UTAH STATEWIDE HIGHER EDUCATION SPACE UTILIZATION MASTER PLAN

DFCM PROJECT NO. 20159300

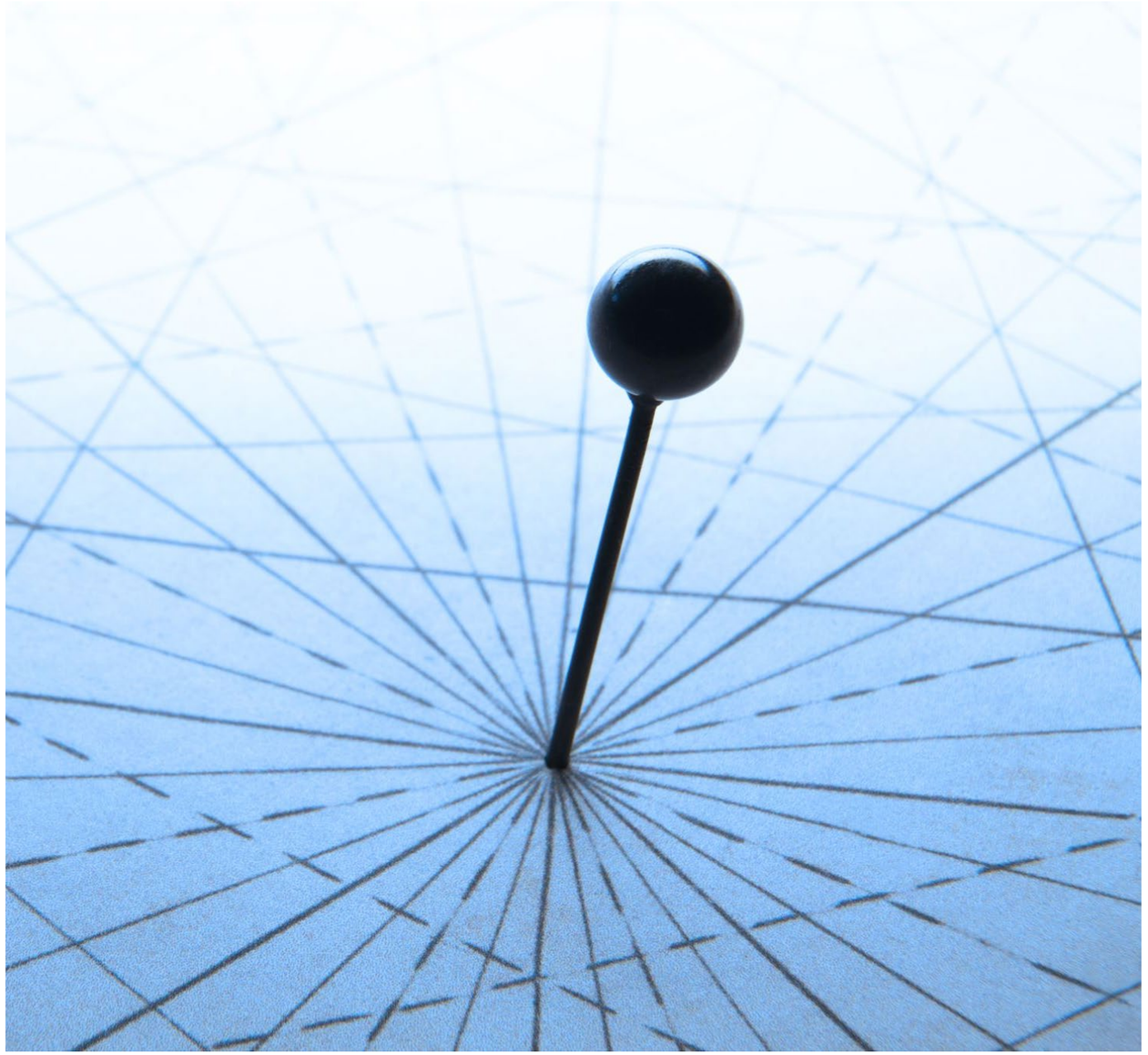
USHE BOARD UPDATE

NOVEMBER 21, 2024

SMITHGROUP NCHEMS

TODAY'S AGENDA

1. Project Overview
2. Data Collection & Current Trends
3. Utilization
4. Guidelines & Outcomes
5. Space Need Analysis Outcomes
6. Recommendations Summary



