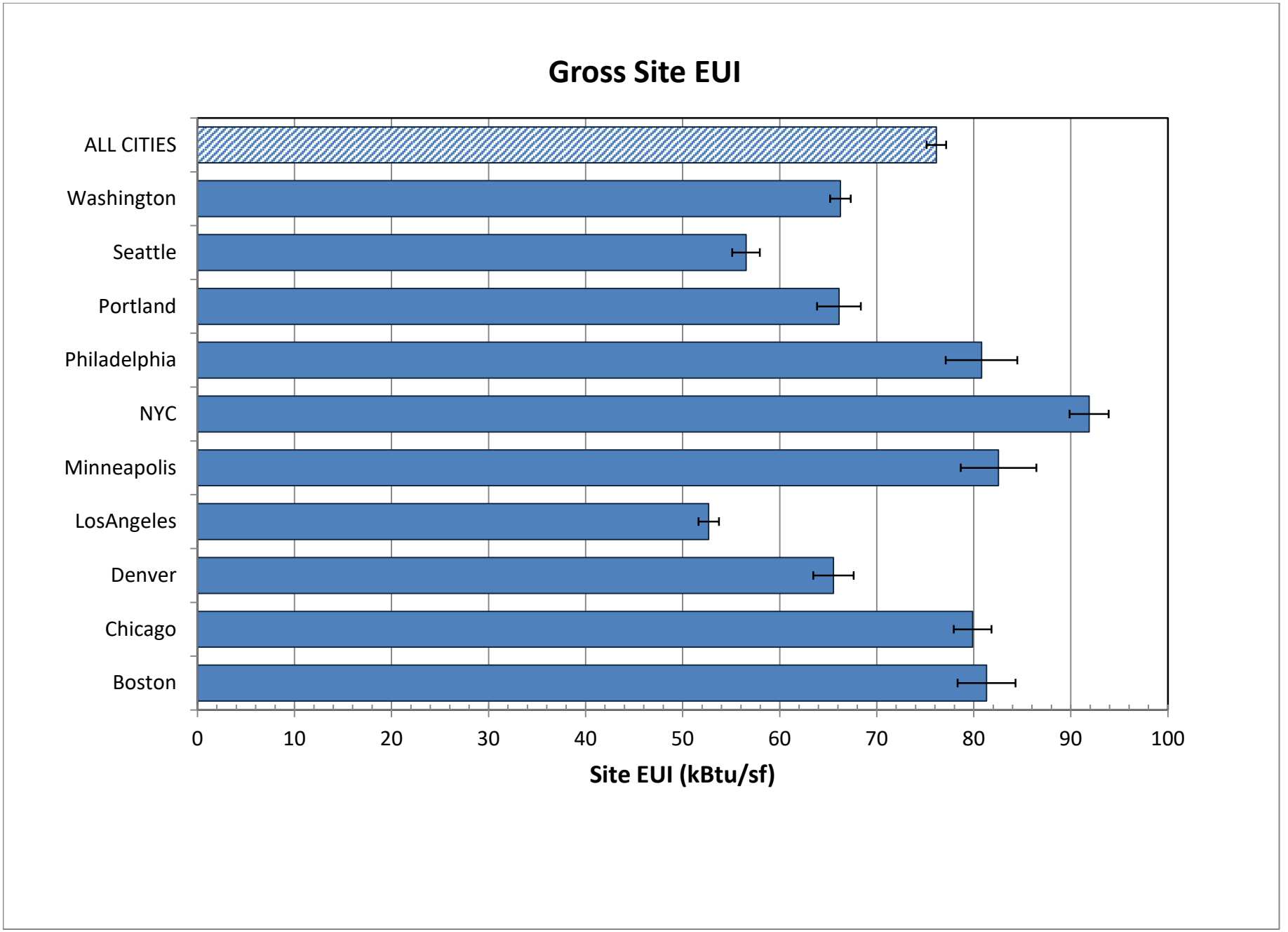

LEED Site EUI savings
error bars are ± 1 sigma
−δsite EUI (kBtu/sf)
35
30
25
20
15
10
5
0
-5
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

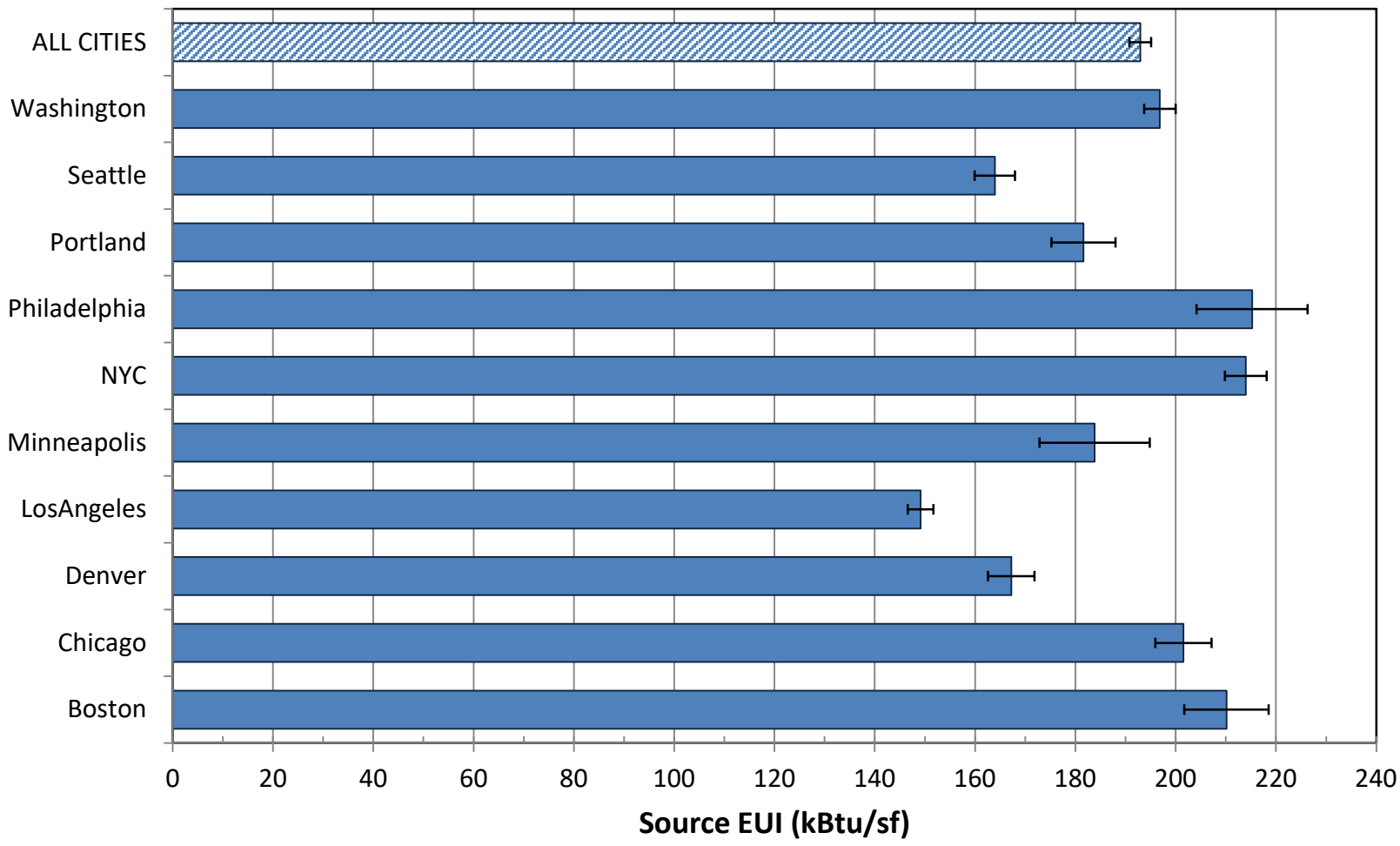

LEED Source EUI Savings
error bars are ± 1 sigma
–δ Source EUI (kBtu/sf)
100
80
60
40
20
0
-20
-40
-60
-80
-100
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

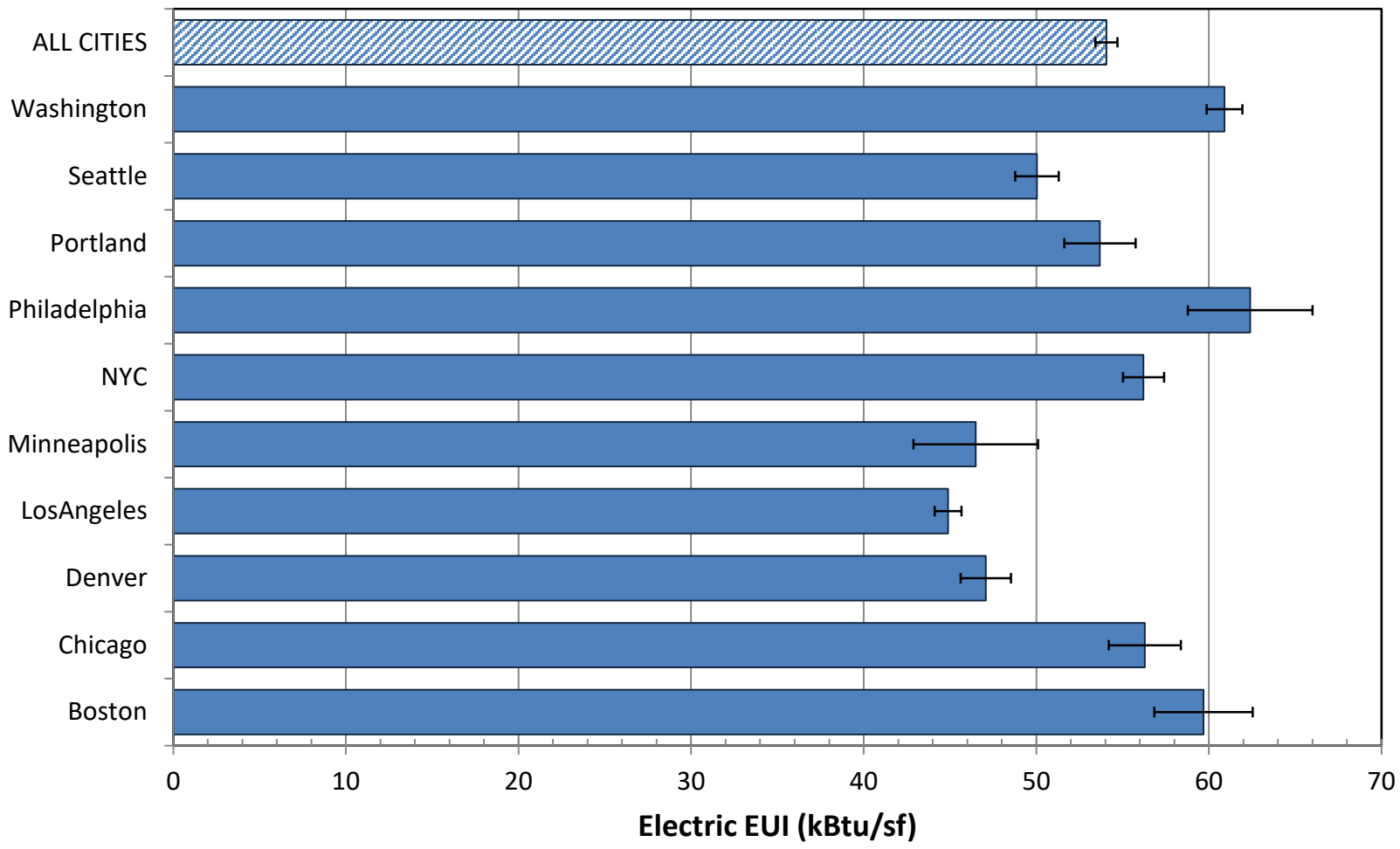

LEED Electric EUI (savings)
error bars are ± 1 sigma
–δElectricEUI (kBtu/sf)
25
20
15
10
5
0
-5
-10
-15
-20
-25
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

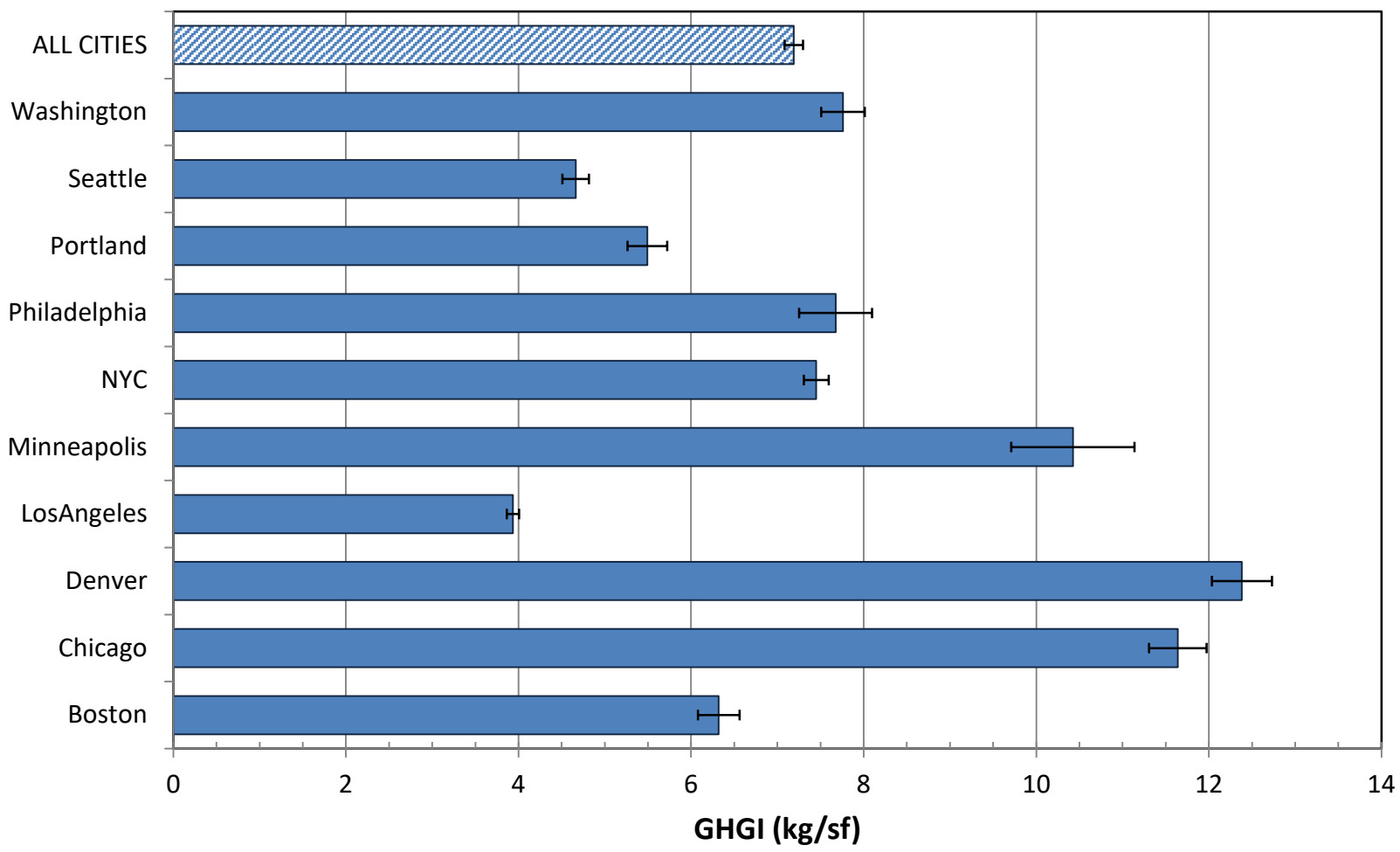

LEED non-Electric EUI (savings)
–δnonElectricEUI (kBtu/sf)
25
20
15
10
5
0
-5
-10
-15
-20
-25
error bars are ± 1 sigma
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

