Developing Regulations Implementing California's Commercial Building Energy Use Disclosure Requirements

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ABSTRACT

This paper describes California's efforts to develop an operational rating and disclosure process that is compatible with both the existing national rating system (Energy Star Portfolio Manager) and the forthcoming California Building Energy Asset Rating System (BEARS). The goal of developing these complementary rating systems is for owners to be able to contrast their results to identify where the potential lies for fueling their buildings with energy efficiency.

The Assembly Bill 1103 (AB 1103) statute establishes the basis for developing the first state-wide mandatory benchmarking and disclosure regulation in the United States. This paper will detail the approach taken and lessons learned from the process of developing and implementing this regulation, including [a] the steps taken to address the needs of diverse stakeholders while working within a clearly bounded statute, [b], staging the applicability of regulations to ensure that the best practices are championed by respected voices ahead of widespread adoption, [c] utilizing the existing Energy Star Portfolio Manager data structure to avoid the need to develop additional IT architecture for program evaluation, [d]establishing a voluntary rating based on California-specific metrics while incorporating an appropriate scale and graphical presentation.

The intent of this paper is to communicate the issues and challenges of implementing a statewide energy use disclosure requirement and share lessons learned in the process.

Background

Benchmarking and performance rating are recognized as the first steps towards improving building energy efficiency. There are two fundamental methods for rating the performance of existing buildings: Operational ratings based on actual energy use, and asset ratings based on the *efficiency potential* of the building's design, construction, equipment and systems. Both the Energy Star Portfolio Manager and the California Building Energy Use Rating Tool (CBEURT) generate operational ratings based on the same data parameters.

California has a rich history in the development and use of energy benchmarking to inform and improve the commercial building marketplace. In 2003, an online benchmarking tool, Cal-ARCH, was made available to allow benchmarking of buildings against a California specific dataset (LBNL 2003). In 2004, Governor Schwarzenegger issued Executive order S-20-2004 (Schwarzenegger 2004), bringing about the benchmarking of State owned facilities and the preference in procurement of Energy Star labeled facilities for state leases. In 2007, Assembly Bill 1103, the basis of this paper, was chaptered. In 2009, the California Public Utilities Commission (CPUC) issued decision 09-09-047(CPUC 2009, 153) directing the four California Investor-Owned Utilities (IOU) to offer support for customer benchmarking of commercial buildings for the utility program period of 2010-2012. EnergyIQ 2.0, an action oriented benchmarking tool allowing commercial building owners to benchmark against multiple peer groups, was launched in 2011(LBNL 2011). Gaining "maximum uptake across building

ownership and management circles: was identified as a priority for the future in the California Long Term Energy Efficiency Strategic Plan (Strategic Plan) update released October 2011(CPUC 2011, 12). Finally, the proposed decision of the CPUC for the 2013-2014 period directs utilities to continue their benchmarking programs. (CPUC 2012, 320)

Statute Summary

Assembly Bill 1103 (Saldaña 2007), was enacted with the goal of allowing "building owners and operators to compare their building's performance to that of similar buildings", noting that "scores could motivate building operators to take actions to improve the building's energy profile and help to justify financial investments". This bill established the responsibility of California Utilities to "maintain records of the energy consumption data of all nonresidential buildings to which they provide service. This data shall be maintained, in a format compatible for uploading to the United States Environmental Protection Agency's Energy Star Portfolio Manager, for at least the most recent 12 months". Statute also stipulated that a utility would be required to upload all of the energy consumption data to the Energy Star Portfolio Manager upon authorization of the building owner. The owner is required to use this information to disclose Energy Star Portfolio Manager data and ratings to a prospective buyer, lessee of the entire building, or lender financing the entire building.

Data Privacy Concerns

One of the impediments to building energy use disclosure in the State of California has been the utilities' need to honor the stringent confidentiality statutes that apply to customer data. Traditionally, the only way that utilities have been able to release tenant data is if the owner is able to obtain a signed release from each customer. The process of obtaining these releases is cumbersome at best and is not possible without the cooperation of each tenant.

