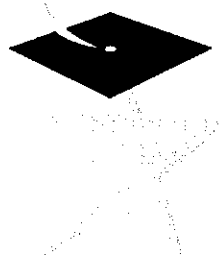


**College for all Texans**



Texas Higher Education  
Coordinating Board

# **Overview of Space Usage Efficiency (SUE)**

**May 2009**

## Texas Higher Education Coordinating Board



Texas Higher Education  
Coordinating Board

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### Mission of the Coordinating Board

The Texas Higher Education Coordinating Board's mission is to work with the Legislature, Governor, governing boards, higher education institutions, and other entities to help Texas meet the goals of the state's higher education plan, *Closing the Gaps by 2015*, and thereby provide the people of Texas the widest access to higher education of the highest quality in the most efficient manner.

### Philosophy of the Coordinating Board

The Texas Higher Education Coordinating Board will promote access to quality higher education across the state with the conviction that access without quality is mediocrity and that quality without access is unacceptable. The Board will be open, ethical, responsive, and committed to public service. The Board will approach its work with a sense of purpose and responsibility to the people of Texas and is committed to the best use of public monies. The Coordinating Board will engage in actions that add value to Texas and to higher education. The agency will avoid efforts that do not add value or that are duplicated by other entities.

The Texas Higher Education Coordinating Board does not discriminate on the basis of race, color, national origin, gender, religion, age, or disability in employment or the provision of services.

## **BACKGROUND**

In the fall of 2008, the Texas Higher Education Coordinating Board (THECB) designated a task force to review the methods used to measure classroom and class laboratory utilization. The purpose of the review of existing utilization rate goals and methodology was to identify areas for potential improvement and standards development. The activity accounted for in the previous model was limited and did not capture important data such as actual seat utilization or a global appropriateness of an institution's classroom inventory.

The THECB staff, through in-depth review with a working group comprised of representatives from various institutions across the state, researched the issue at length. Principal considerations were minimizing administrative burden on the part of the institutions and ensuring the measure was not only useful for the THECB, but also at the institutional level. The following Space Usage Efficiency (SUE) measure was developed as a result of close and productive collaboration with the THECB, agency staff, and institutions of higher education in Texas.

### Use of Multiple Measures

It is difficult, if not impossible, to use any one measure to determine activity, need, and usage appropriateness in a campus' classrooms and class laboratories. To more comprehensively and effectively identify space need and actual use, three variables are measured; *Facilities Demand*, *Current Utilization Rate*, and *Percent Fill*.

Points are awarded based on the performance score in each of the three variables as determined by the formulae outlined in appendix A. The points are converted to a score by multiplying the points by a weighting factor. This weighting factor can be modified over time to reflect strategic priorities. Finally, the scores for each of the three variables are summed to determine the classroom or class laboratory's SUE score. In order to provide an overall performance rank, an overall utilization score is used. The overall score is determined as a sum of the classroom and class laboratory SUE scores. No additional reports are required from institutions as all data are available within existing reports.

## **MEASURED VARIABLES**

### Facilities Demand

Many vital classroom-type activities occur outside of classrooms (room type 110) and lab-type activities occur outside of class laboratories (room type 210). Therefore, a measure is needed to determine the appropriateness of the room roster compared to the academic activities that require rooms. In essence, the facilities demand measure connects the supply (number of classrooms or class labs) with the demand (number of activities scheduled that require rooms).

To determine the demand measure, the total hours of classroom-type activities is divided by the total number of classrooms. The same process is used for the lab-type activities. The 45 hours per week (HPW) (for classrooms) and 35 HPW (for laboratories) goals were assigned based on the relative distribution of existing performance scores and reflects an increase over existing goals.

### Facilities Demand Conversion

<b>Demand</b>					
Classroom			Class Laboratory		
HPW	Points	Score (weight = 9)	HPW	Points	Score (weight = 9)
45.0 and above	4	36	35.0 and above	4	36
38.0 – 44.9	3	27	30.0 – 34.9	3	27
31.0 – 37.9	2	18	25.0 – 29.9	2	18
Below 31.0	1	9	Below 25.0	1	9

Table 1

#### Utilization Rate

There is no change to the current methodology. This is an effective measure to identify the actual use of the individual rooms. The current utilization guideline is 38.0 hours per week (HPW) for classrooms and 25.0 HPW for class laboratories. This method assigns points based on performance in this category based on relative performance to the historical guideline.