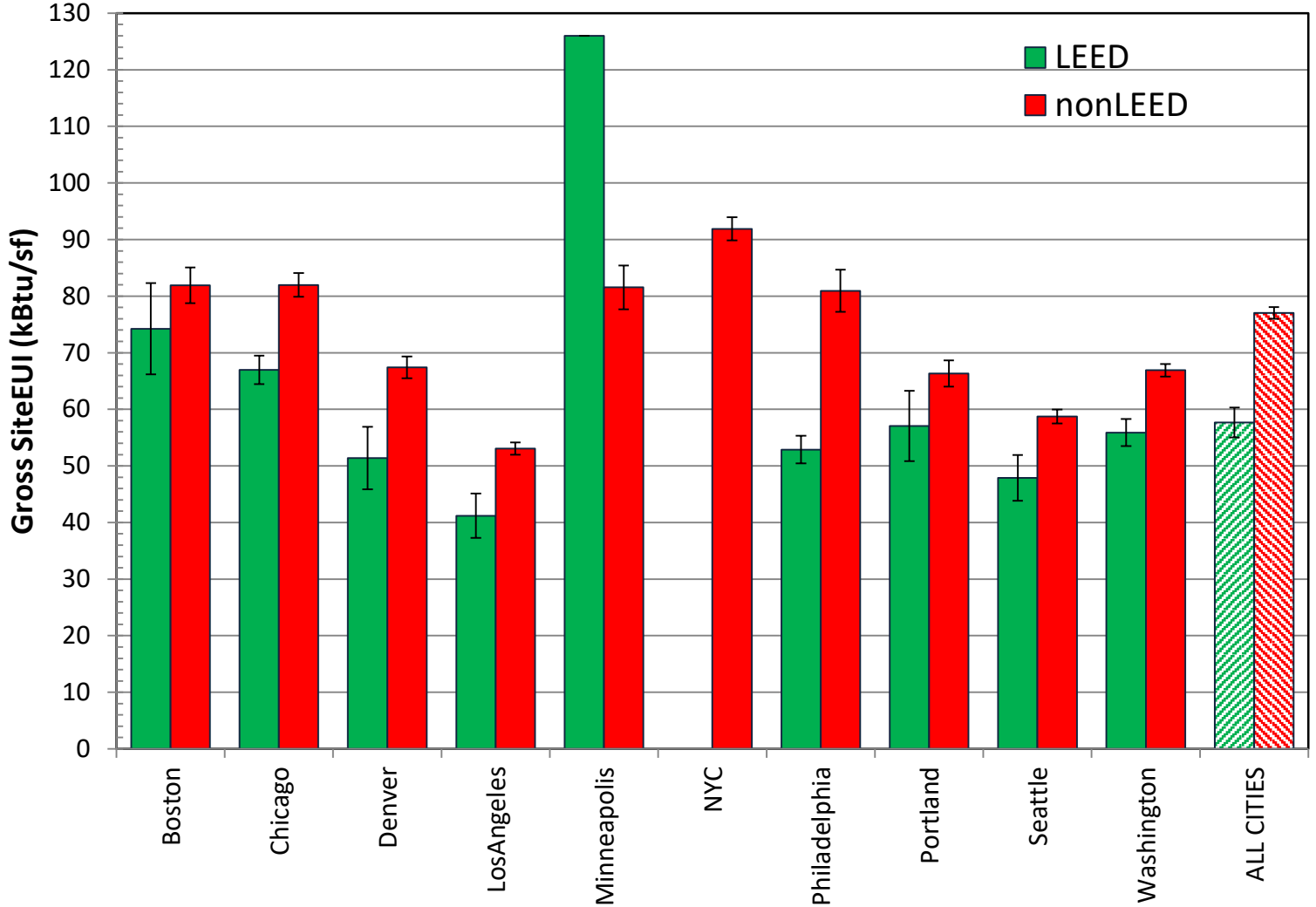

LEED GHG Intensity Savings
−δGHG I (kg/sf)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
error bars are ± 1 sigma
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

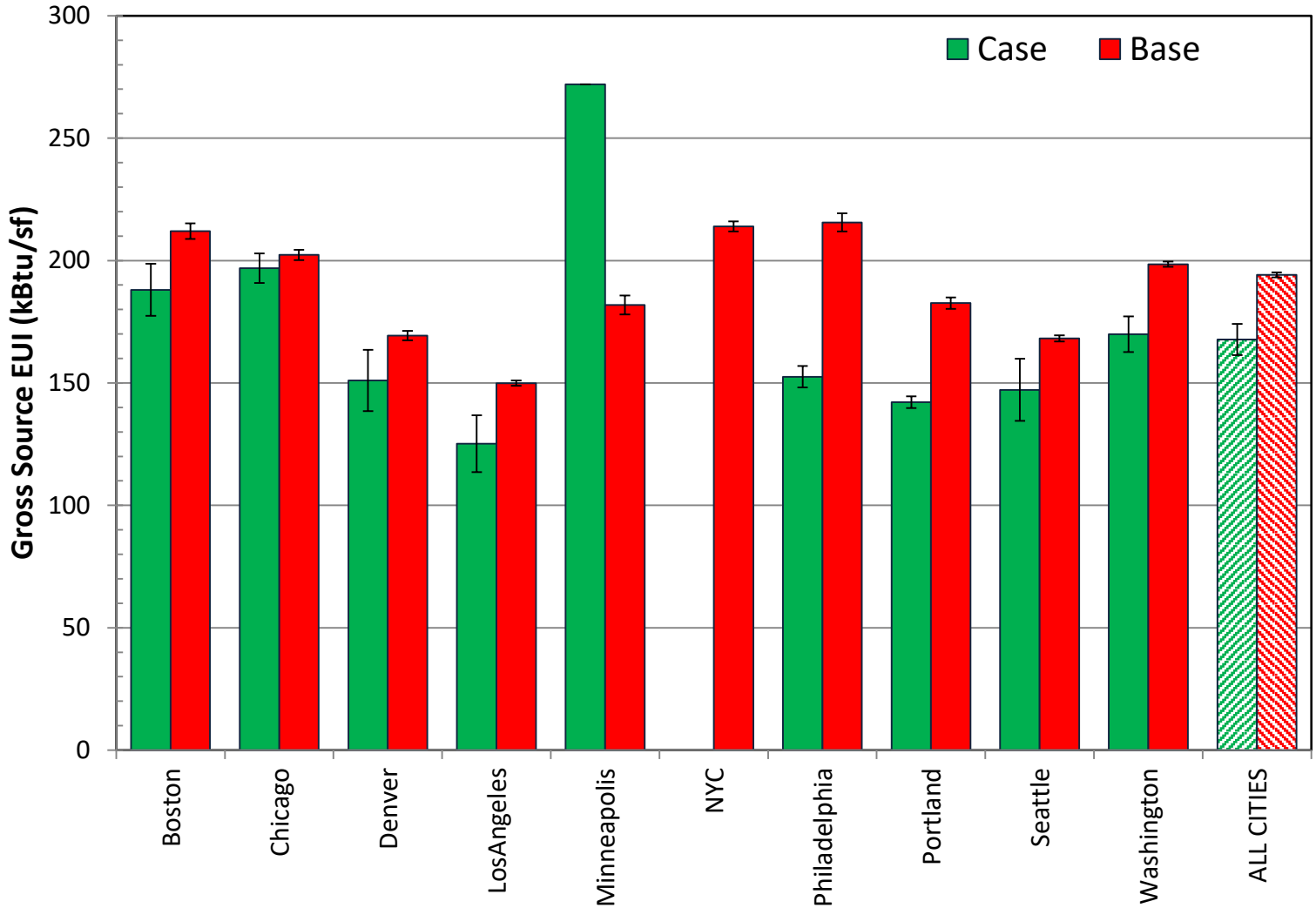

Gross Site EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
10
20
30
40
50
60
70
80
90
100
Site EUI (kBtu/sf)

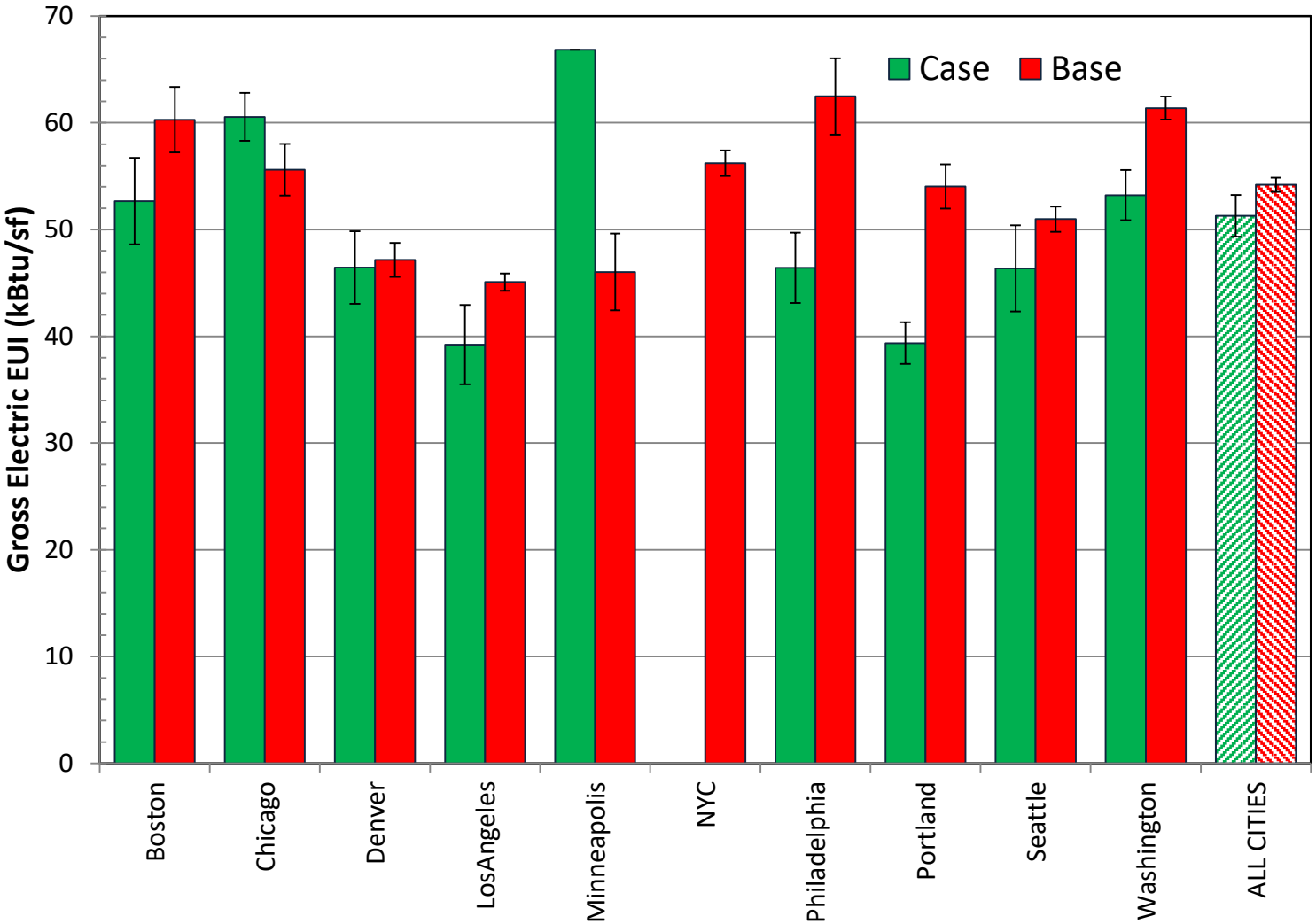

Gross Source EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
20
40
60
80
100
120
140
160
180
200
220
240
Source EUI (kBtu/sf)

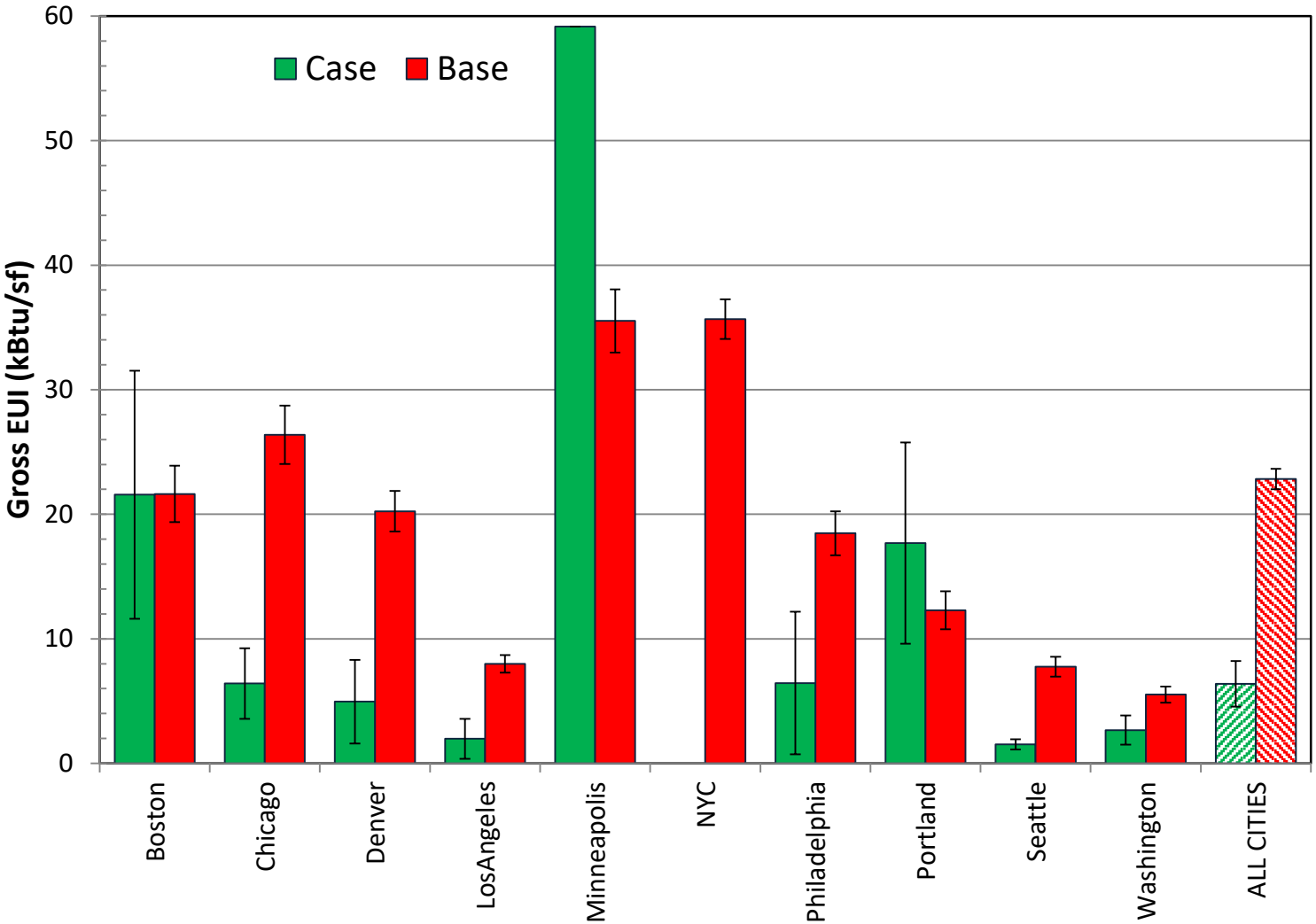

Gross Electric EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
10
20
30
40
50
60
70
Electric EUI (kBtu/sf)

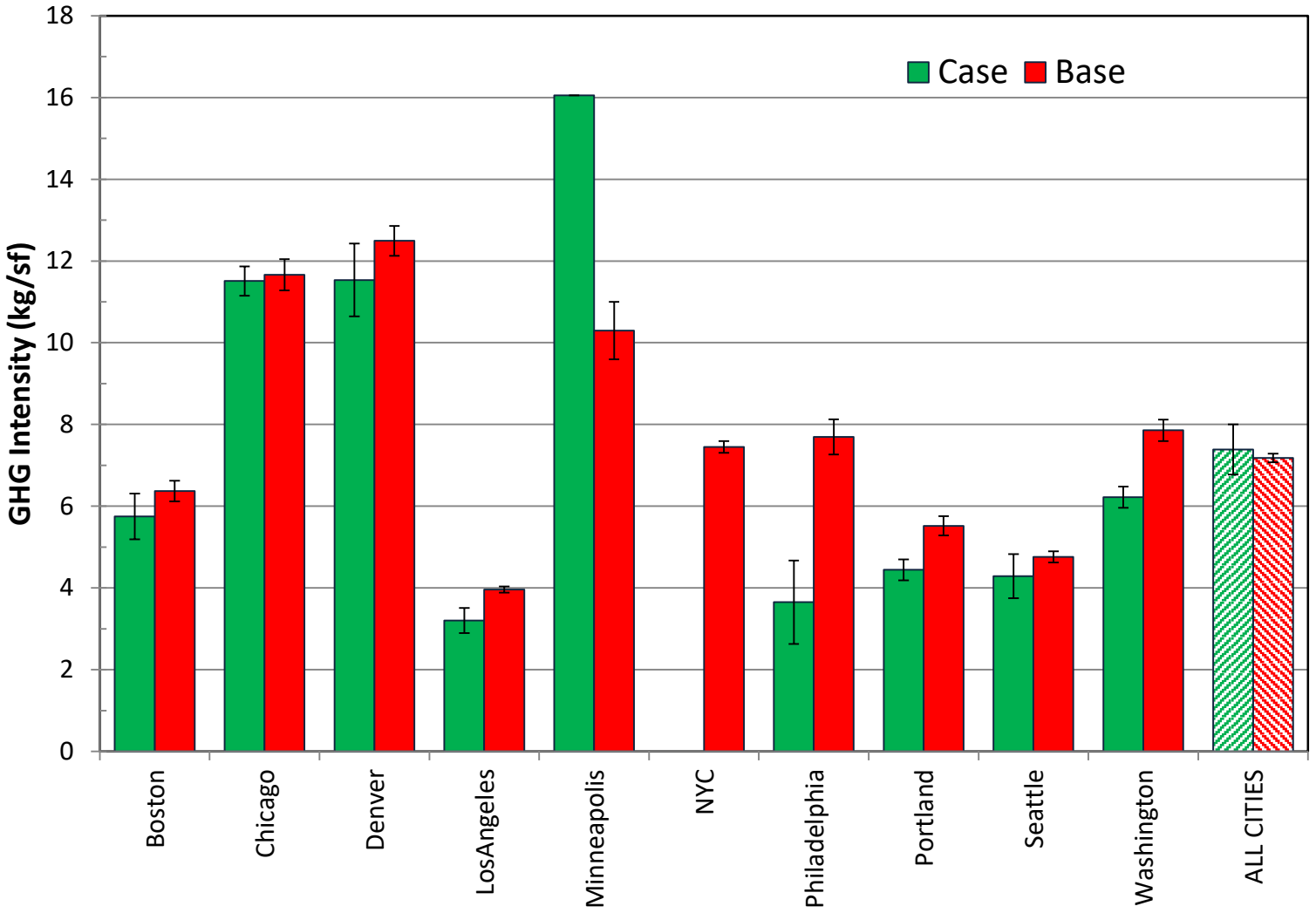

Gross GHGI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
2
4
6
8
10
12
14
GHGI (kg/sf)