The introduction of smart meters prompted the California Legislature to pass SB 1476 (2010, Padilla), clarifying the conditions under which energy use data can be shared with a third party. In implementing SB 1476 the California Public Utilities Commission (CPUC) established Public Utilities Code, §§ 8380, 8381(PUC 2011), making clear that utilities can provide energy use data without customer consent when required by state law. Part of this requirement is that the energy use data cannot be used for any secondary commercial purpose, and that the data be protected by reasonable security procedures and practices. This disclosure is to be held strictly between the owner and buyer, lessee, or financier, and can only be used for the purposes of the transaction at hand.

Addressing Stakeholder Needs

Initial outreach to stakeholders was carried out through an Energy Benchmarking Working Group, as a part of Governor Schwarzenegger's Green Building Initiative. Participants in this group included representatives of building owners, realtors, property management firms, federal government, state government, local government, contractor's associations, and advocacy groups (HMG 2012). In addition to working group input, there were three public meetings held to solicit input from the general population. As the regulations proceeded towards a formal rulemaking process, staff presented the draft regulations and compliance process at several

webinars and panel discussions. This effort is now in the formal rulemaking phase; the rulemaking process will involve public presentations and response to formal comment.

In the course of the working group discussions and public meeting, several groups emerged with particular concerns (Loyer 2011). While by no means comprehensive, the following sections detail typical stakeholder group concerns and the CEC's path to addressing these concerns.

Property owners. Property owners voiced concern over the time spent with and reliance upon their tenants if a requirement for a signed release from each tenant became a part of the process. In addition to all of the time spent contacting the tenant and securing their consent in writing, some raised the point that they did not want to have to inform their tenants of any major transaction being considered in the building. In this, the CEC concurred, rejecting the option of requiring release from every individual tenant as "so burdensome that it would endanger compliance" (CEC 2012, 7). As the Owner has right of entry to tenant leased spaces, it was determined that the least burdensome implementation path would be to allow the owner to submit the energy meter numbers to the utilities.

Aside from the concerns having to do with tenant participation, the property owners voiced concern that the disclosure process could unduly delay the purchase process, potentially leading to deals falling through. These concerns were allayed by allowing the owner flexibility in the timing of the presentation of the disclosure; there is no requirement that it be presented prior to the contract executing the transaction.

Property managers. Property managers had concerns as to whether the disclosure would be relevant to their properties. In particular, properties under lease structures where the owner does not pay for utilities do not often consider energy costs in evaluating transactions. There was a concern that buildings with multiple space types or types not well covered by Energy Star categories might not be able to get a meaningful rating; negatively impacting property value. These concerns were allayed by offering a detailed breakout of typical Energy Use Intensity for California buildings in the Disclosure Summary Sheet, as well as by offering the CBEURT as a way to offer a rating for all buildings.

Real estate agents. Real Estate Agents voiced two main concerns on the implementation of this legislation, the imposition of new duties and the delay in execution of purchase contracts. These concerns were addressed by keeping their role to the delivery of the owner-generated disclosure, and by not requiring the disclosure until the time of the presentation of the contract.

Tenant representatives. Tenant representatives raised concerns that the owners' use of the disclosed data be limited to the transaction at hand. Specifically, there was concern that the data could be used to justify an increase in rents or to provide a rationale for the eviction of a tenant. This concern is addressed by the law governing the use of energy data provided to third parties. The language of section 8380 is very clear on this; there can be no use of this data for secondary commercial purposes without the utility account holder's written consent.

Investor owned utilities. The Investor Owned Utilities (IOUs) were concerned with assuming legal liability for data disclosure without a signed release of liability for each customer. They also raised the point that their billing systems are not well suited to provide energy use data by

building address. The legal liability issues are covered by the Public Utility Code sections 8380 and 8381 referenced above. The concern about address based disclosure is covered by specifying that the owner must provide either "Utility or Meter Account information" to ESPM (CEC 2012a).