Utilization standards, where they do exist, vary in value as well as the methodology used to determine the rate. A study conducted by the State Council of Higher Education for Virginia (SCHEV) reviewed 20 state's standards and found the average for classroom utilization to be 40 HPW and class lab utilization to be 26 HPW. Given the differences in calculation method and exclusions specific to Texas, the 38.0/25.0 HPW standard appears to be appropriate.

### Utilization Rate Conversion

<b>Utilization Rates</b>					
Classroom			Class Laboratory		
HPW	Points	Score (weight = 8)	HPW	Points	Score (weight = 8)
38.0 and above	4	32	25.0 and above	4	32
34.0 – 37.9	3	24	20.0 – 24.9	3	24
30.0 – 33.9	2	16	15.0 – 19.9	2	16
Below 30.0	1	8	Below 15.0	1	8

Table 2

#### Average Percent Fill

It is necessary to determine the number of seats occupied when a room is in use to determine the appropriateness of use, need for additional facilities, and opportunities for optimization.

As in the utilization measure, the SCHEV study addressed station usage and found 65 percent occupancy was the average standard for classroom occupancy. They found a higher standard in the laboratory category at 77 percent. The points array for percent fill place the Texas standard in line with the findings of the SCHEV study, while keeping the three-point value above the mean of Texas institutions.

### Average Percent Fill Conversion

<b>Average Percent Fill</b>					
Classroom			Class Laboratory		
Percent of Seats	Points	Score (weight = 8)	Percent of Seats	Points	Score (weight = 8)
65% and above	4	32	75% and above	4	32
55.0% – 64.9%	3	24	65.0% – 74.9%	3	24
45.0 %– 54.9%	2	16	55.0 %– 64.9%	2	16
Below 45.0%	1	8	Below 55.0%	1	8

Table 3

## **STANDARDS AND USES**

### Standards

Based on the performance measures above, SUE goals for classrooms and class laboratories, as well as an overall performance standard, have been developed. A total score of 75 (or above) for either the classroom or class laboratory area is the standard. Overall, a score of 150 (or above) is deemed to have met the standard for overall space usage efficiency.

### Routine Uses of SUE Information

The overall SUE score will be used by the THECB and THECB staff as a global assessment mechanism to determine whether a given project should be entered on the consent calendar or scheduled for actual presentation. Chapter 17, sub-chapter D of the THECB board rules outlines the types of project applications the SUE score would influence.

Individually, the scores for classroom and class laboratory may be used to assess the desirability of the projects that are primarily of one type or another. For instance, a building project contains numerous classrooms coupled with academic office space. In this case, the classroom score would inform the approval process. Conversely, a building with class laboratories would be assessed using the class lab score. For either of these purposes, a score of 75 in either classroom or class laboratory is considered as meeting the standard. Using the multiple measures allows institutions that fail to meet the standards in either the individual component scores or the overall score to focus their action plans toward a specific area.

## APPENDIX A

### SUE FORMULAE

#### Demand

This measure is calculated identical to the Utilization measure but includes hours from classes that are not taught in classrooms. The CBM005 report is grouped by [Year], [FICE], [Building], and [Room] and the product of the [DaysofWeek] field and [Duration] field divided by 50 (to convert to hours) are summed by [RoomType] = 110, 2\*, or other.

*Inputs:* CBM005 [Year], [FICE], [Building], [Room], [RoomType], [DaysofWeek], [StartTime] and [Duration]

#### Utilization

The Utilization measure is the legacy measure reported on the CBM005 report. This measure only counts those classes taught in specific rooms (classroom or class laboratory) and is calculated using the existing CBM005 application. In brief, the total number of minutes taught in classrooms or class laboratories is divided by 50 (number of minutes in an hour accounting for passing and room transition time), and then divided by the number of classrooms or class laboratories reported in the facilities inventory. Excluded are those minutes that are stacked; this occurs when two or more classes are reported at the same time in the same place. Also excluded are non-credit activities that may be scheduled in classrooms or class laboratories.

#### Percent of Fill

To measure the percent of capacity filled when a classroom is utilized the CBM005 report is joined with the Facilities Room Inventory to obtain the reported capacity for a room. The sum of the enrollment fields on the CBM005 report are multiplied by the number of digits in the [DaysofWeek] and totaled [Building], [Room], [RoomType] and [StartTime]. The result of this calculation is divided by the [Capacity] for each instance. The resulting Percent of Fill by class is averaged by [FICE] and [RoomType] 110 and 210.