Site Energy
Gross SiteEUI (kBtu/sf)
130
120
110
100
90
80
70
60
50
40
30
20
10
0
LEED
nonLEED
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


Source Energy
Gross Source EUI (kBtu/sf)
300
250
200
150
100
50
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


Electric Energy Use
Gross Electric EUI (kBtu/sf)
70
60
50
40
30
20
10
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


non-Electric Energy Use
Gross EUI (kBtu/sf)
60
50
40
30
20
10
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


GHG Emission
GHG Intensity (kg/sf)
18
16
14
12
10
8
6
4
2
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

					Site EUI (kBtu/sf)					Source EUI (kBtu/sf)					GHG intensity (kg/ft$_2$)					Electric Intensity (kBtu/sf)					nonElectric Intensity (kBtu/sf)				
Case	City	N	Neff	Tot. Area	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mearl	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm
1	Boston	35	27	23,413,149	71.6	70.6	20.3	14.8	2.6	188.9	182.7	49.2	37.2	6.0	5.64	5.78	2.01	1.73	0.34	54.4	52.0	16.3	13.4	2.2	17.1	18.6	17.5	15.3	2.9
2	Chicago	81	54	85,307,634	71.9	73.9	18.8	19.4	2.7	188.6	194.1	44.3	44.0	6.2	10.94	11.27	2.63	2.60	0.37	54.1	55.7	16.7	16.6	2.3	17.7	18.2	21.7	22.5	3.2
3	Denver	49	31	22,473,633	62.0	58.6	17.7	15.2	2.5	163.9	152.4	53.5	43.1	6.3	12.42	11.98	4.42	3.51	0.50	47.3	43.5	19.7	16.2	2.4	14.7	15.1	18.3	17.1	2.7
4	LosAngeles	41	22	28,041,596	50.6	47.1	16.1	14.3	2.9	146.6	136.6	47.1	40.0	7.5	3.75	3.54	1.38	1.07	0.20	44.7	41.7	15.2	12.8	2.3	6.0	5.4	8.5	8.5	1.7
5	Minneapolis	16	13	13,035,044	65.4	63.1	20.5	18.6	4.8	160.4	157.9	35.8	30.7	7.5	9.53	9.41	2.11	1.79	0.44	43.9	43.9	8.9	7.5	1.9	21.5	19.2	16.9	16.2	4.3
6	NYC	81	53	67,700,677	77.6	84.3	19.7	20.1	2.7	192.8	204.5	42.5	42.1	5.6	6.75	7.07	2.52	1.78	0.21	53.3	55.5	12.3	12.2	1.6	24.4	28.8	14.5	15.7	2.2
7	Philadelphia	16	11	11,814,767	66.7	69.0	10.3	9.8	2.9	191.9	199.2	34.3	30.1	8.4	6.69	6.91	1.73	1.54	0.47	58.3	60.6	11.9	10.2	2.8	8.4	8.4	7.2	6.9	2.0
8	Portland	0	NA	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9	Seattle	50	28	23,681,785	57.3	52.4	20.4	16.3	2.5	164.5	155.8	47.4	44.7	6.8	4.89	4.51	1.84	1.72	0.27	49.9	48.2	14.7	13.7	2.1	7.4	4.2	15.7	7.3	0.9
10	Washington	150	109	46,221,008	59.8	60.0	12.0	11.7	1.0	181.3	181.8	34.1	32.3	2.8	7.01	6.98	2.90	2.55	0.20	56.7	56.8	11.1	10.4	0.9	3.1	3.2	7.4	7.2	0.7
11	**ALL CITIES**	519	287	321,689,293	64.9	68.2	18.8	20.7	1.4	178.4	181.7	44.6	45.8	2.8	7.61	8.01	3.70	3.52	0.20	52.8	52.6	14.7	14.7	0.9	12.1	15.6	16.5	18.3	1.2
Base																													
1	Boston	127	48	34,107,872	81.5	85.5	34.8	29.6	3.4	202.8	223.9	90.2	84.5	10.6	6.18	6.70	2.60	2.37	0.28	56.1	64.2	29.4	28.2	3.7	25.5	21.3	26.3	21.0	2.7
2	Chicago	122	44	51,211,689	84.0	81.4	25.4	22.0	2.8	212.4	210.2	66.2	55.4	8.3	12.26	12.16	3.93	3.28	0.50	59.4	59.6	23.7	19.8	3.2	24.5	21.8	25.6	22.3	3.0
3	Denver	123	78	19,433,478	71.6	67.4	20.8	19.5	2.2	180.6	174.0	49.2	46.0	5.0	13.16	12.75	3.85	3.70	0.41	50.4	49.4	16.5	15.1	1.5	21.2	18.1	19.1	17.0	1.7
4	LosAngeles	599	215	153,976,231	56.0	53.0	23.2	18.7	1.1	157.9	149.9	62.6	49.3	2.7	4.13	3.96	1.67	1.33	0.07	47.4	45.1	19.3	15.4	0.8	8.5	7.9	11.6	11.1	0.8
5	Minneapolis	56	25	16,742,604	90.9	80.6	37.2	30.7	4.5	197.2	180.1	85.8	77.5	11.8	11.05	10.13	5.67	5.16	0.77	48.7	45.7	26.9	24.9	3.8	42.2	34.9	29.8	23.2	3.2
6	NYC	618	240	235,636,164	88.6	96.8	45.8	44.5	2.6	201.6	223.0	95.8	92.0	5.1	7.09	7.76	3.47	3.18	0.18	52.0	58.1	26.7	25.9	1.5	36.6	38.7	33.3	33.5	2.2
7	Philadelphia	74	36	31,703,213	76.7	76.8	32.3	24.6	3.4	198.8	206.5	74.0	56.4	7.8	7.36	7.30	5.06	3.27	0.38	56.6	60.2	22.3	16.6	2.3	20.2	16.6	23.8	17.0	2.4
8	Portland				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9	Seattle	236	81	28,534,329	58.4	58.9	21.5	17.9	1.5	168.0	174.6	62.1	53.8	4.4	5.04	4.87	2.25	1.87	0.18	51.0	53.9	20.4	17.6	1.4	7.4	5.0	13.6	9.6	0.7
10	Washington	224	131	55,422,963	69.3	65.9	18.3	16.7	1.3	208.1	199.6	53.0	49.3	4.0	7.93	7.85	2.82	3.32	0.32	64.7	62.4	17.6	16.0	1.3	4.5	3.5	12.0	9.0	0.6
11	**ALL CITIES**	2,179	781	626,768,543	72.4	77.3	34.9	36.7	1.3	185.9	196.3	77.7	77.8	2.7	6.83	7.20	4.02	3.80	0.14	52.6	55.1	23.2	22.4	0.8	19.8	22.3	26.4	27.8	1.1
		median YearBuilt																											
Comparison		**LEED**	**nonLEED**		**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**	**Percent**	**delta**	**t-value**	**p-value**	**sd**
1	Boston	1975	1974		-17.5%	-15.0	-2.43	0.0144	6.1	-18.4%	-41.2	-2.26	0.0223	18.2	-13.6%	-0.91	-1.63	0.1042	0.56	-19.0%	-12.2	-1.96	0.0459	6.2	-12.9%	-2.8	-0.55	0.5872	5.0
2	Chicago	1973	1973		-9.2%	-7.5	-1.80	0.0689	4.2	-7.6%	-16.0	-1.50	0.1368	10.7	-7.4%	-0.89	-1.39	0.1673	0.64	-6.5%	-3.9	-0.95	0.3575	4.1	-16.5%	-3.6	-0.77	0.4462	4.7
3	Denver	1986	1986		-13.2%	-8.9	-2.26	0.0224	3.9	-12.4%	-21.6	-2.24	0.0240	9.6	-6.1%	-0.77	-1.07	0.2874	0.73	-11.9%	-5.9	-1.76	0.0772	3.3	-16.7%	-3.0	-0.80	0.4279	3.8
4	LosAngeles	1983	1983		-11.1%	-5.9	-1.39	0.1667	4.2	-8.9%	-13.3	-1.25	0.2054	10.7	-10.5%	-0.41	-1.44	0.1495	0.29	-7.6%	-3.4	-1.04	0.2859	3.3	-31.5%	-2.5	-0.88	0.3840	2.8
5	Minneapolis	1975	1975		-21.7%	-17.5	-1.99	0.0481	8.8	-12.4%	-22.3	-1.17	0.2260	19.0	-7.1%	-0.72	-0.61	0.5367	1.18	-4.1%	-1.9	-0.33	0.7425	5.6	-44.9%	-15.7	-2.17	0.0295	7.2
6	NYC	1957	1957		-12.9%	-12.5	-1.88	0.0576	6.6	-8.3%	-18.5	-1.41	0.1563	13.1	-8.9%	-0.69	-1.49	0.1361	0.46	-4.5%	-2.6	-0.68	0.4874	3.8	-25.5%	-9.9	-1.79	0.0721	5.5
7	Philadelphia	1984	1984		-10.2%	-7.8	-1.08	0.2831	7.2	-3.6%	-7.4	-0.45	0.6516	16.3	-5.2%	-0.38	-0.47	0.6330	0.81	0.6%	0.4	0.08	0.9368	4.9	-49.5%	-8.2	-1.64	0.0915	5.0
8	Portland	NA	NA		#VALUE!	NA	#VALUE!	NA	NA	#VALUE!	NA	#VALUE!	NA	NA	#VALUE!	NA	#VALUE!	NA	NA	#VALUE!	NA	#VALUE!	NA	NA	#VALUE!	NA	#VALUE!	NA	NA
9	Seattle	1986	1986		-11.0%	-6.5	-1.67	0.0940	3.9	-10.8%	-18.8	-1.70	0.0863	11.0	-7.3%	-0.36	-0.85	0.3931	0.42	-10.6%	-5.7	-1.67	0.0928	3.4	-15.8%	-0.8	-0.52	0.5933	1.5
10	Washington	1986	1986		-8.9%	-5.9	-3.37	0.0004	1.7	-8.9%	-17.8	-3.46	0.0007	5.1	-11.1%	-0.87	-2.18	0.0261	0.40	-8.9%	-5.6	-3.36	0.0012	1.7	-9.3%	-0.3	-0.35	0.7177	0.9
11	**ALL CITIES**	1978	1975		-11.8%	-9.2	-4.43	0.0000	2.1	-9.6%	-18.9	-4.23	0.0000	4.5	-10.2%	-0.73	-3.85	0.0001	0.19	-8.1%	-4.5	-3.18	0.0014	1.4	-21.1%	-4.7	-2.66	0.0076	1.8

All	City	N	Neff	Tot. Area	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm	mean	wt.mean	sd	wt.sd	sdm
1	Boston	162	74	57,521,021	79.4	79.4	32.4	25.8	2.5	199.8	207.1	83.2	72.2	7.3	6.1	6.3	2.5	2.2	0.23	55.7	59.2	27.1	24.1	2.5	23.7	20.2	24.9	19.0	2.0
2	Chicago	203	96	136,519,323	79.1	76.7	23.7	20.8	2.1	202.9	200.1	59.5	49.2	5.2	11.7	11.6	3.5	2.9	0.31	57.3	57.2	21.3	17.9	1.9	21.8	19.5	24.3	22.5	2.3
3	Denver	172	82	41,907,111	68.9	62.7	20.4	17.9	1.8	175.8	162.4	50.9	45.7	4.3	12.9	12.3	4.0	3.6	0.33	49.5	46.2	17.5	16.0	1.5	19.3	16.5	19.0	17.1	1.7
4	LosAngeles	640	225	182,017,827	55.6	52.1	22.8	18.2	1.0	157.2	147.8	61.8	48.2	2.6	4.1	3.9	1.7	1.3	0.07	47.3	44.6	19.1	15.0	0.8	8.4	7.5	11.5	10.8	0.7
5	Minneapolis	72	36	29,777,648	85.2	72.9	35.7	27.5	3.5	189.0	170.4	78.8	62.5	7.6	10.7	9.8	5.1	4.1	0.47	47.6	44.9	24.1	19.4	2.3	37.6	28.0	28.7	21.9	2.9
6	NYC	699	289	303,336,841	87.3	94.0	43.7	40.7	2.1	200.6	218.9	91.2	83.8	4.1	7.1	7.6	3.4	2.9	0.15	52.1	57.5	25.5	23.5	1.2	35.2	36.5	31.9	30.7	1.8
7	Philadelphia	90	47	43,517,980	74.9	74.7	29.8	21.9	2.7	197.5	204.5	68.6	50.7	6.1	7.2	7.2	4.6	2.9	0.30	56.9	60.3	20.8	15.2	1.8	18.1	14.3	22.2	15.4	1.9
8	Portland	0	NA	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9	Seattle	286	91	52,216,114	58.2	56.0	21.3	17.5	1.4	167.4	166.1	59.7	50.7	4.1	5.0	4.7	2.2	1.8	0.16	50.8	51.3	19.5	16.2	1.3	7.4	4.6	13.9	8.6	0.6
10	Washington	374	239	101,643,971	65.5	63.2	16.7	14.9	0.8	197.3	191.5	48.2	43.3	2.5	7.6	7.5	2.9	3.0	0.20	61.5	59.9	15.8	14.0	0.8	4.0	3.3	10.4	8.2	0.4
11	**ALL CITIES**	2,698	1,042	948,457,836	70.9	74.3	32.6	32.5	1.0	184.4	191.3	72.6	69.0	2.0	7.0	7.5	4.0	3.7	0.11	52.6	54.2	21.9	20.2	0.6	18.3	20.0	25.0	25.2	0.8