Evolution of Benchmarking and Disclosure

As the AB 1103 rulemaking process has been running its course, several municipal and State commercial building benchmarking laws were enacted across the nation. These laws vary in the size and type of buildings covered, as well as the basis for requiring disclosure. A summary of these laws is given below in Figure 1.

Table 1: Commercial Benchmarking Laws' Size and Disclosure Requirements[1]

Jurisdiction	Benchmarking (Building Type and Size)		Disclosure					
	Non-residential	Multi-family	On public web site	To local or state government	To tenants	To transactional counterparties		
						Sale	Lease	Financing
Austin*	10k SF+	-	-	✓	-	✓	-	-
California	5k SF+	-	-	✓	-	✓	✓	✓
District of Columbia*	50k SF+	50k SF+	✓	✓	-	-	-	-
New York City*	50k SF+	50k SF+	✓	✓	-	-	-	-
San Francisco*	10k SF+	-	✓	✓	✓	-	-	-
Seattle*	10k SF+	5+ units	-	✓	✓	✓	✓	✓
Washington	10k SF+	-	-	-	-	✓	✓	✓

*Time based disclosure – there is a date certain for disclosure regardless of any triggering transaction

In 2009, AB 758 (Skinner, 2009) was enacted. This statute requires the Commission to develop a comprehensive energy efficiency program for existing buildings including the development of a system of energy assessments, ratings, and building labeling. The California Building Energy Asset Rating System (BEARS) is the mechanism by which the rating element of the program is being delivered. This rating system is designed to give an assessment of the *technical potential* of a building.

While the initial vision of implementation (Brook, 2010)was one of a disclosure certificate that combined elements of the Energy Star rating with a California based metric, the decision was ultimately made to separate the national and state metrics. This segmentation leads to separate document sets that are generated using distinct resources; [1] a mandatory set of documents based on the Energy Star Portfolio Manager and [2] an optional component that gives a California specific Operational rating, generated by an online calculator. This California specific rating, the CBEURT, utilizes the same information set as the ESPM to generate a rating

[1] This table is adapted from one originally used in an IMT report (Burr 2011)

that is based on California specific metrics and referenced to net zero source energy consumption. This rating is designed to give an assessment of the performance of the building as it is *currently being operated*.

Staging the Application of the Regulations

In order to give California commercial building owners time to adapt to these regulations, it was determined that their implementation date should be staged according to facility gross square footage, with larger buildings preceding smaller ones. The initial decision to have larger buildings precede smaller ones was made based on the professional judgment that large building owners are more likely to have familiarity with benchmarking in general and the Energy Star Portfolio Manager in specific. This judgment is supported by a review of data now available, as well as by the experiences of cities when rolling out disclosure programs.