#### *Inputs:*

CBM005 [Year], [FICE], [Building], [Room], [DaysofWeek], [StartTime], [RoomType], [EnrollUGL], [EnrollUGU], [EnrollMas], [EnrollDoc], [EnrollSpec], [EnrollExcessUG], [EnrollExcessDev], [EnrollLowerExcessUG], [EnrollUpperExcessUG]  
Facilities Room Inventory [Year], [FICE], [Building], [Room], [Capacity]

## APPENDIX B

### EXAMPLE (Mountainview University)

For the purpose of example, this addresses only the classroom SUE scores. The same methodology would be applied (using the appropriate points and scores) for class laboratory SUE.

#### CLASSROOM REVIEW

Mountainview University is a public university in the State of Texas. In the fall semester of a given year, Mountainview teaches 100 classes each week. Each class meets three times per week with a duration of 50 minutes per class. Ninety of the classes are medium-to large-sized and are taught in actual classrooms (room type 110) as indicated on the institutionally submitted facilities inventory. Classes taught in the classrooms, on the average, fill the rooms to 70 percent of room capacity. The other 10 classes are relatively small and are taught in meeting and conference rooms. Mountainview has seven actual classrooms on the facilities inventory.

#### Mountainview Classroom Data

As reported on the CBM 005

Number of Classes	Number of meetings per class, per week	Minutes per class	Total minutes per week	Number of classrooms
100	3	50	15,000	7
Number of classes in classrooms	Number of classes in non-classroom spaces	Total minutes in classrooms	Total minutes in non-classrooms	Average percent of seats filled
90	10	13,500	1,500	70%

Table B-1

#### Demand

This measure compares the overall demand (total number of classes taught) to the currently available number of actual classrooms.

#### Steps

1. Divide the total minutes of classes taught (15,000) by the number of classrooms (7). The result is the average class demand on the actual classrooms.

2. Divide the average class demand by 50 (the number of minutes per hour a room can practically be used). The result is the classroom demand in average number of hours per week.

In this example, Mountainview's demand measure would be:

$$\begin{aligned}\text{Demand} &= (\text{TOT min/wk}) / (\text{\#of Classrooms}) / (50) \\ &= (15,000) / (7) / (50) \\ &= \mathbf{42.9 \text{ HPW}}\end{aligned}$$

### **Utilization Rate**

There is no change to this method of calculation. For this example, we are assuming there are no stacked classes and all classes are fundable courses.

#### Steps

1. Divide total minutes taught in classrooms (13,500) by the number of classrooms (7). The result is the average number of minutes per classroom.
2. Divide the average number of minutes per classroom by 50 (the number of minutes per hour a room can practically be used). The result is the utilization rate in average number of hours per week (HPW).

In this example, Mountainview's classroom utilization rate would be:

$$\begin{aligned}\text{Classroom Utilization} &= (\text{TOT min in 110}) / (\text{\# of 110}) / (50) \\ &= (13,500) / (7) / (50) \\ &= \mathbf{38.6 \text{ HPW}}\end{aligned}$$

### **Percent Fill**

Percent fill is determined by averaging the percent of seats filled in all classes taught in classrooms. This is a very basic measure that is system generated; for Mountainview, the classroom average percent fill is **70 percent**.

## **CLASS LABORATORY REVIEW**

Class laboratories (room type 210) at Mountainview University are used to a somewhat lesser degree. In the fall semester of any given year, Mountainview has 30 laboratory sessions that meet one time per week; each session is 170 minutes in duration. There are four class laboratories and each are large and well equipped. Not all laboratory sections are taught in the actual class laboratories; 15 sessions are held in other types of laboratories. On the average, 50 percent of the stations are in use in the class laboratories

### Mountainview Class Laboratory Data

As reported on the CBM 005

Number of lab sections	Number of meetings per section, per week	Minutes per lab section	Total minutes per week of class lab use	Number of class laboratories
30	1	170	5,100	4
Number of Sections in class labs	Number of lab sections in other lab spaces	Total minutes in class laboratories	Total minutes in other rooms	Average percent of seats filled
15	15	2,550	2,550	50%

Table B-2

#### **Demand**

This measure compares the overall demand (total number of lab sections taught) to the currently available number of actual class laboratories.

#### Steps

3. Divide the total minutes of lab sections taught (5,100) by the number of class labs (4). The result is the average demand on the actual class laboratories.
4. Divide the average lab demand by 50 (the number of minutes per hour a room can practically be used). The result is the class lab demand in average number of hours per week.