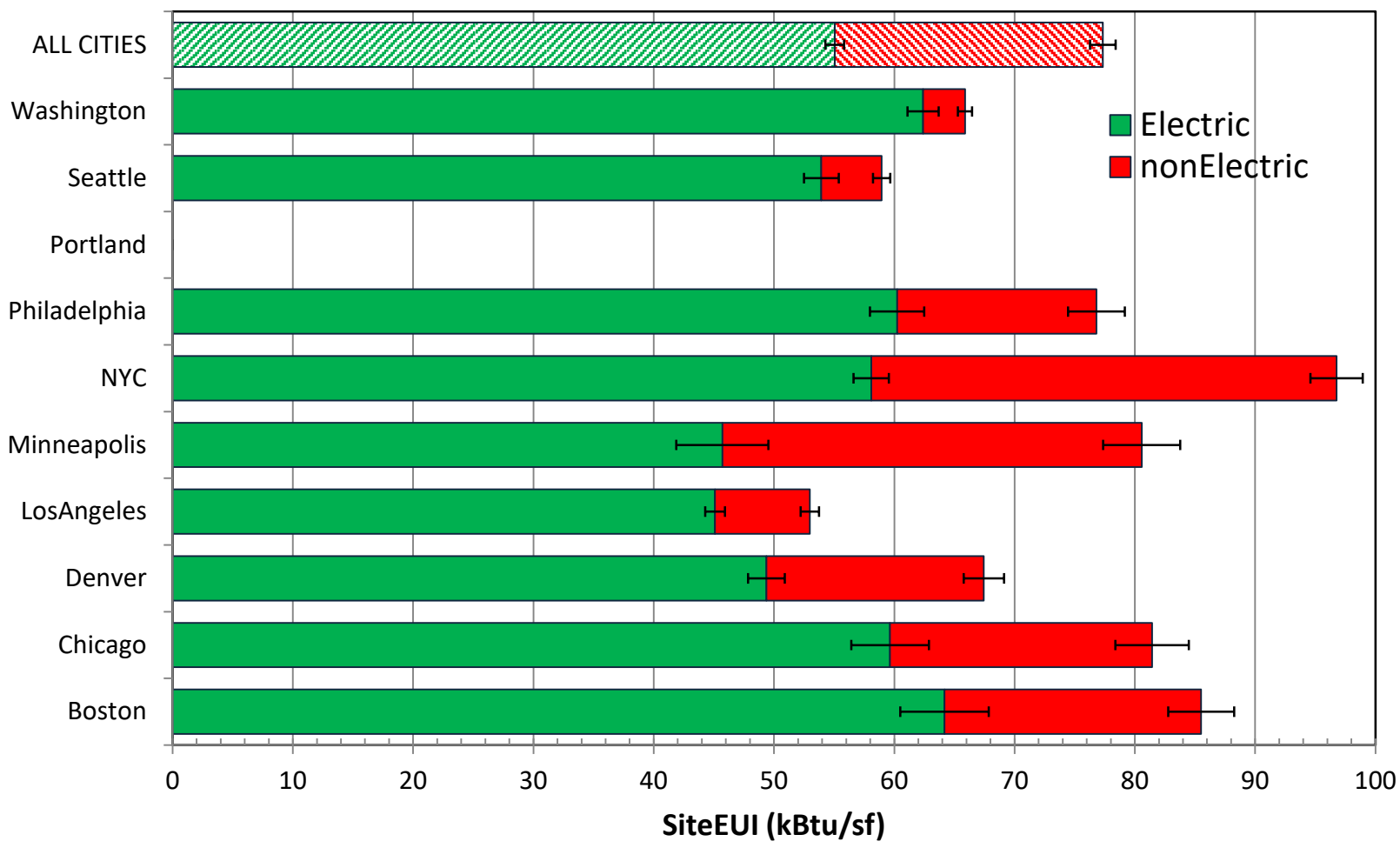
Office - LEED savings relative to nonLEED																			
	LEED		Base (nonLEED)		SiteEUI			ElectricEUI			nonElectricEUI			SourceEUI			GHGI (kg/ft^2)		
City	N	A ($10^6 ft^2$)	N	A ($10^6 ft^2$)	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p	Base	LEED-δ	p
Boston	35	23.4	127	34.1	86	17%	0.014	64	19%	0.046	21	13%	0.587	224	18%	0.022	6.7	14%	0.104
Chicago	81	85.3	122	51.2	81	9%	0.069	60	7%	0.358	22	17%	0.446	210	8%	0.137	12.2	7%	0.167
Denver	49	22.5	123	19.4	67	13%	0.022	49	12%	0.077	18	17%	0.428	174	12%	0.024	12.8	6%	0.287
LosAngeles	41	28.0	599	154.0	53	11%	0.167	45	8%	0.286	8	32%	0.384	150	9%	0.205	4.0	10%	0.150
Minneapolis	16	13.0	56	16.7	81	22%	0.048	46	4%	0.743	35	45%	0.030	180	12%	0.226	10.1	7%	0.537
NYC	81	67.7	618	235.6	97	13%	0.058	58	4%	0.487	39	25%	0.072	223	8%	0.156	7.8	9%	0.136
Philadelphia	16	11.8	74	31.7	77	10%	0.283	60	-1%	0.937	17	50%	0.092	207	4%	0.652	7.3	5%	0.633
Portland	0	0.0	0	0.0	NA	#VALUE!	NA	NA	#VALUE!	NA	NA	#VALUE!	NA	NA	#VALUE!	NA	NA	#VALUE!	NA
Seattle	50	23.7	236	28.5	59	11%	0.094	54	11%	0.093	5	16%	0.593	175	11%	0.086	4.9	7%	0.393
Washington	150	46.2	224	55.4	66	9%	0.000	62	9%	0.001	3	9%	0.718	200	9%	0.001	7.9	11%	0.026
Aggregate	**519**	**321.7**	**2179**	**626.8**	**77**	**12%**	**0.000**	**55**	**8%**	**0.001**	**22**	**21%**	**0.008**	**196**	**10%**	**0.000**	**7.2**	**10%**	**0.000**

													LEED savings "delta"									
			SiteEUI		ElectricEUI		nElectricEUI		SourceEUI		GHGI		SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston	162	57.5	79	3.2%	59	4.3%	20	10.0%	207	3.5%	6.3	3.6%										
nonLEED	127	34.1	86	4.0%	64	5.7%	21	12.8%	224	4.7%	6.7	4.2%	15.0	0.014	12.2	0.046	2.8	0.587	41	0.022	0.9	0.104
LEED	35	23.4	71	3.7%	52	4.3%	19	15.8%	183	3.3%	5.8	5.9%	17%		19%		13%		18%		14%	
Chicago	203	136.5	77	2.7%	57	3.4%	20	11.8%	200	2.6%	11.6	2.7%										
nonLEED	122	51.2	81	3.4%	60	5.4%	22	14.0%	210	3.9%	12.2	4.1%	7.5	0.069	3.9	0.358	3.6	0.446	16	0.137	0.9	0.167
LEED	81	85.3	74	3.7%	56	4.2%	18	17.7%	194	3.2%	11.3	3.3%	9%		7%		17%		8%		7%	
Denver	172	41.9	63	2.8%	46	3.3%	16	10.2%	162	2.7%	12.3	2.7%										
nonLEED	123	19.4	67	3.2%	49	3.1%	18	9.3%	174	2.9%	12.8	3.2%	8.9	0.022	5.9	0.077	3.0	0.428	22	0.024	0.8	0.287
LEED	49	22.5	59	4.2%	44	5.4%	15	18.2%	152	4.1%	12.0	4.2%	13%		12%		17%		12%		6%	
LosAngeles	640	182.0	52	2.0%	45	1.8%	7	9.3%	148	1.7%	3.9	1.8%										
nonLEED	599	154.0	53	2.1%	45	1.8%	8	9.7%	150	1.8%	4.0	1.9%	5.9	0.167	3.4	0.286	2.5	0.384	13	0.205	0.4	0.150
LEED	41	28.0	47	6.1%	42	5.6%	5	32.3%	137	5.5%	3.5	5.7%	11%		8%		32%		9%		10%	
Minneapolis	72	29.8	73	4.9%	45	5.0%	38	10.5%	170	4.4%	9.8	4.8%										
nonLEED	56	16.7	81	5.6%	46	8.4%	35	9.2%	180	6.6%	10.1	7.6%	17.5	0.048	1.9	0.743	15.7	0.030	22	0.226	0.7	0.537
LEED	16	13.0	63	7.6%	44	4.2%	19	22.4%	158	4.7%	9.4	4.7%	22%		4%		45%		12%		7%	
NYC	699	303.3	94	2.2%	58	2.1%	36	4.9%	219	1.9%	7.6	1.9%										
nonLEED	618	235.6	97	2.6%	58	2.5%	39	5.6%	223	2.3%	7.8	2.3%	12.5	0.058	2.6	0.487	9.9	0.072	19	0.156	0.7	0.136
LEED	81	67.7	84	3.2%	55	3.0%	29	7.6%	204	2.7%	7.1	3.0%	13%		4%		25%		8%		9%	
Philadelphia	90	43.5	75	3.6%	60	3.0%	14	13.2%	205	3.0%	7.2	4.1%										
nonLEED	74	31.7	77	4.5%	60	3.7%	17	14.3%	207	3.8%	7.3	5.1%	7.8	0.283	-0.4	0.937	8.2	0.092	7	0.652	0.4	0.633
LEED	16	11.8	69	4.2%	61	4.6%	8	24.4%	199	4.2%	6.9	6.7%	10%		-1%		50%		4%		5%	
Portland	0	0.0	NA	######	NA	#####	NA	######	NA	#####	NA	#####										
nonLEED	0	0.0	NA	######	NA	#####	NA	######	NA	#####	NA	#####	#VALUE!	NA	#VALUE!	NA	#VALUE!	NA	#VALUE!	NA	#VALUE!	NA
LEED	0	0.0	NA	######	NA	#####	NA	######	NA	#####	NA	#####	#VALUE!		#VALUE!		#VALUE!		#VALUE!		#VALUE!	
Seattle	286	52.2	56	2.6%	51	2.5%	5	12.2%	166	2.5%	4.7	3.4%										
nonLEED	236	28.5	59	2.5%	54	2.7%	5	14.3%	175	2.5%	4.9	3.7%	6.5	0.094	5.7	0.093	0.8	0.593	19	0.086	0.4	0.393
LEED	50	23.7	52	4.7%	48	4.3%	4	21.1%	156	4.3%	4.5	6.0%	11%		11%		16%		11%		7%	
Washington	374	101.6	63	1.3%	60	1.4%	3	13.4%	191	1.3%	7.5	2.6%										
nonLEED	224	55.4	66	2.0%	62	2.1%	3	16.9%	200	2.0%	7.9	4.1%	5.9	0.000	5.6	0.001	0.3	0.718	18	0.001	0.9	0.026
LEED	150	46.2	60	1.7%	57	1.6%	3	21.5%	182	1.5%	7.0	2.8%	9%		9%		9%		9%		11%	
Aggregate	2,698	948.5	74	1.4%	54	1.1%	20	4.1%	191	1.1%	7.5	1.5%										
nonLEED	2,179	626.8	77	1.7%	55	1.4%	22	4.8%	196	1.4%	7.2	1.9%	9.2	0.000	4.5	0.001	4.7	0.008	19	0.000	0.7	0.000
LEED	519	321.7	68	2.0%	53	1.7%	16	7.7%	182	1.5%	8.0	2.5%	12%		8%		21%		10%		10%	

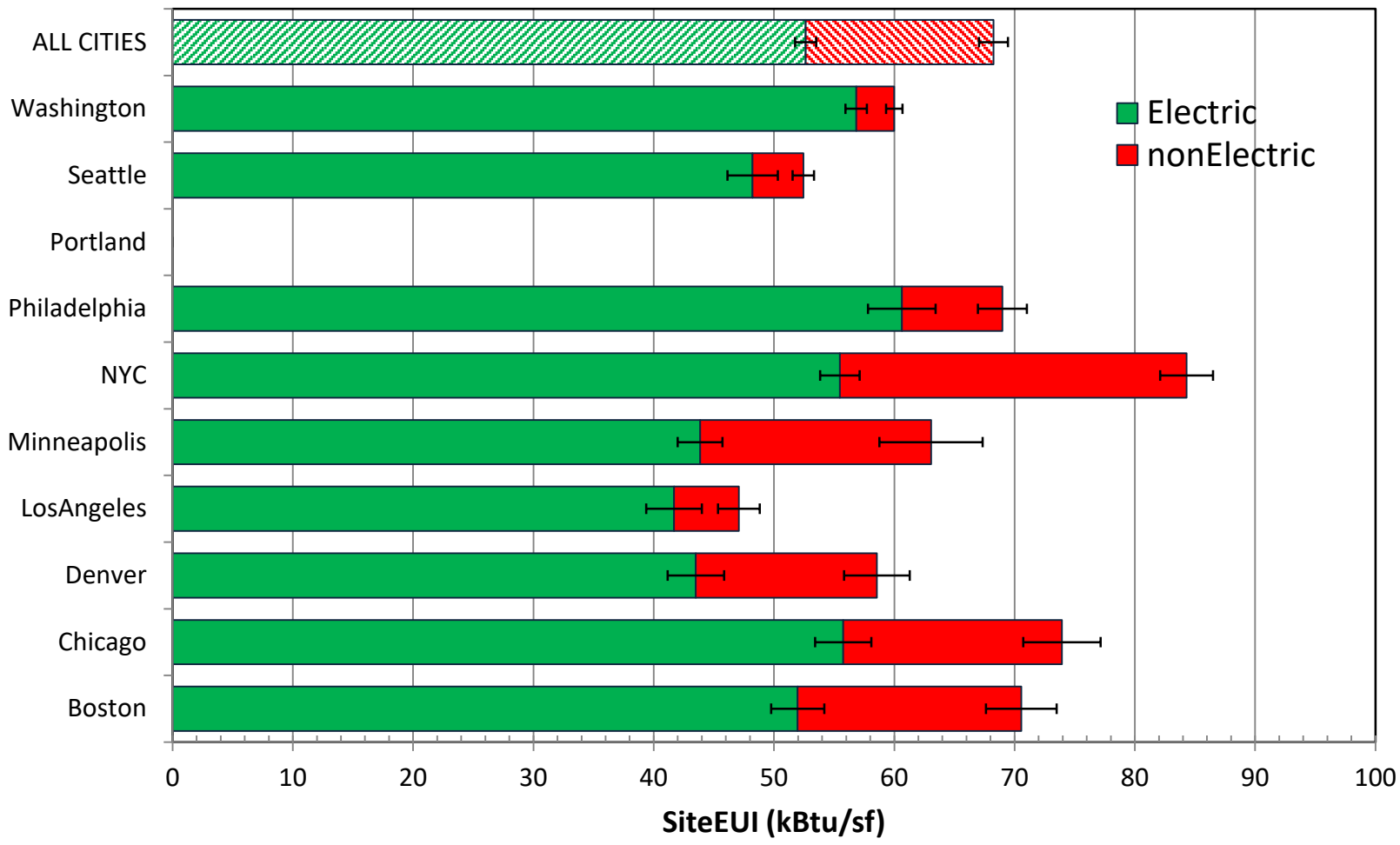
	ALL		nonLEED											
					SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE
Boston	162	57.5	127	34.1	86	4%	64	6%	21	13%	224	5%	6.7	4%
Chicago	203	136.5	122	51.2	81	3%	60	5%	22	14%	210	4%	12.2	4%
Denver	172	41.9	123	19.4	67	3%	49	3%	18	9%	174	3%	12.8	3%
LosAngeles	640	182.0	599	154.0	53	2%	45	2%	7.9	10%	150	2%	4.0	2%
Minneapolis	72	29.8	56	16.7	81	6%	46	8%	35	9%	180	7%	10.1	8%
NYC	699	303.3	618	235.6	97	3%	58	3%	39	6%	223	2%	7.8	2%
Philadelphia	90	43.5	74	31.7	77	4%	60	4%	17	14%	207	4%	7.3	5%
Portland	0	0.0	0	0.0	NA	######	NA	#####	NA	#####	NA	#####	NA	#####
Seattle	286	52.2	236	28.5	59	2%	54	3%	5.0	14%	175	3%	4.9	4%
Washington	374	101.6	224	55.4	66	2%	62	2%	3.5	17%	200	2%	7.9	4%
Aggregate	2,698	948.5	2,179	626.8	77	2%	55.1	1%	22.3	5%	196	1%	7.2	2%

		LEED		LEED savings "delta"									
City		N	A (Mft^2)	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston		35	23.4	15.0	0.014	12.2	0.046	2.8	0.587	41	0.022	0.9	0.104
Chicago		81	85.3	7.5	0.069	3.9	0.358	3.6	0.446	16	0.137	0.9	0.167
Denver		49	22.5	8.9	0.022	5.9	0.077	3.0	0.428	22	0.024	0.8	0.287
LosAngeles		41	28.0	5.9	0.167	3.4	0.286	2.5	0.384	13	0.205	0.4	0.150
Minneapolis		16	13.0	17.5	0.048	1.9	0.743	15.7	0.030	22	0.226	0.7	0.537
NYC		81	67.7	12.5	0.058	2.6	0.487	9.9	0.072	19	0.156	0.7	0.136
Philadelphia		16	11.8	7.8	0.283	-0.4	0.937	8.2	0.092	7	0.652	0.4	0.633
Portland		0	0.0	#VALUE!	NA	#VALUE!	NA	#VALUE!	NA	#VALUE!	NA	#####	NA
Seattle		50	23.7	6.5	0.094	5.7	0.093	0.8	0.593	19	0.086	0.4	0.393
Washington		150	46.2	5.9	0.000	5.6	0.001	0.3	0.718	18	0.001	0.9	0.026
Aggregate		519	321.7	9.2	0.000	4.5	0.001	4.7	0.0076	19	0.000	0.7	0.000