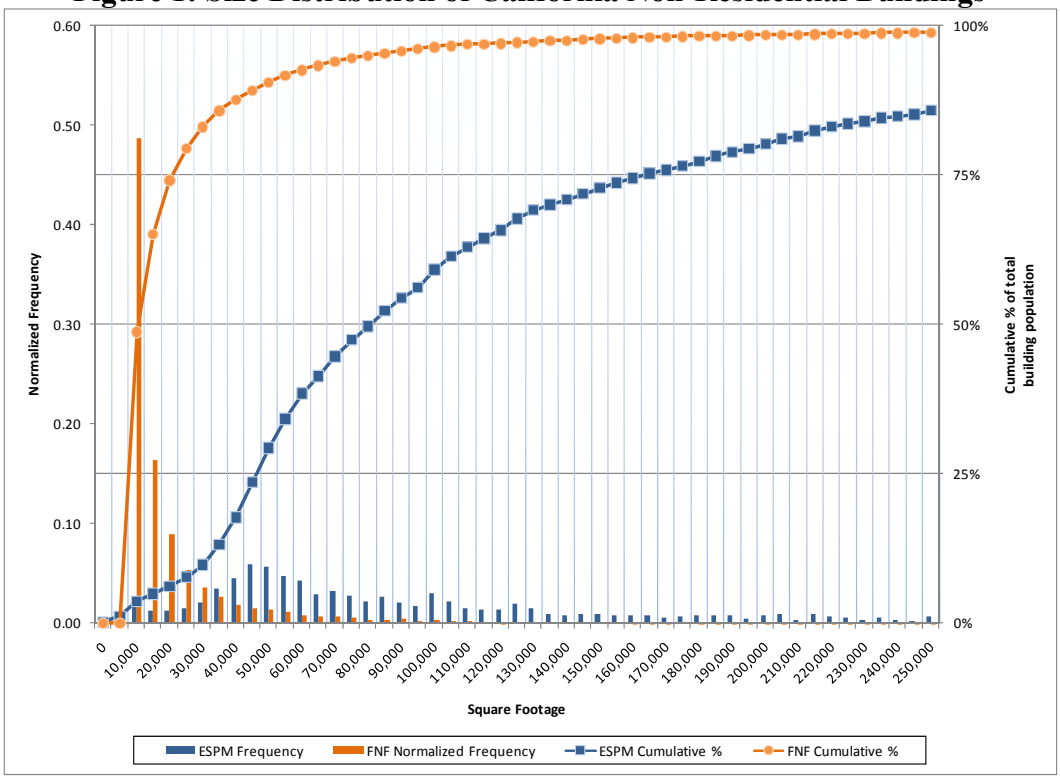
Building size. The size parameters for each stage of the building disclosure requirements were selected by consensus of industry experts (Loyer 2011). These stages and implementation dates are given in Table 2 below.

Table 2: Disclosure Implementation Schedule

Building Size (Gross Square Feet)	Implementation Date for Disclosure
50,000 +	January 1, 2013
10,000 - 49,999	July 1, 2013
5,000 - 9,999	January 1, 2014

Data sources available to compare these size parameters are title company commercial building data (N=10,379) and the database of Energy Star labeled buildings within California (N=3,260). Due to the large difference in sample sizes, the frequency of buildings has been normalized. Distribution of building sizes within these building populations is given below in Figure 1.

Figure 1: Size Distribution of California Non-Residential Buildings

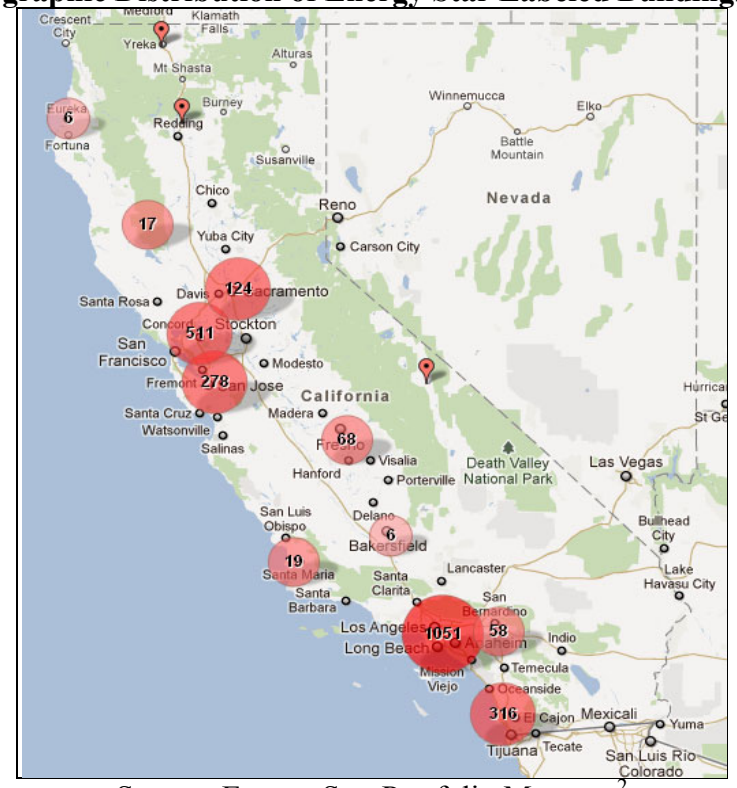


Source: Energy Star Portfolio Manager, Fidelity Title Company

It can be seen from Figure 1 that the distribution of Energy Star labeled buildings is skewed towards larger sized buildings, as compared to the overall population of buildings shown by the title company data.