In this example, Mountainview's class lab demand measure would be:

$$\begin{aligned}\text{Demand} &= (\text{TOT min/wk}) / (\text{\#of Class labs}) / (50) \\ &= (5,100) / (4) / (50) \\ &= \mathbf{25.5 \text{ HPW}}\end{aligned}$$

#### **Utilization Rate**

There is no change to this method of calculation. For this example, we are assuming there are no stacked classes and all classes are fundable courses.

#### Steps

3. Divide total minutes taught in class labs (2,550) by the number of class labs (4). The result is the average number of minutes per class laboratory.
4. Divide the average number of minutes per class laboratory by 50 (the number of minutes per hour a room can practically be used). The result is the utilization rate in average number of hours per week (HPW).

In this example, Mountainview's class laboratory utilization rate would be:

$$\begin{aligned} \text{Classroom Utilization} &= (\text{TOT min in class lab}) / (\# \text{ of class labs}) / (50) \\ &= (2,550) / (4) / (50) \\ &= \mathbf{12.8 \text{ HPW}} \end{aligned}$$

### **Percent Fill**

Percent fill is determined by averaging the percent of station used in all lab sections taught in class laboratories. This is a very basic measure that is system-generated; for Mountainview, the class laboratory average percent fill is **50 percent**.

### **SUE SCORING**

<b>Demand</b>					
Classroom			Class Laboratory		
HPW	Points	Score (weight = 9)	HPW	Points	Score (weight = 9)
45.0 and above	4	36	35.0 and above	4	36
38.0 – 44.9	3	27	30.0 – 34.9	3	27
31.0 – 37.9	2	18	25.0 – 29.9	2	18
Below 31.0	1	9	Below 25.0	1	9
<b>Utilization Rates</b>					
Classroom			Class Laboratory		
HPW	Points	Score (weight = 8)	HPW	Points	Score (weight = 8)
38.0 and above	4	32	25.0 and above	4	32
34.0 – 37.9	3	24	20.0 – 24.9	3	24
30.0 – 33.9	2	16	15.0 – 19.9	2	16
Below 30.0	1	8	Below 15.0	1	8
<b>Percent Fill</b>					
Classroom			Class Laboratory		
Percent of Seats	Points	Score (weight = 8)	Percent of Seats	Points	Score (weight = 8)
65% and above	4	32	75% and above	4	32
55.0% – 64.9%	3	24	65.0% – 74.9%	3	24
45.0 %– 54.9%	2	16	55.0 %– 64.9%	2	16
Below 45.0%	1	8	Below 45.0%	1	8

Table B-3  
SUE Conversion Table

Classroom SUE Scoring

Institution	Demand <b>[42.9]</b> (weight = 9)		Utilization <b>[38.6]</b> (weight = 8)		Percent Fill <b>[70%]</b> (weight = 8)		Total Score
	Points	Score	Points	Score	Points	Score	
Mountainview	3	<b>27</b>	4	<b>32</b>	4	<b>32</b>	<b>91</b>

Table B-4  
Mountainview University Classroom SUE Scores

Class Laboratory SUE Scoring

Institution	Demand <b>[25.5]</b> (weight = 9)		Utilization <b>[12.8]</b> (weight = 8)		Percent Fill <b>[50%]</b> (weight = 8)		Total Score
	Points	Score	Points	Score	Points	Score	
Mountainview	2	<b>18</b>	1	<b>8</b>	2	<b>16</b>	<b>42</b>

Table B-4  
Mountainview University Classroom SUE Scores

**SUMMARY**

Mountainview University would be considered in compliance with the standard for classroom efficiency (score of 91 out of 100, standard is 75), but would not be in compliance with the standard for class laboratory efficiency (score of 42 out of 100, standard is 75). Furthermore, Mountainview would not be in compliance with the overall efficiency standard (133 out of 200, standard is 150).

Mountainview met the standard for classroom efficiency. Therefore, in regard to SUE scores alone, if Mountainview submitted a capital project for review in any of the following categories, it could be placed on the consent calendar:

- classroom, general;
- auditorium/theater; or
- other facility types that appear, as determined by the THECB staff, to contain classrooms or similar space.