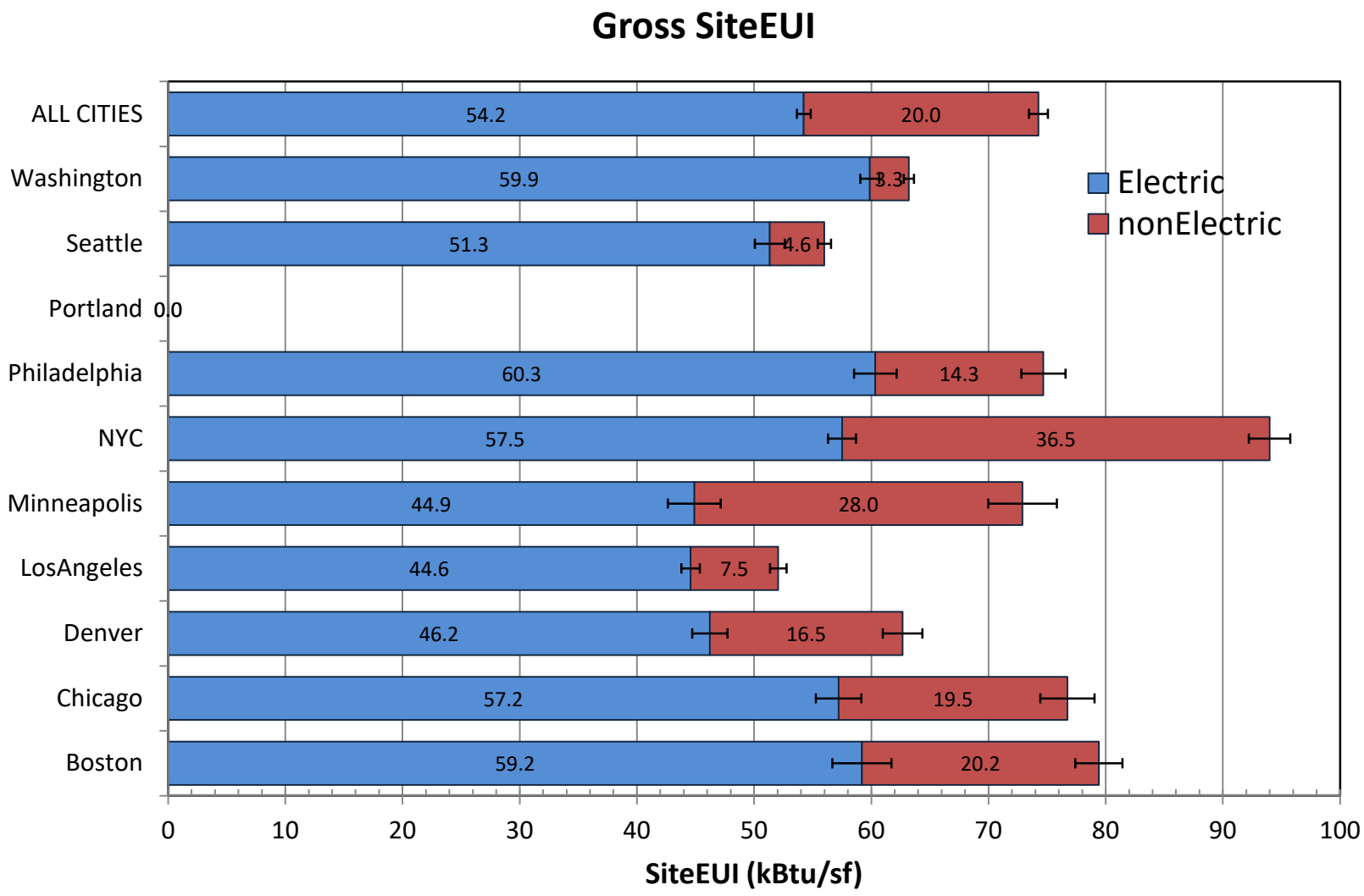
	LEED		nonLEED												LEED savings "delta"									
					SiteEUI		ElectricEUI		nElectricEUI		SourceEUI		GHGI		SiteEUI		ElectricEUI		nonElectricEUI		SourceEUI		GHGI	
City	N	A (Mft^2)	N	A (Mft^2)	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kBtu/ft^2	RSE	kg/ft^2	RSE	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kBtu/ft^2	p	kg/ft^2	p
Boston	35	23.4	127	34.1	86	4%	64	6%	21	13%	224	5%	6.7	4%	15.0	0.014	12.2	0.046	2.8	0.587	41	0.0223	0.9	0.104
Chicago	81	85.3	122	51.2	81	3%	60	5%	22	14%	210	4%	12.2	4%	7.5	0.069	3.9	0.358	3.6	0.446	16	0.1368	0.9	0.167
Denver	49	22.5	123	19.4	67	3%	49	3%	18	9%	174	3%	12.8	3%	8.9	0.022	5.9	0.077	3.0	0.428	22	0.0240	0.8	0.287
LosAngeles	41	28.0	599	154.0	53	2%	45	2%	7.9	10%	150	2%	4.0	2%	5.9	0.167	3.4	0.286	2.5	0.384	13	0.2054	0.4	0.150
Minneapolis	16	13.0	56	16.7	81	6%	46	8%	35	9%	180	7%	10.1	8%	17.5	0.048	1.9	0.743	15.7	0.030	22	0.2260	0.7	0.537
NYC	81	67.7	618	235.6	97	3%	58	3%	39	6%	223	2%	7.8	2%	12.5	0.058	2.6	0.487	9.9	0.072	19	0.1563	0.7	0.136
Philadelphia	16	11.8	74	31.7	77	4%	60	4%	17	14%	207	4%	7.3	5%	7.8	0.283	-0.4	0.937	8.2	0.092	7	0.6516	0.4	0.633
Portland	0	0.0	0	0.0	NA	######	NA	#####	NA	#####	NA	#####	NA	#####	#VALUE!	NA	#VALUE!	NA	#VALUE!	NA	#VALUE!	NA	#VALUE!	NA
Seattle	50	23.7	236	28.5	59	2%	54	3%	5.0	14%	175	3%	4.9	4%	6.5	0.094	5.7	0.093	0.8	0.593	19	0.0863	0.4	0.393
Washington	150	46.2	224	55.4	66	2%	62	2%	3.5	17%	200	2%	7.9	4%	5.9	0.000	5.6	0.001	0.3	0.718	18	0.0007	0.9	0.026
Aggregate	519	321.7	2,179	626.8	77	2%	55.1	1%	22.3	5%	196	1%	7.2	2%	9.2	0.000	4.5	0.001	4.7	0.008	19	0.000	0.7	0.000

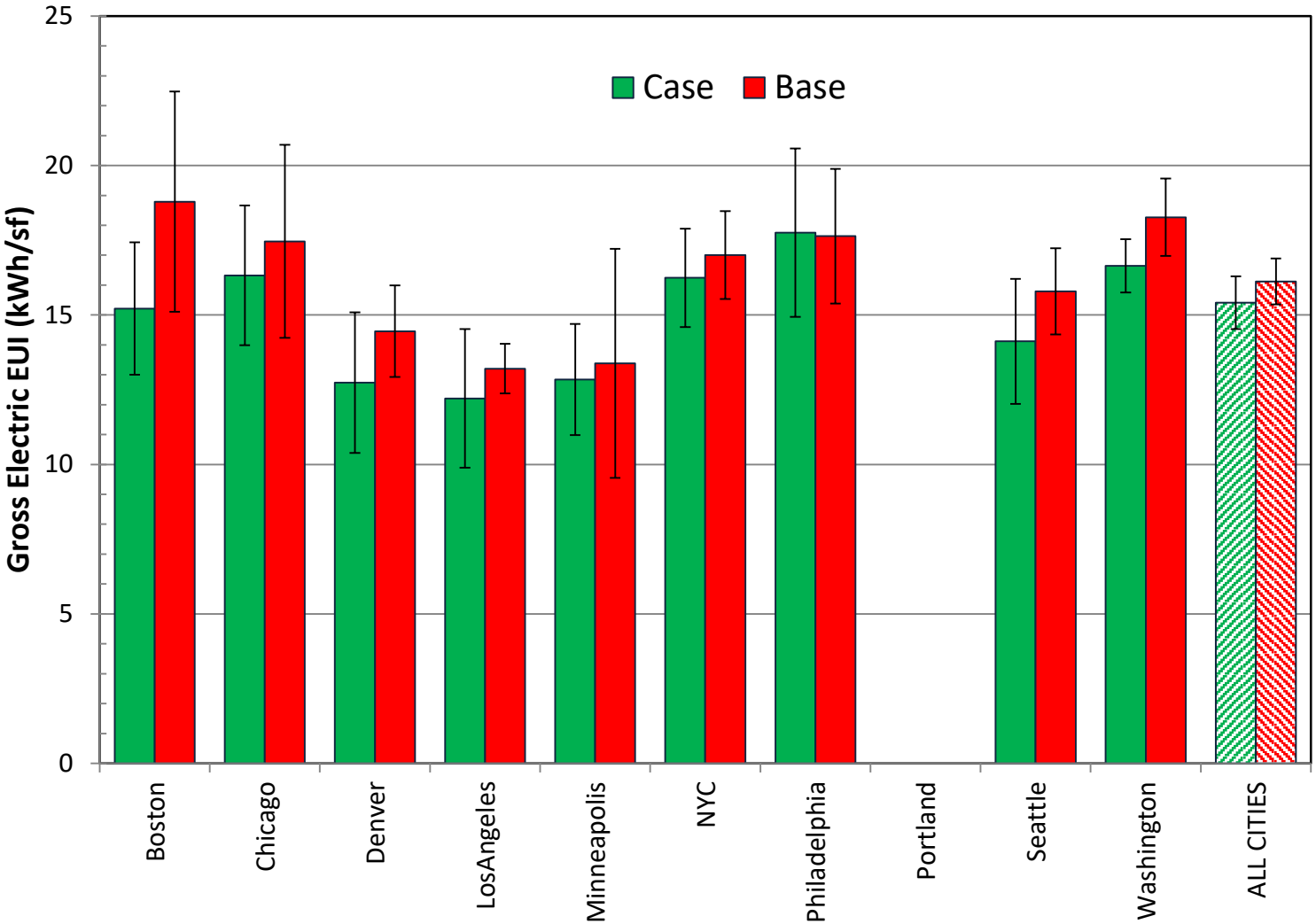


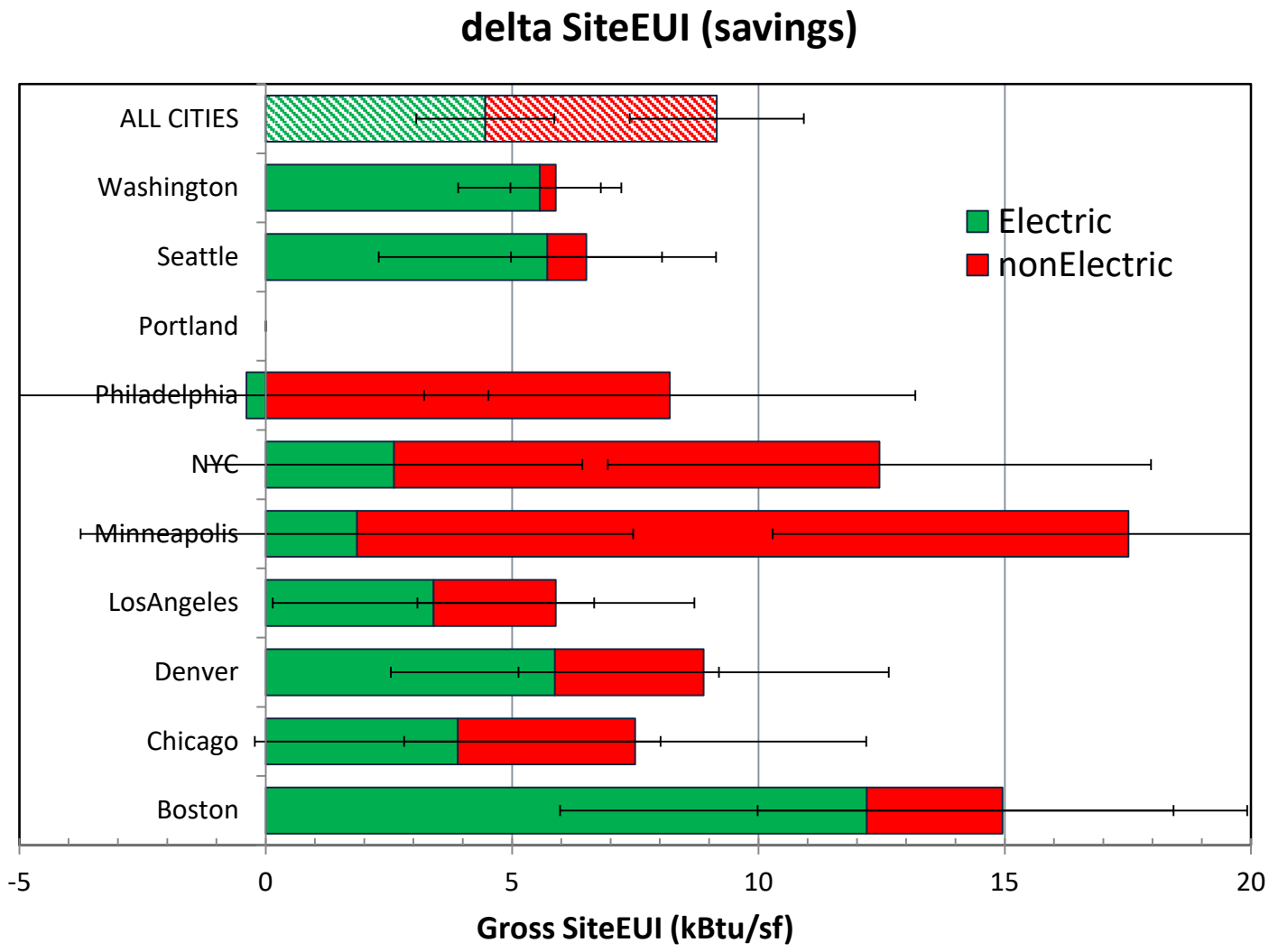
nonLEED Office

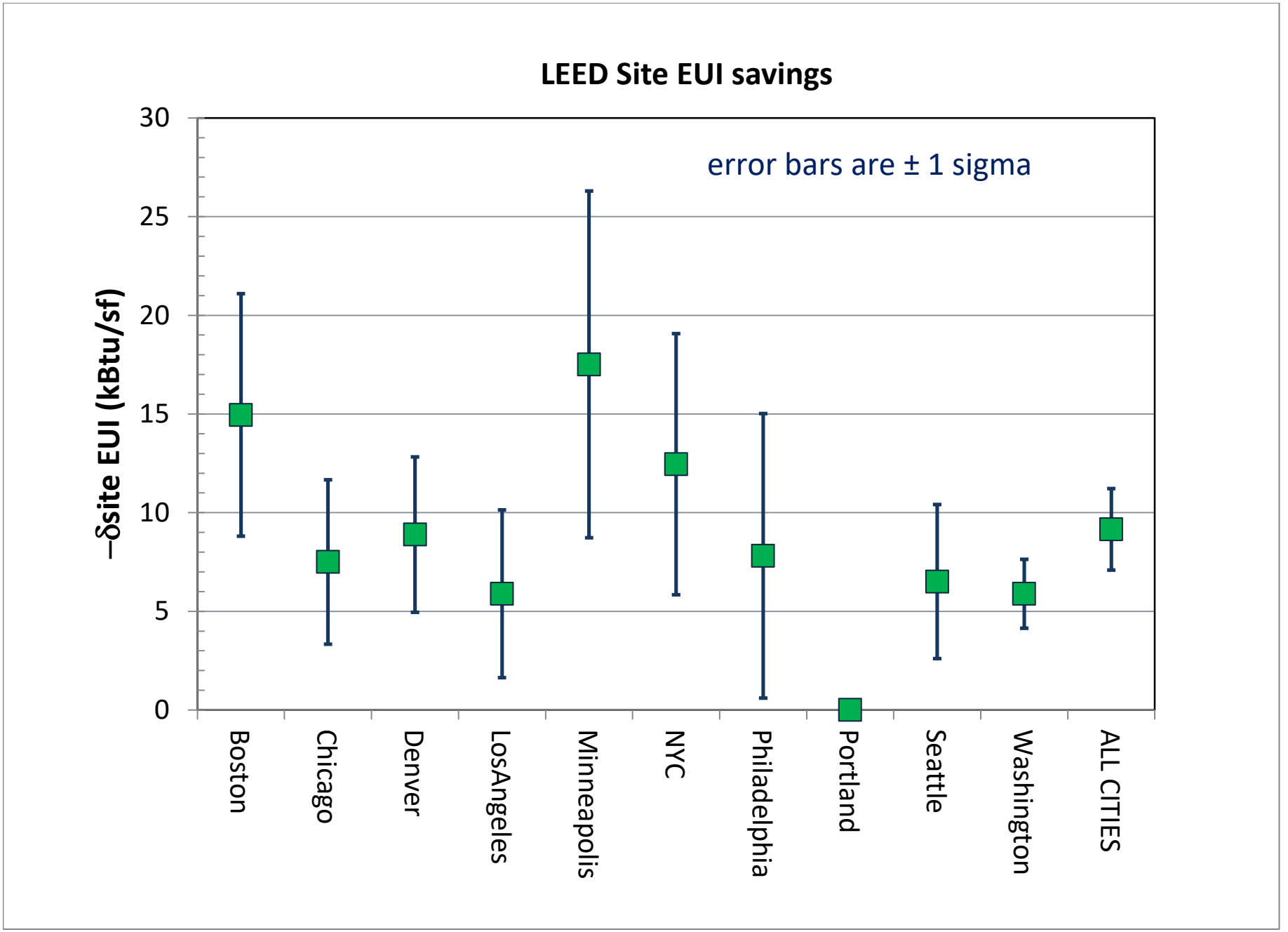

Gross SiteEUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
Electric
nonElectric
0
10
20
30
40
50
60
70
80
90
100
SiteEUI (kBtu/sf)