The distribution of Energy Star labeled buildings is also skewed towards urban areas, as can be seen in Figure 2 below. In general, urban areas have a greater population of large buildings and have experienced support through the IOU Benchmarking piloting program (NMR 2012, 50.)

Figure 2: Geographic Distribution of Energy Star Labeled Buildings in California



Source: Energy Star Portfolio Manager[2]

Limits on disclosure. While the AB 1103 statute clearly limits to disclosure to that occurring between counterparties at the time of transaction, other benchmarking laws call for regular benchmarking without requiring a triggering transaction, as well as the public disclosure of benchmarking scores. The implementing regulations, however, do not have either of these elements.

The AB 1103 language specifically called out that the disclosure would be the result of a triggering whole building transaction; stakeholders would have perceived any other approach as an overreach. While there are some voices (Sherwin, 2012) calling for public disclosure of benchmarking results, the fact than none of the other states proposing benchmarking laws are requiring public disclosure supports the decision to avoid public disclosure at a statewide level.

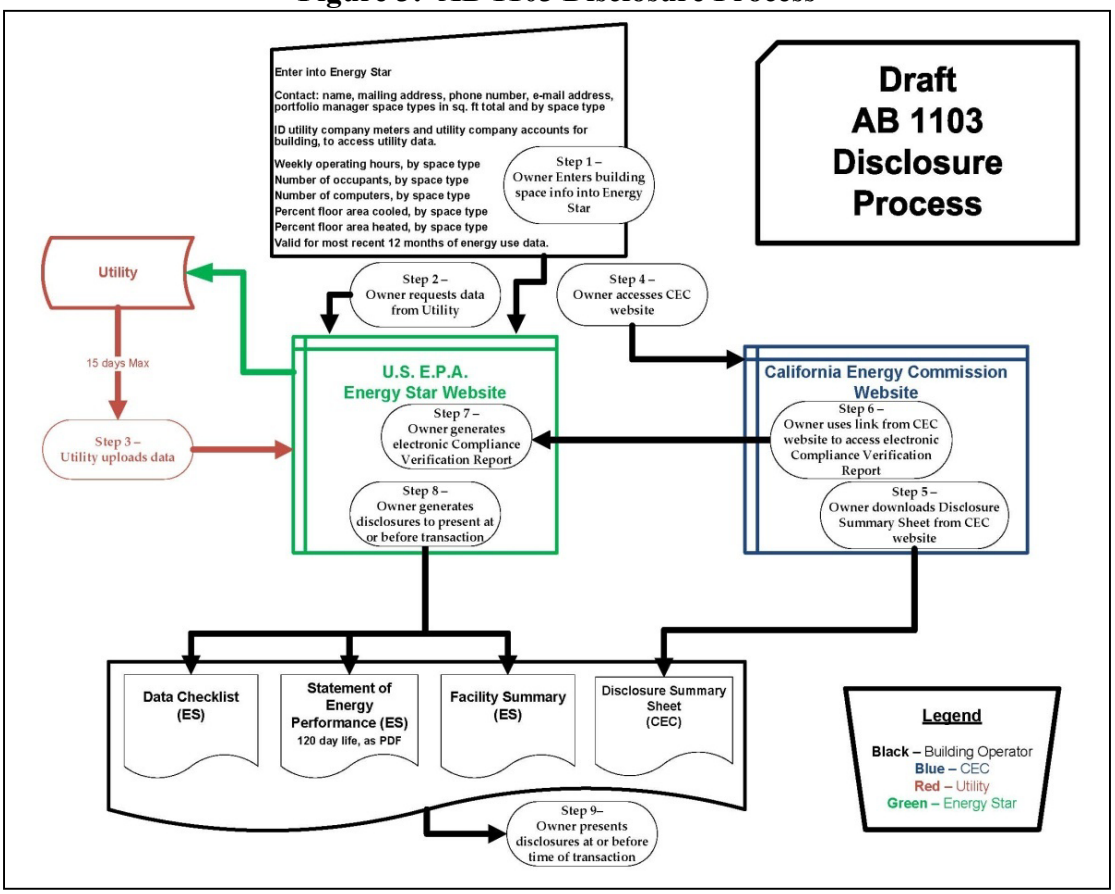
Utilizing Energy Star Portfolio Manager

The statute explicitly called for the disclosure of Energy Star Portfolio Manager data and ratings by the building owner. The Commission has leveraged Energy Star Portfolio Manager extensively; it is used for data transfer and warehousing, as well as report generation. The process[3] by which compliance is achieved is detailed below in Figure 3.

[2] This figure does not list all sites, as the mapping software limit was 2,500 sites and ESPM listed sites have a N=3,260. In order to represent the distribution, each site was assigned a random number and cutoff criteria was established to assure that there would be less than 2,500 random sites represented.

[3] A detailed, screen by screen example of this process can be found at http://www.energy.ca.gov/ab1103/documents/2011-09-12_workshop/2011-09-12_AB_1103_disclosure_process.pdf.

Figure 3: AB 1103 Disclosure Process



Mandatory Elements of Disclosure

There are four standard documents and one electronic submission that taken together comprise a complete disclosure. The standard documents must be submitted by the owner as soon as practicable, but no later than the time of the presentation of the contract. The electronic submission occurs on the Energy Star as a part of generating the standard documents.