Because Mountainview did not meet the established standard for class laboratory efficiency, proposed projects of the following types would need to be presented to the Committee for Strategic Planning or the Coordinating Board at the regularly scheduled meetings:

- laboratory, general; and
- other facility types that appear, as determined by the THECB staff, to contain class laboratories or similar space
- 

Further, because Mountainview did not meet the overall standard for efficiency, proposed projects submitted of the following types would need to be presented to the Committee for Strategic Planning or the Coordinating Board at the regularly scheduled meetings:

- athletic;
- library/study facilities;
- office, general;
- office, high rise;
- office, technology;
- physical plant;
- student center;
- other; and
- projects that, at the discretion of the THECB staff, cannot clearly be classified in a single category of facility type.

For those projects in the non-compliant categories, Mountainview would need to develop an action plan outlining measures to be taken to achieve compliance. This plan could be informed by a review of the SUE scores and focused on the specific points leading to non-compliance.

Once the project is placed on the appropriate calendar (i.e. consent or formal), the Board or Strategic Planning Committee may use the data contained in the SUE scores to facilitate the decision-making process and make the final determination of project disposition.

Fice	Name	Class Demand	Class POF	Lab Demand	LAB POF
000020	Sul Ross State University - Rio Grande	9.39	41.34%	0.72	107.00%
003541	Angelo State University	33.48	64.22%	36.11	67.01%
003565	Texas A&M University - Commerce	24.84	50.39%	26.25	77.97%
003581	Lamar University	36.20	59.34%	30.40	63.53%
003592	Midwestern State University	46.01	57.71%	47.07	63.48%
003594	University of North Texas	41.79	76.73%	32.72	76.71%
003599	University of Texas - Pan American	49.06	73.85%	34.99	74.41%
003606	Sam Houston State University	36.26	70.83%	43.75	70.07%
003615	Texas State University - San Marcos	50.39	69.08%	69.03	69.43%
003624	Stephen F. Austin State University	33.30	63.92%	92.64	64.11%
003625	Sul Ross State University	23.55	46.45%	10.44	51.61%
003630	Prairie View A&M University	34.99	57.88%	28.09	59.51%
003631	Tarleton State University	32.43	51.30%	92.87	53.67%
003632	Texas A&M University	61.21	71.32%	39.97	80.73%
003639	Texas A&M University - Kingsville	33.60	59.50%	25.60	60.02%
003642	Texas Southern University	30.79	79.24%	24.28	64.98%
003644	Texas Tech University	44.51	64.23%	46.56	88.81%
003646	Texas Woman's University	48.63	52.01%	32.04	66.55%
003652	University of Houston	39.42	37.94%	40.69	56.95%
003656	University of Texas at Arlington	33.35	59.84%	46.10	62.60%
003658	University of Texas at Austin	40.69	53.07%	38.23	105.08%
003661	University of Texas at El Paso	41.06	59.68%	59.19	64.21%
003665	West Texas A&M University	36.48	52.12%	28.78	40.09%
009651	Texas A&M International University	44.87	59.99%	78.68	72.70%
009741	University of Texas at Dallas	47.73	49.46%	39.05	89.13%
009930	University of Texas of the Permian Basin	41.14	47.26%	28.17	40.82%
010115	University of Texas at San Antonio	50.69	60.81%	47.54	72.28%
010298	Texas A&M University at Galveston	0.45	2.00%	0.31	
011161	Texas A&M University - Corpus Christi	37.35	62.94%	26.30	69.49%
011163	University of Texas at Tyler	37.47	56.81%	91.31	53.18%
011711	University of Houston - Clear Lake	31.80	51.34%	25.73	54.51%
012826	University of Houston - Downtown	32.64	64.82%	29.39	74.42%
013231	University of Houston - Victoria	15.08	36.08%	4.20	27.33%
029269	Texas A&M University - Texarkana	30.00	47.13%	9.83	48.14%
030646	University of Texas at Brownsville	36.62	28.14%	33.26	47.39%
036273	Lamar Institute of Technology	42.81	68.82%	38.59	56.62%
023582	Lamar State College - Orange	32.31	51.06%	44.71	59.28%
023485	Lamar State College - Port Arthur	30.38	50.13%	37.58	59.63%
009225	Texas State Technical College - Harlingen	21.91	70.19%	21.24	69.88%
033965	Texas State Technical College - Marshall	29.30	50.17%	23.33	55.82%
003634	Texas State Technical College - Waco	23.07	95.10%	23.83	87.00%
009932	Texas State Technical College - West	18.69	47.29%	24.41	51.49%

This document is available on the Texas Higher Education Coordinating Board website: <http://www.thecb.state.tx.us>

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