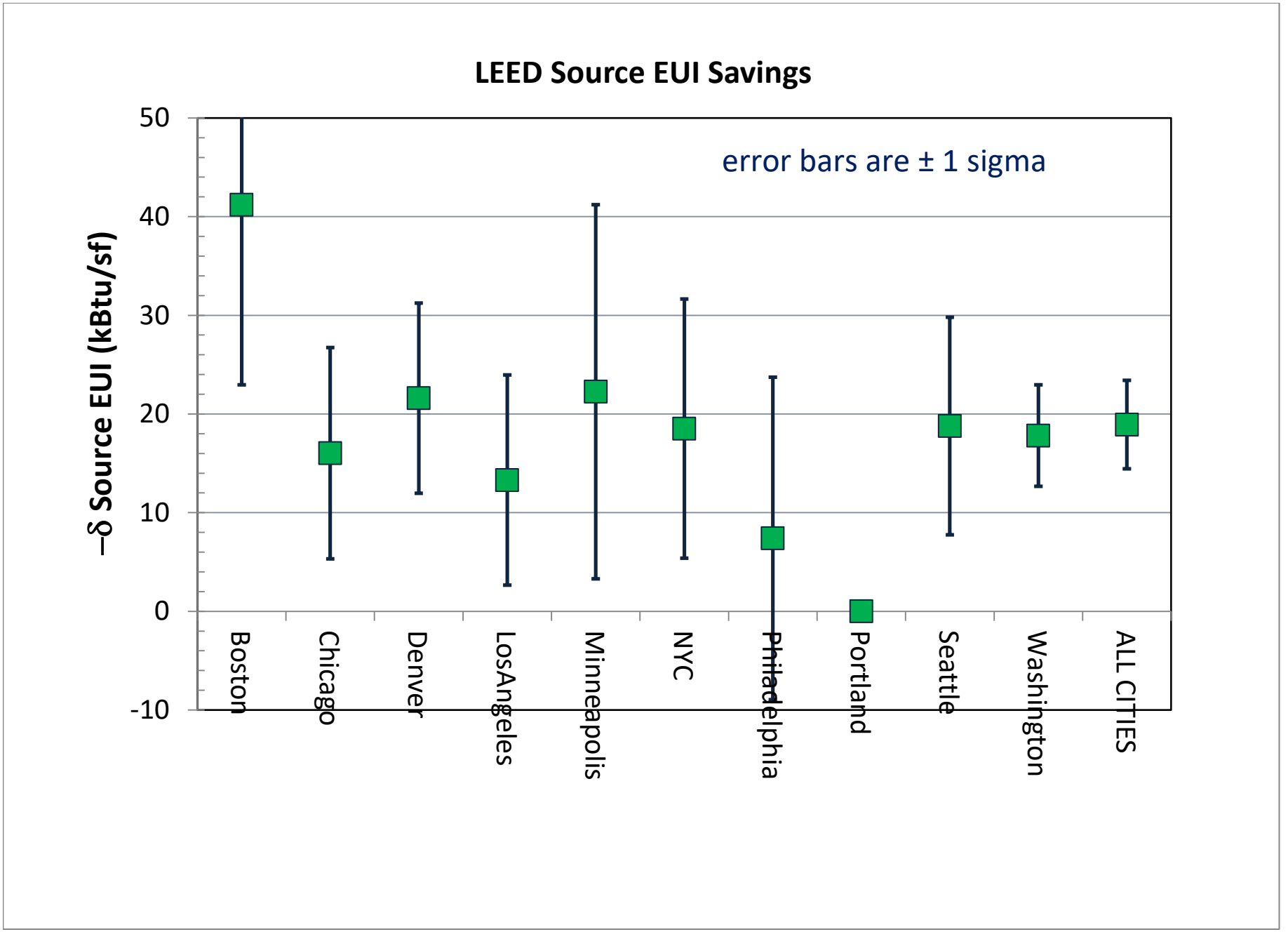
LEED Office

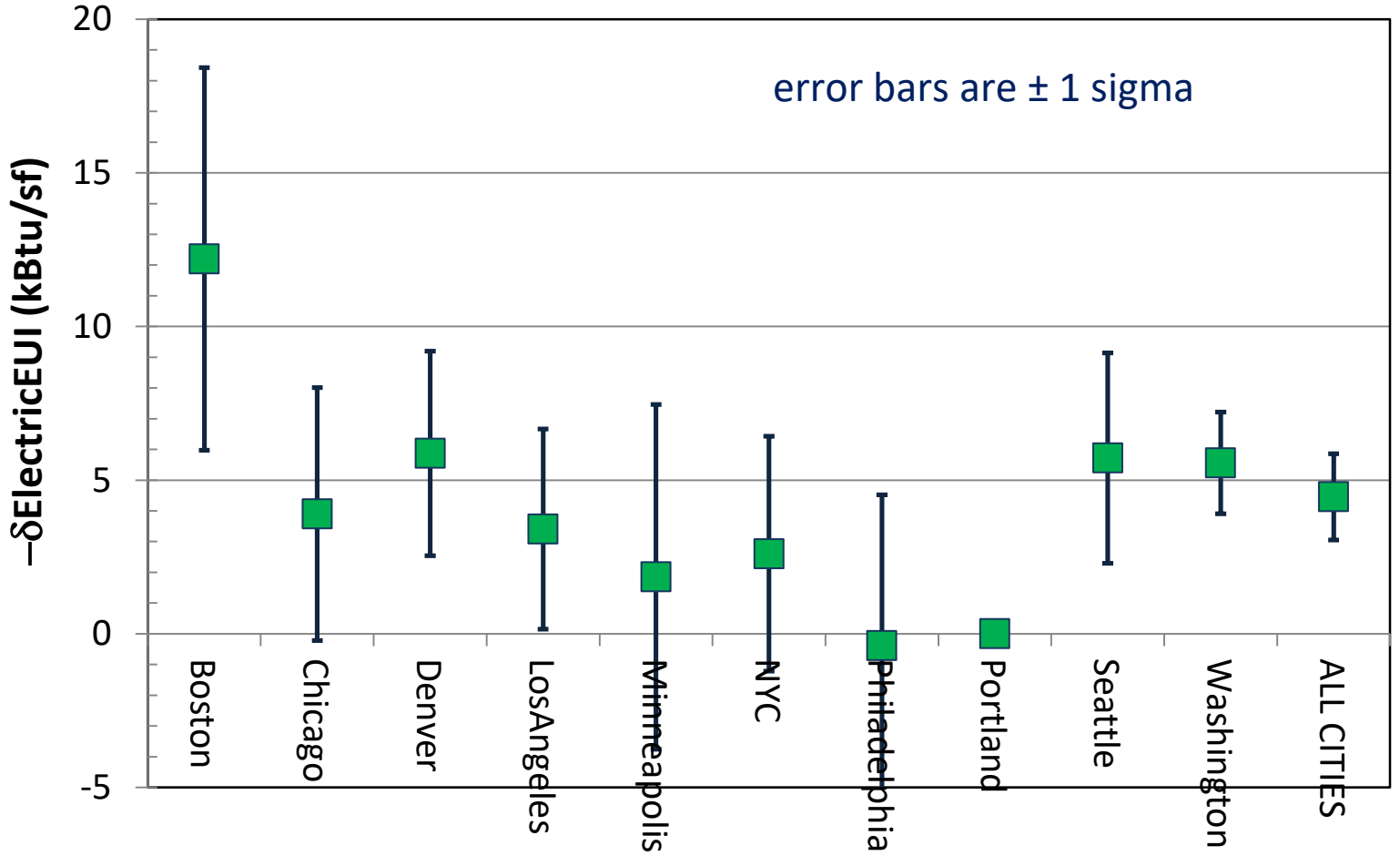

Gross SiteEUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
54.2
20.0
59.9
3.3
51.3
4.6
0.0
60.3
14.3
57.5
36.5
44.9
28.0
44.6
7.5
46.2
16.5
57.2
19.5
59.2
20.2
Electric
nonElectric
0
10
20
30
40
50
60
70
80
90
100
SiteEUI (kBtu/sf)

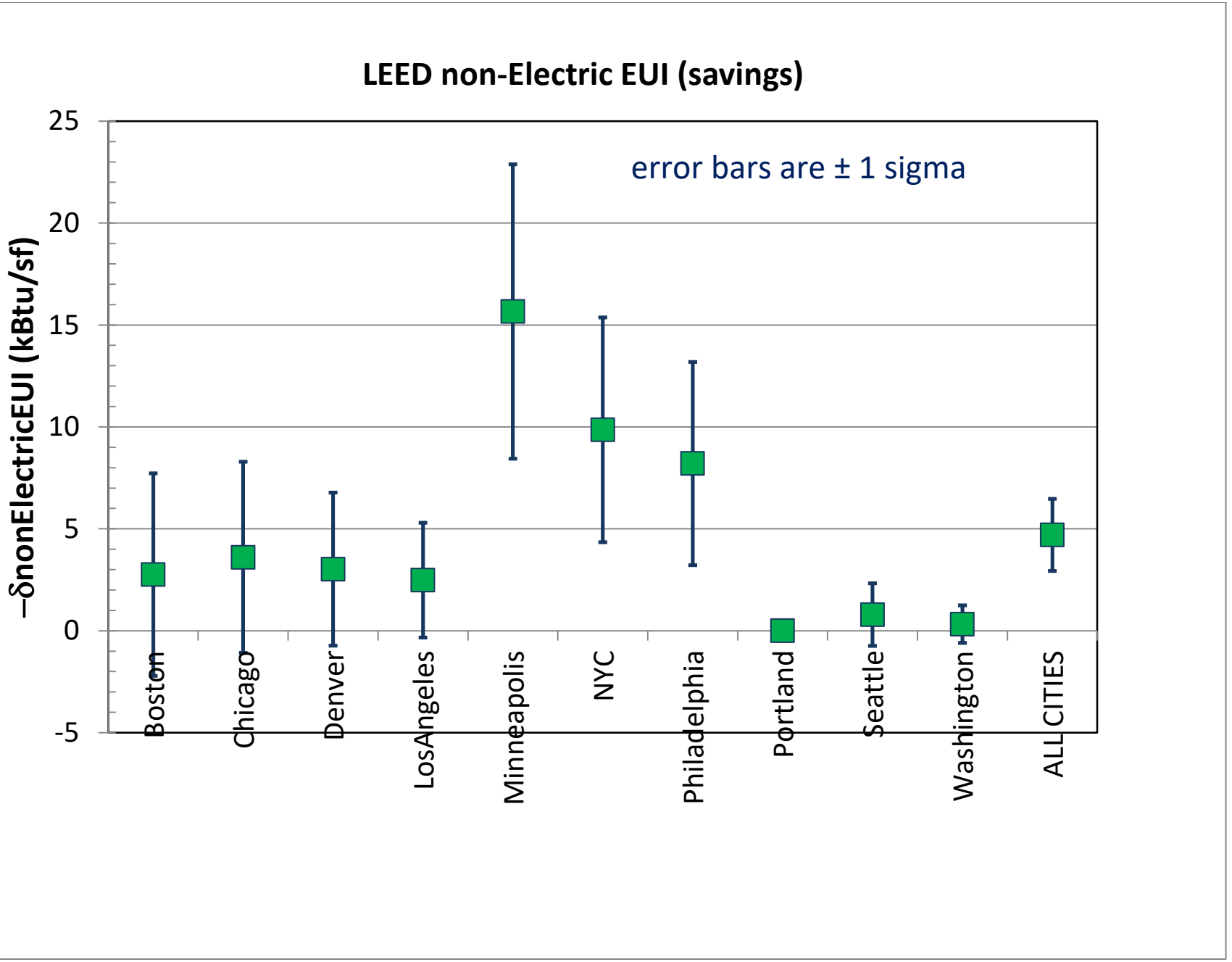

Electric Energy Use
Gross Electric EUI (kWh/sf)
25
20
15
10
5
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

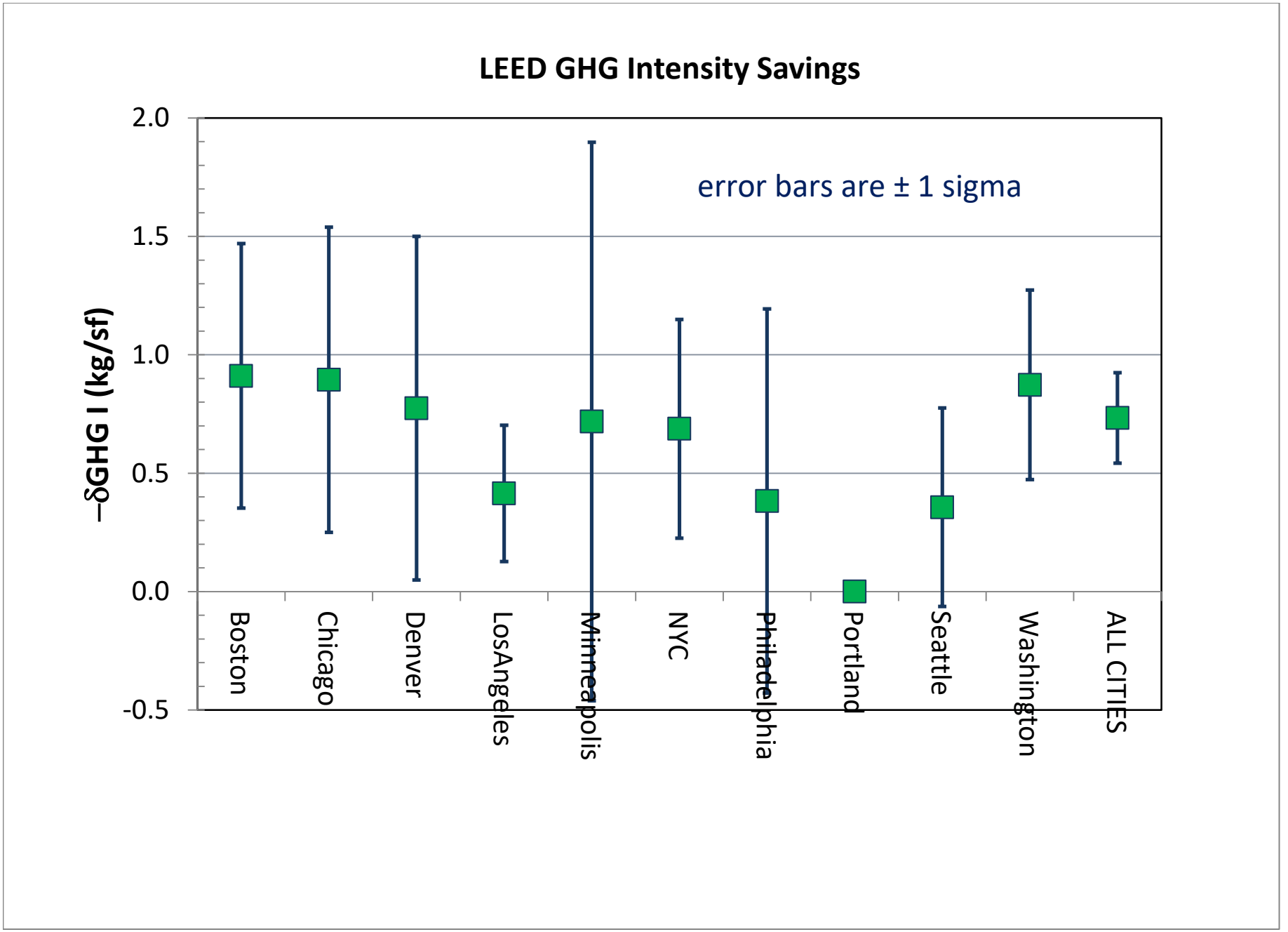

delta SiteEUI (savings)
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
Electric
nonElectric
-5
0
5
10
15
20
Gross SiteEUI (kBtu/sf)