Disclosure summary sheet. This is a document created by the Commission to help owners to make sense of the three standard Energy Star Portfolio Manager reports. It details the contents and relevance of the Data Checklist, Statement of Energy Performance, and Facility Summary. In addition to explaining the ESPM standard reports, it lists median Energy Use Intensities (EUI) for various space types in case the property is a building that is unable to be rated by ESPM. It is felt that even if a rating is not available from ESPM, parties to the transaction can get a general feel for how their building is doing by comparing the building's EUI values to median EUI values. In case this general feel is not sufficient, the sheet also informs the owner of the possibility of getting an Operational Rating that is more tailored to their property by using the online CBEURT or EnergyIQ tools.

Disclosure requirement – energy star standard reports. The regulations use existing standard Energy Star Portfolio Manager Reports to accomplish disclosure of not only the rating, where

applicable, but the assumptions used to arrive at this conclusion. Unfortunately, preliminary results from the IOU supported benchmarking program indicate that gaming may be an issue (NMR 2012, 24). This requirement was included in an attempt to minimize "gaming" the rating by basing it on overly rosy space use assumptions. By including the assumptions made to receive a rating, the owner allows the counterparty to make sure that the description of the property that ESPM has received matches the counterparty's understanding of the property and its use. By assuring that all of these assumptions are on the record, the counterparty has recourse to fraud statutes if there are major material misrepresentations by the owner.

ENERGY STAR statement of energy performance. The Statement of Energy Performance is a document that gives a single sheet summary of the energy use and rating of a nonresidential building. It is the briefest of the standard reports; it is useful for a person who just wants to know the rating and the overall energy use. While it is illustrative, it does not give a full picture of the operation of a building. For this reason, the Data Checklist and Facility Summary are also required as a part of the disclosure documentation.

ENERGY STAR data checklist. The Data Checklist is a report that summarizes a property's physical and operating characteristics. This report forces the owner to disclose the space and operational assumptions that underlie the rating and energy use data. For each space and operational variable, there is a set of verification questions and a checkbox designed to clarify the detail being shown and verify that it is entered accurately. In addition to the space and operational variables, this document lists the monthly energy use by fuel source. While no notes or check marks are required to achieve compliance, there is space for a professional engineer or registered architect to certify the accuracy of the data, if desired.

ENERGY STAR facility summary. The Facility Summary is a report that summarizes a building's space usage and compares a building's energy use to national averages. It is similar to the Statement of Energy Performance in that it is a single page document designed to give summary data. This summary, however, is much more technically inclined, and compares several metrics to a baseline value, to the value required for an Energy Star label, the national average value, and to a user defined target value (if the user has set one up).

Disclosure requirement – ENERGY STAR compliance verification report. This custom report is accessed by the owner via a link on the Commission web site. This report consists of the owner's submission of the raw data that the Energy Star reports are based on. This data allows the Commission to revisit the data in the case that there are any questions, as well as use aggregate data for future policy planning. All of the data, however, remains on the Energy Star servers. This arrangement assures that the data will remain secure and encrypted, and allows the Commission to administer this program without embarking upon a major IT project.

Optional Elements of Disclosure

While the above elements of disclosure satisfy the legislative requirements of AB 1103, the outreach process identified stakeholder concerns not addressed the by the mandatory elements. Chief among these were ESPM's inability to rate buildings with a high number of different space usage and the limited number of space types available. For these reasons and in

order to make sure that the benchmarking effort is in alignment with California goals, a California based rating is available as an optional element in the disclosure process.

Promulgating a California Based Rating

While the Energy Star Portfolio Manager is the most widely available and well supported benchmarking tool available, it does not align perfectly with all elements of the Strategic Plan, nor does it provide the most accurate characterization for a variety of California buildings. The main drawbacks for the Energy Star Portfolio Manager are building type limitations, the basis of the rating scale, the ESPM's inability to rate buildings with multiple space types where none of them is a majority of the building, and the lack of weather normalization reflecting the variation in climate found throughout California.

There are 16 possible building types for the Energy Star Portfolio Manager, while the California Commercial End Use Survey (CEUS) allows for 63 possible site codes (Sharp, 2010).Energy Star Portfolio Manager will only provide a rating for a building that has more than 50% of its space made up of a single type. The basis for the Energy Star Portfolio Manager rating is a percentile score of energy use as compared with a survey of commercial building across the entire United States. The Strategic Plan, however, lays out its goals in the context of buildings that achieve zero energy consumption. This results in a rating scale that is the inverse of the ESPM rating in that a low score is better than a high score. In ESPM, the worst score possible is one, but in the CBEURT, a zero score is the stated goal.

In order to provide an operational rating that most accurately reflects the California building space types and energy usage, an alternate rating criterion was established. The CEUS data was used to determine median EUI values for each of the building types. The base rating scale was then established; an EUI of zero yields a rating of zero, while an EUI equal to the median value for a particular building type will always yield a rating of one hundred.

In order to adjust this base scale to reflect the operational parameters of the building, a statistical analysis of the CEUS data was performed. This analysis was used to generate a set of regression coefficients that correspond to the change in EUI expected because of the change in operational. The relevant coefficients are then used to generate a final rating.

In buildings that have multiple space use types, this analysis is performed for each space type, and a weighted average of all of the space types is used to give an overall building rating.

California is a state that is marked by extremes in climate variation. It contains both the highest and lowest points in the continental United States, with deserts and temperate rain forests found at the same latitude. The ESPM's weather normalization has the same values for all of California. In order to reflect this diversity, the California uses Heating Design Day (HDD) and Cooling Design Day (CDD) values with zip code level resolution, using over 2,500 location specific values to calculate a more locally applicable rating.

An example of the form that this rating takes is given below in Figure 4. The top right quadrant gives the numerical score for the entire building; with the position of the score dependent on its numerical value. The position of this score and its associated arrow gives unambiguous feedback via the five color categories shown in the lower right quadrant. The rating for a typical California building is shown in the lower left quadrant as a point of reference.

Figure 4: CBUERT Rating

Summary

The implementation of AB 1103 has resulted in a portfolio of disclosures that will allow persons evaluating Non-Residential buildings to understand their energy use relative to national and state benchmarks with a minimum of effort. These disclosures have been designed in such a way that they will support California's Long Term Energy Efficiency Strategic Plan's Zero Net Energy goals and will be a complement to the BEARS metrics being developed under AB 758.

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