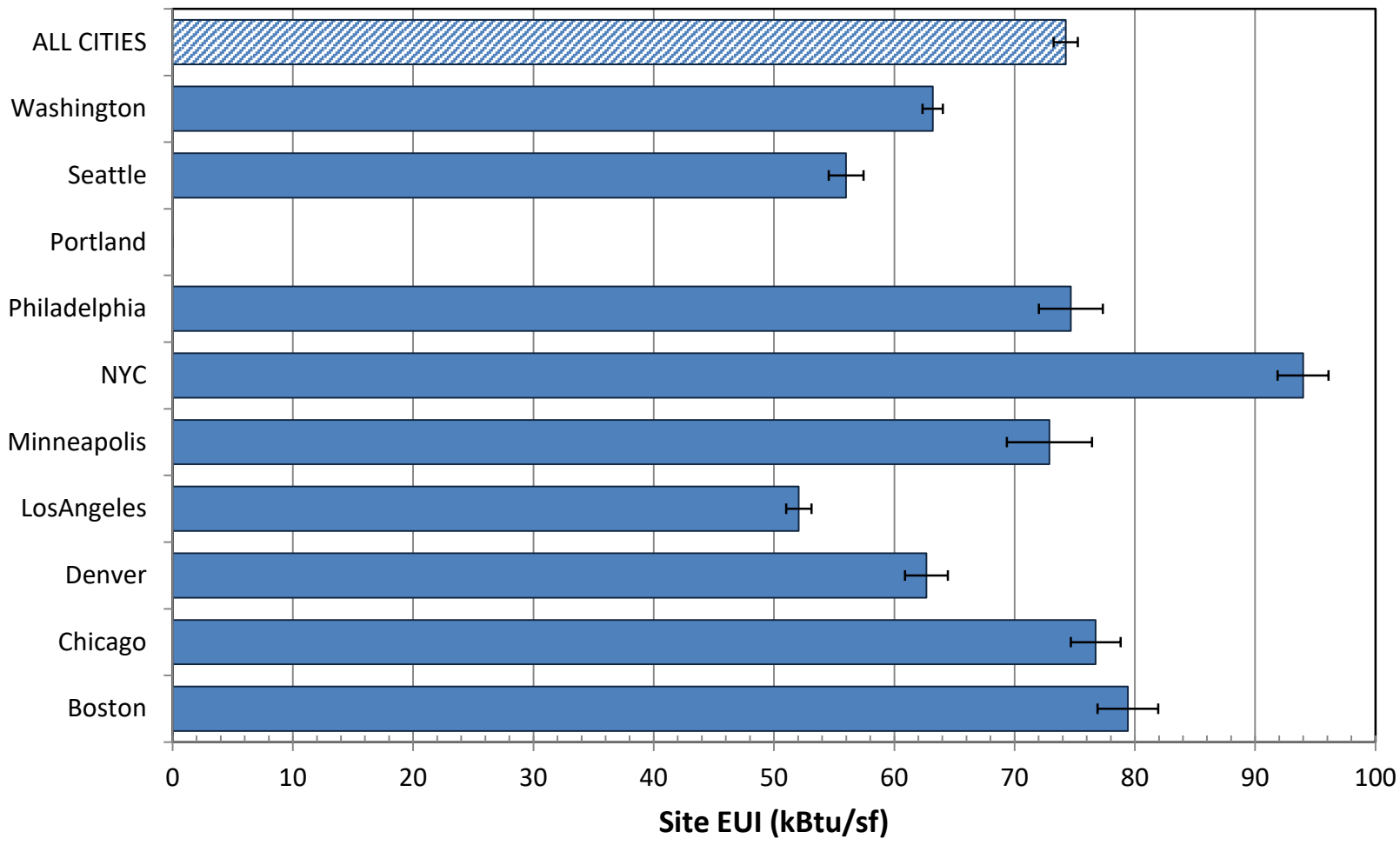

LEED Site EUI savings
error bars are ± 1 sigma
–δsite EUI (kBtu/sf)
30
25
20
15
10
5
0
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

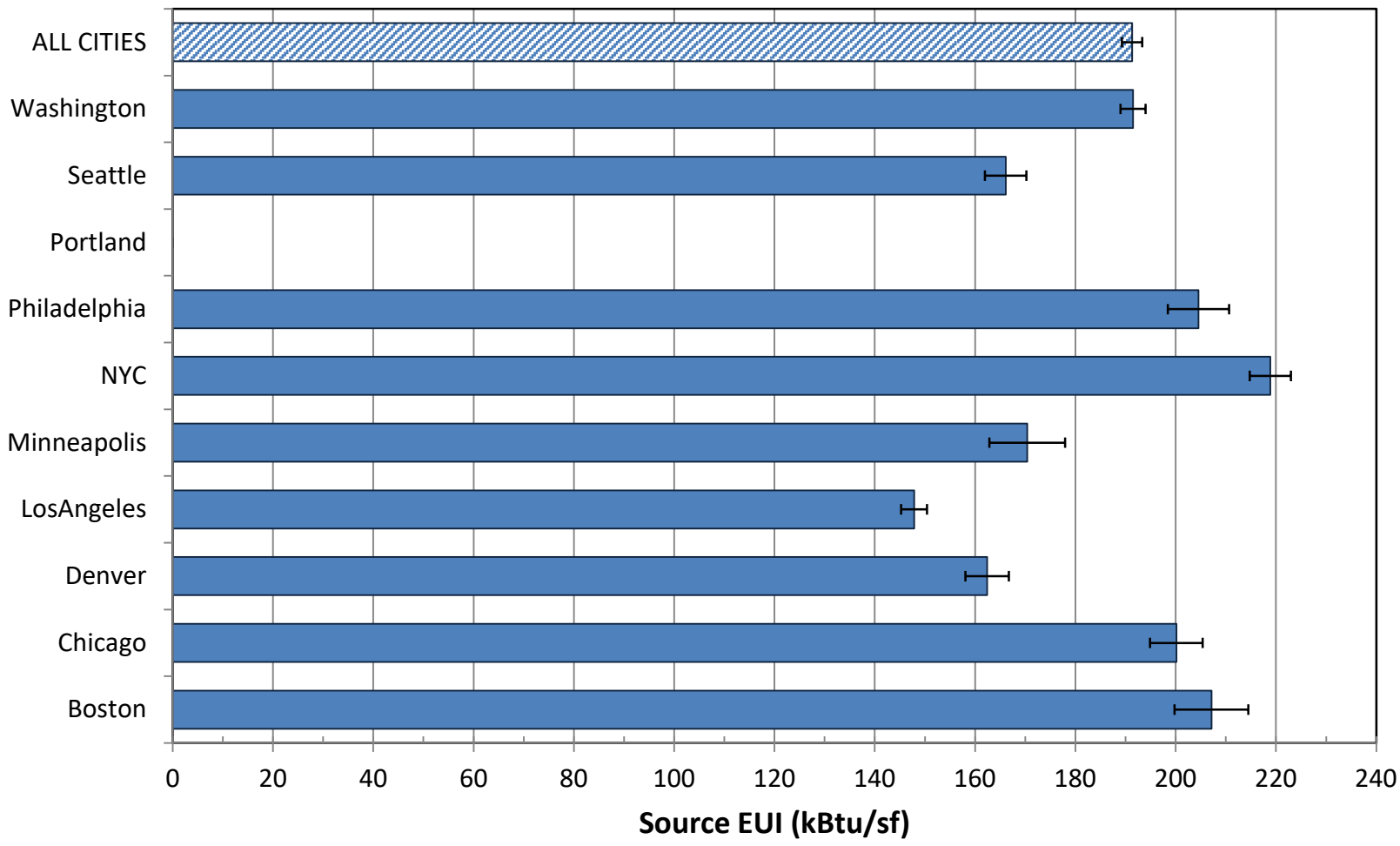

LEED Source EUI Savings
error bars are ± 1 sigma
–δ Source EUI (kBtu/sf)
50
40
30
20
10
0
-10
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

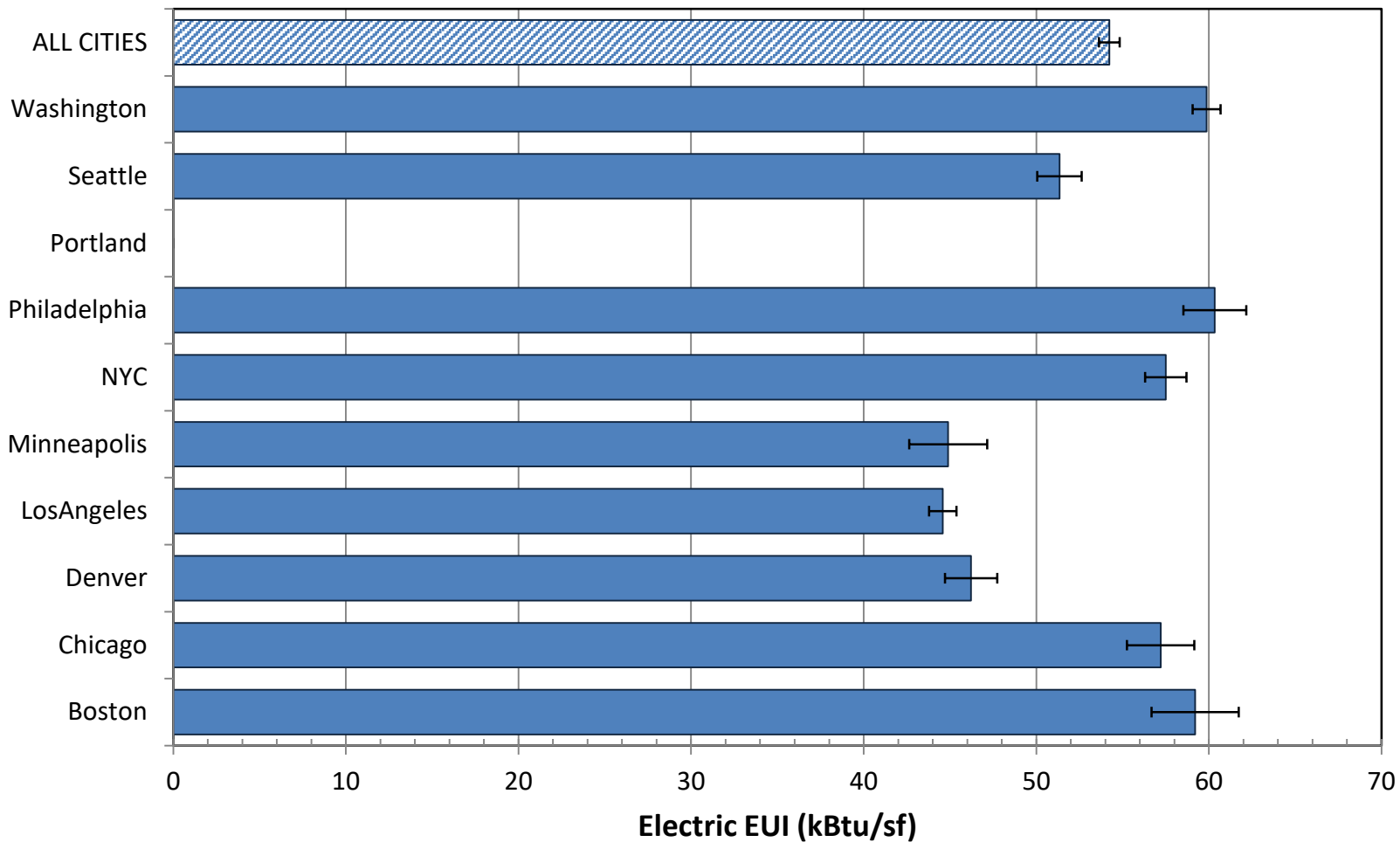

LEED Electric EUI (savings)
error bars are ± 1 sigma
–δElectricEUI (kBtu/sf)
20
15
10
5
0
-5
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

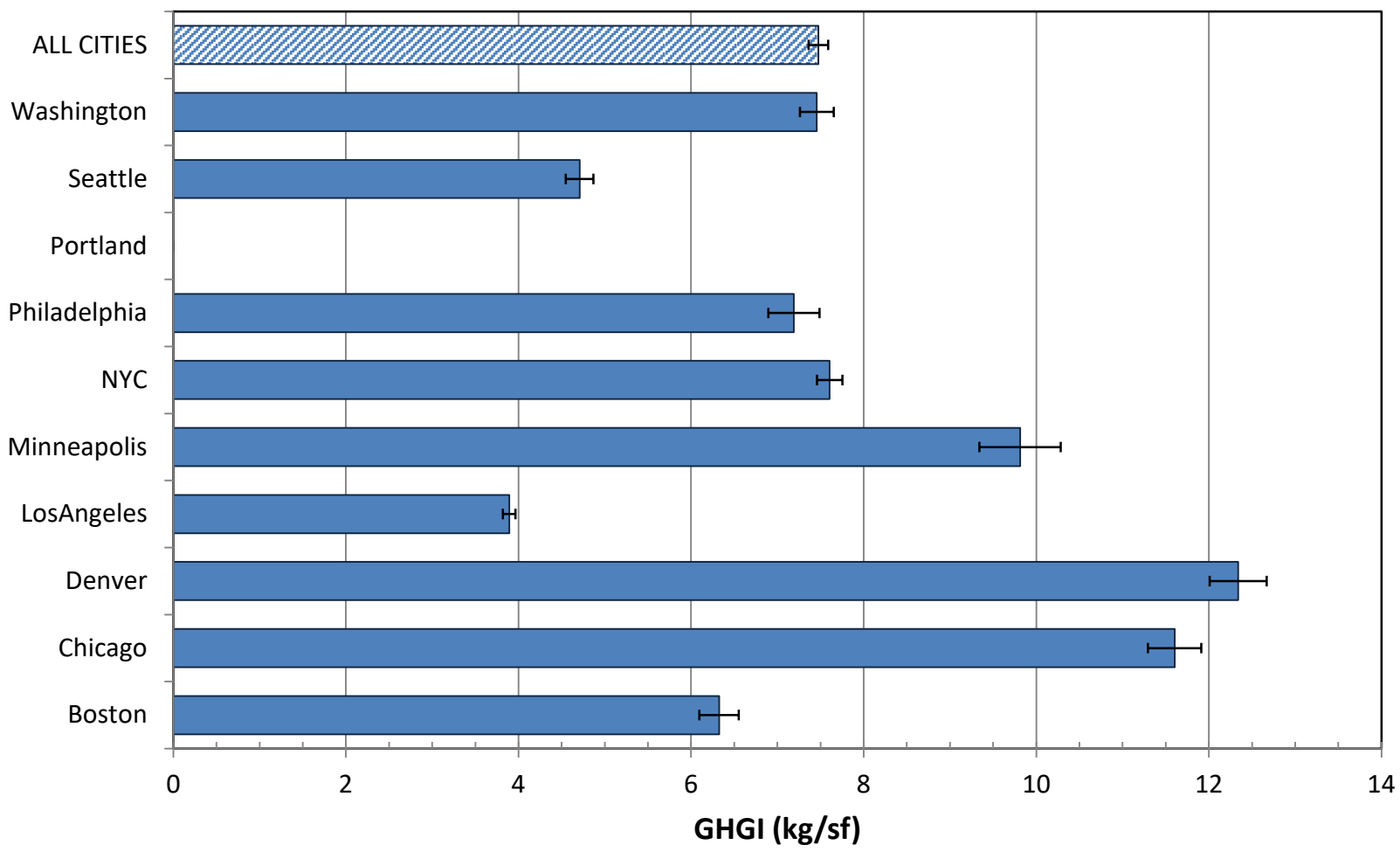

LEED non-Electric EUI (savings)
error bars are ± 1 sigma
–δnonElectricEUI (kBtu/sf)
25
20
15
10
5
0
-5
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

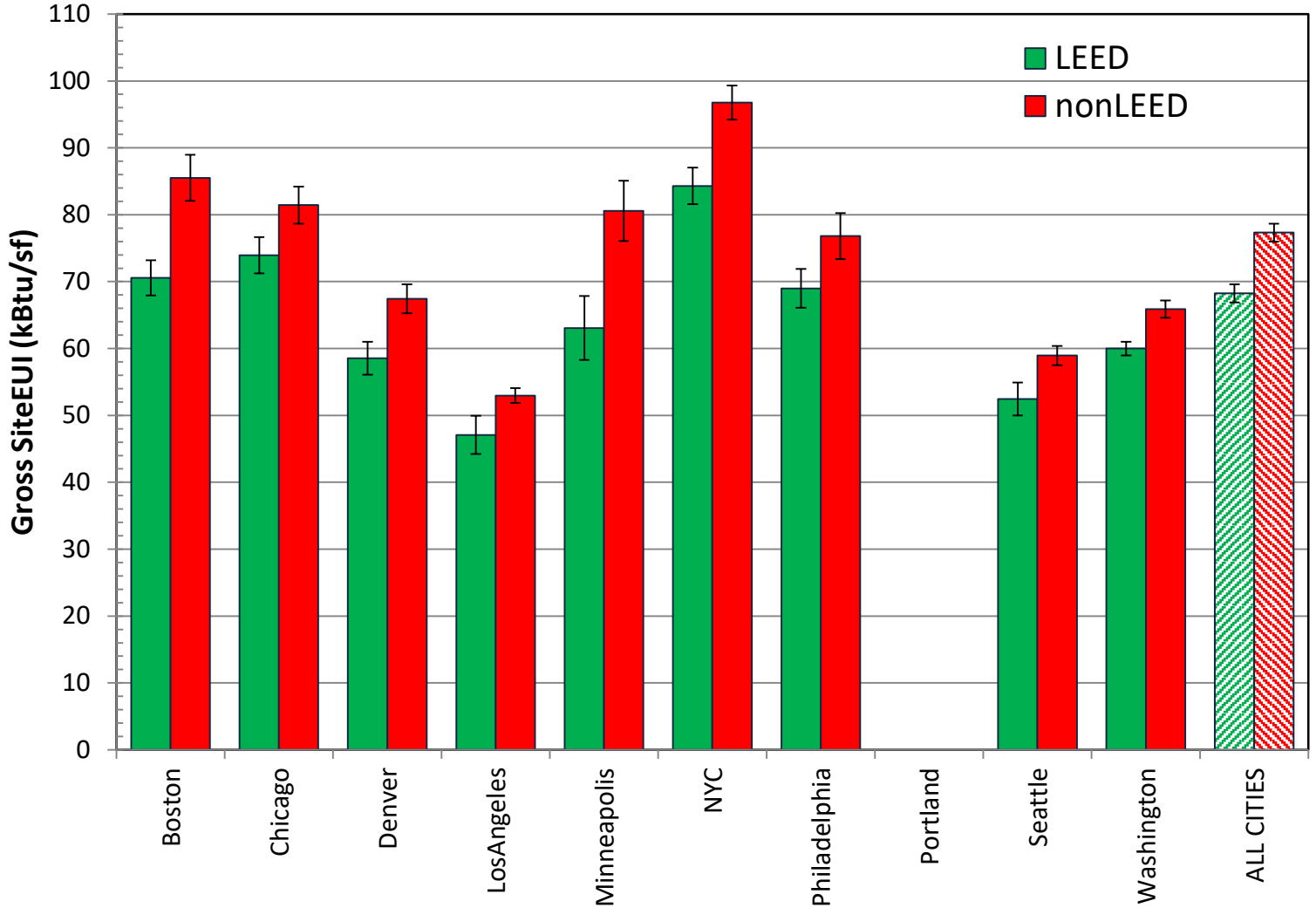

LEED GHG Intensity Savings
error bars are ± 1 sigma
–δGHG I (kg/sf)
2.0
1.5
1.0
0.5
0.0
-0.5
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES

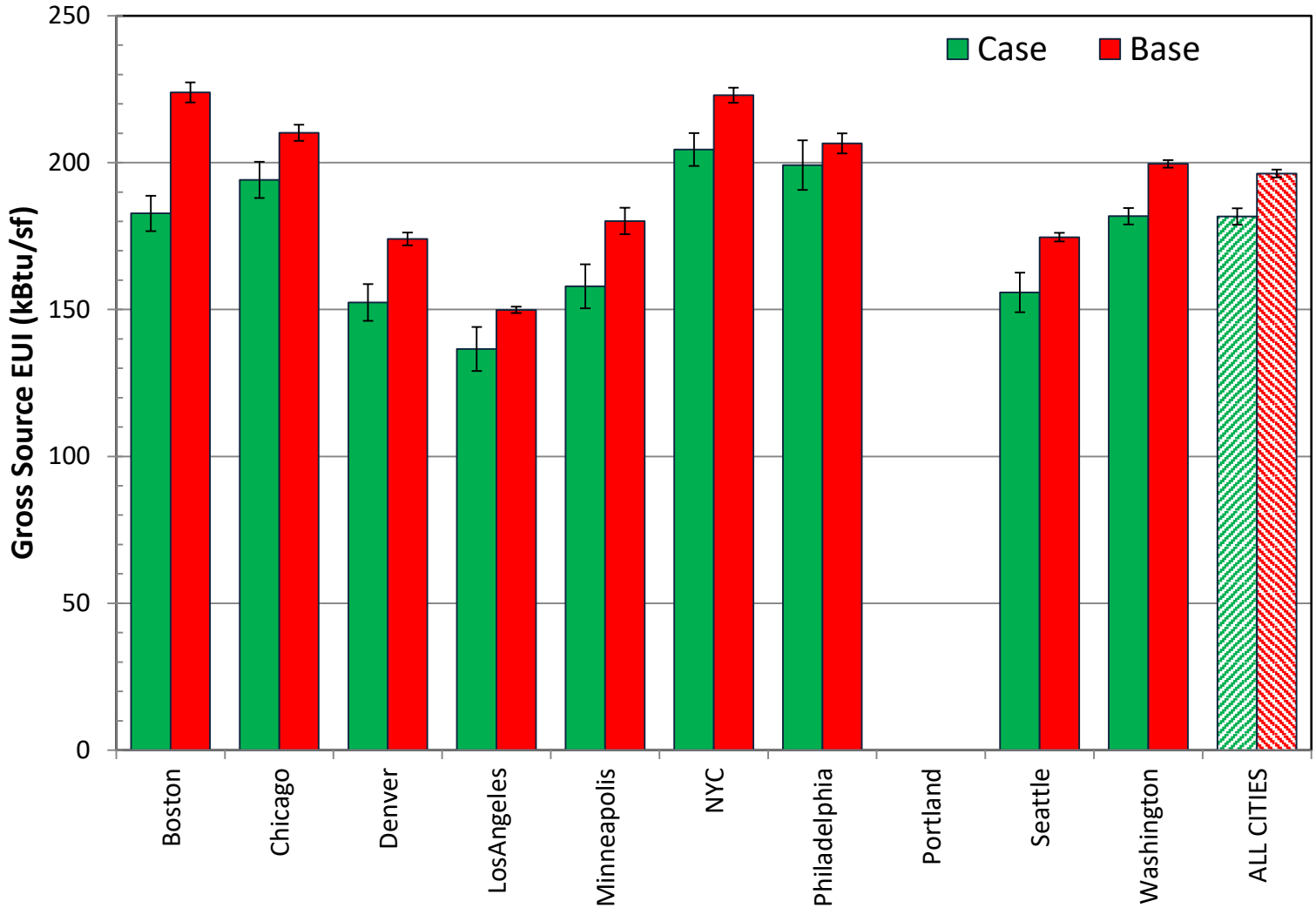

Gross Site EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
10
20
30
40
50
60
70
80
90
100
Site EUI (kBtu/sf)

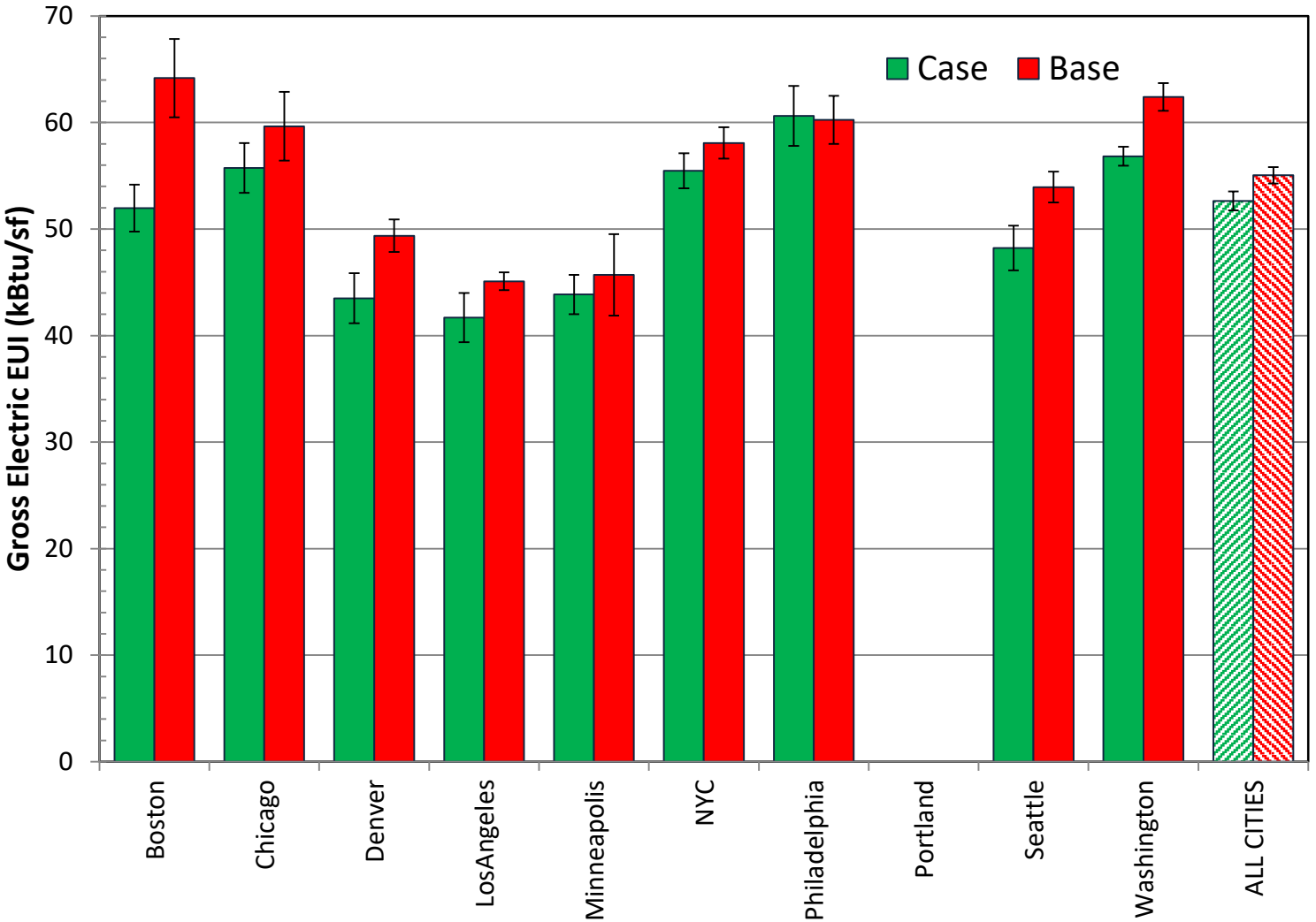

Gross Source EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
20
40
60
80
100
120
140
160
180
200
220
240
Source EUI (kBtu/sf)

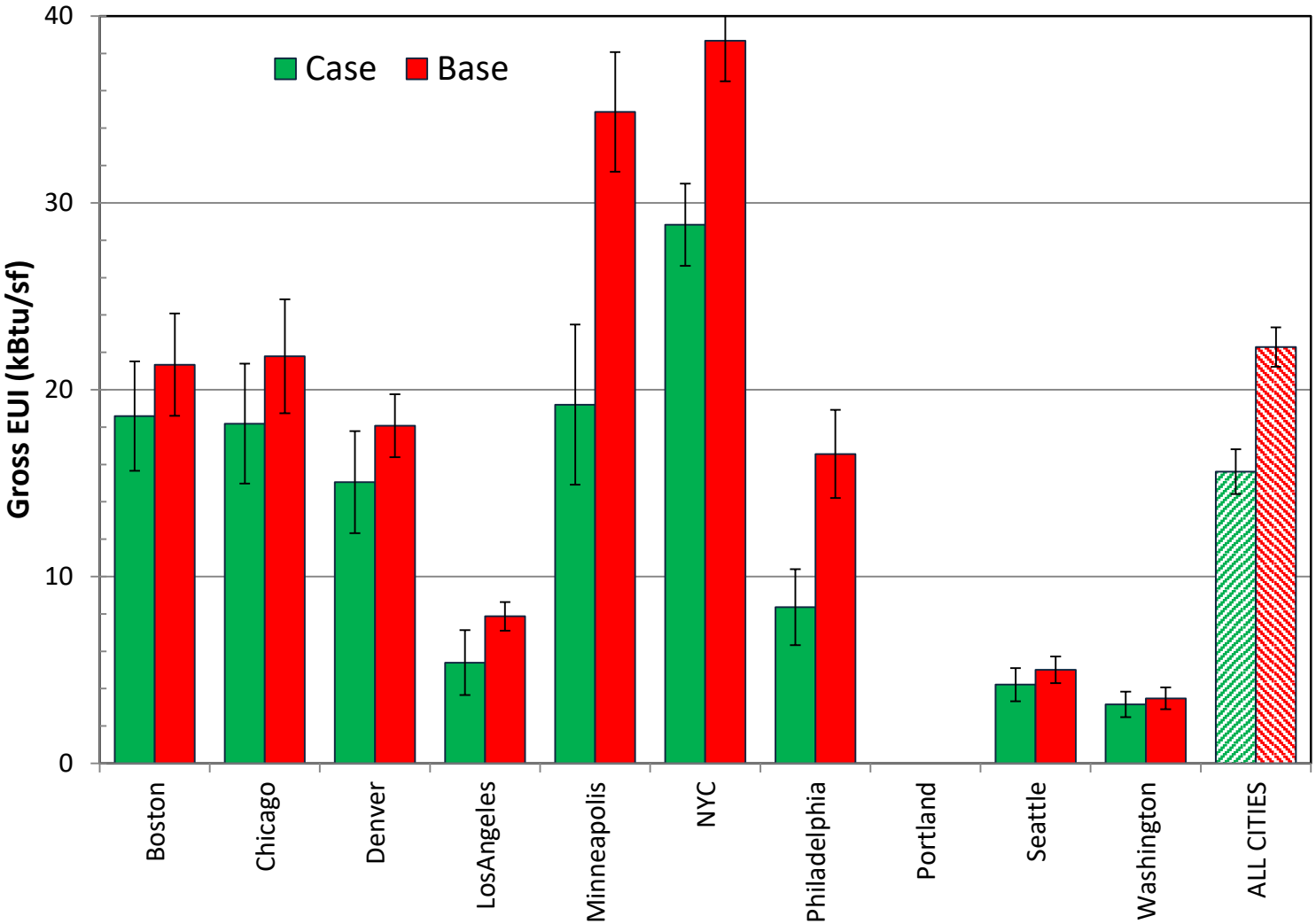

Gross Electric EUI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
10
20
30
40
50
60
70
Electric EUI (kBtu/sf)

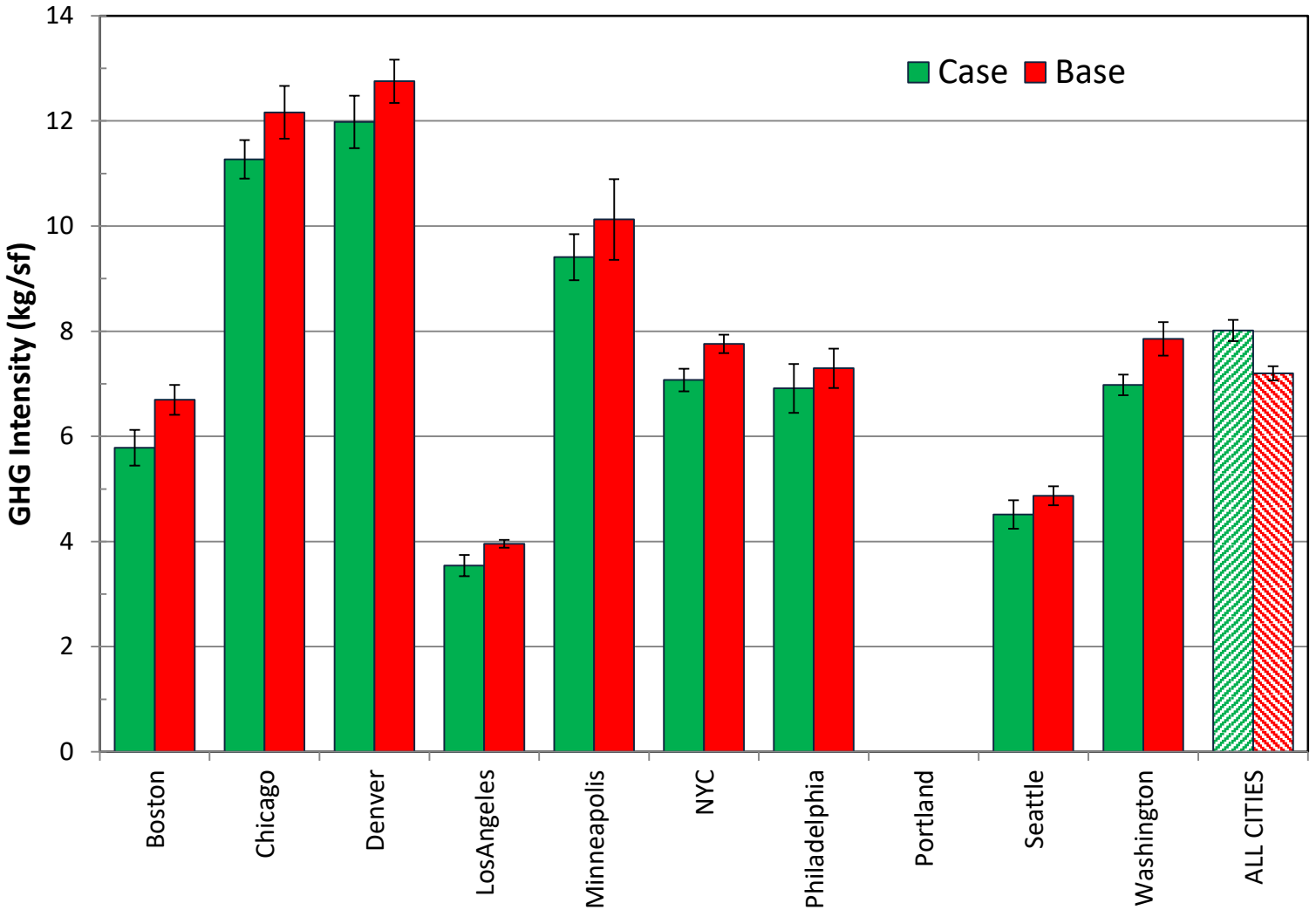

Gross GHGI
ALL CITIES
Washington
Seattle
Portland
Philadelphia
NYC
Minneapolis
LosAngeles
Denver
Chicago
Boston
0
2
4
6
8
10
12
14
GHGI (kg/sf)


Site Energy
Gross SiteEUI (kBtu/sf)
110
100
90
80
70
60
50
40
30
20
10
0
LEED
nonLEED
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


Source Energy
Gross Source EUI (kBtu/sf)
250
200
150
100
50
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


Electric Energy Use
Gross Electric EUI (kBtu/sf)
70
60
50
40
30
20
10
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


non-Electric Energy Use
Gross EUI (kBtu/sf)
40
30
20
10
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES


GHG Emission
GHG Intensity (kg/sf)
14
12
10
8
6
4
2
0
Case
Base
Boston
Chicago
Denver
LosAngeles
Minneapolis
NYC
Philadelphia
Portland
Seattle
Washington
ALL CITIES