PROJECT OVERVIEW

SMITHGROUP

INTRODUCTION

Phase	Task #	Tasks
UNDERSTAND	1	Scoping, Schedule, Data List
		Kickoff Work Session
	2	Project Coordination
		Trends/Benchmarking Work Session
	3	Project Coordination
		Campus Meetings, Tours, Data Validation
		Utilization, Challenges, Opportunities
EXPLORE	4	Project Coordination
		Space Metrics, Standards, Recommendations
	5	Project Coordination
		Projections, Space Needs
REALIZE	6	Project Coordination
		Study Findings and Recommendations
		Draft Report Review and Comments

Purpose of Study

- To develop a statewide space utilization master plan across Utah's 16 colleges and universities.
- This includes an assessment of current utilization and the creation of space standards that result in achievable opportunities to improve space efficiency, capital prioritization, and cross-campus collaboration.

DATA COLLECTION AND CURRENT TRENDS

REVIEW OF INTERNAL DOCUMENTATION

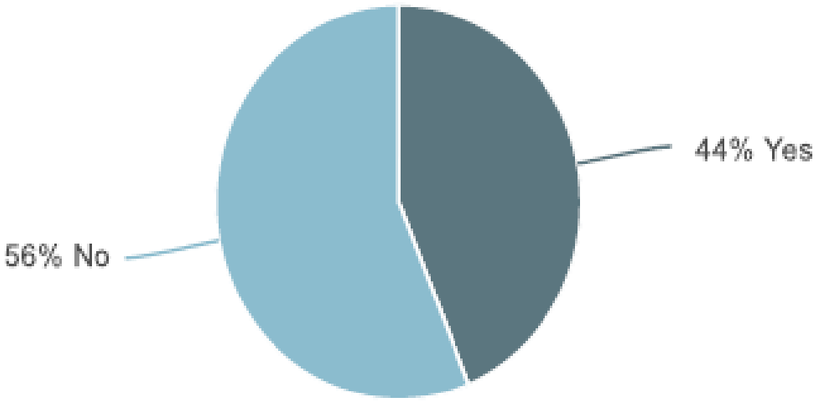
RECOMMENDATIONS

Space planning and guideline development requires accurate data and uniform processes

- Recommendations include:
  - Each degree-granting institution should update their facility inventory taxonomy to current space uses (similar to TC updates).
    - Additionally, annual training should be provided for accuracy of future reporting.
  - Room Grouping Codes should be reviewed and updated, with appropriate definitions provided.
  - There is a need for uniform USHE policy procedures and processes that all institutions follow.
  - Create a mechanism to differentiate Technical College program space within degree-granting institutions.
  - Reallocate appropriate resources for space management at the system and institutional levels.

FIGURE 2.5 SURVEY QUESTION #7 RESULTS

DO YOU FEEL AS THOUGH YOUR INSTITUTION HAS ADEQUATE RESOURCES APPLIED TOWARDS SPACE MANAGEMENT?



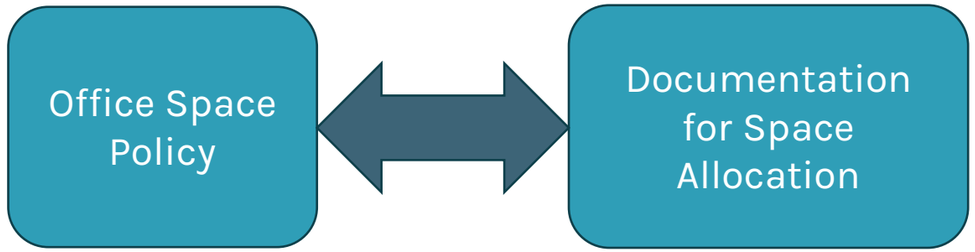
CURRENT TRENDS REQUIRE NEW TYPES OF DATA

Trends with Space Implications

- Online/Hybrid instructional delivery
- Remote/Hybrid employee work policies
- Using technologies to measure utilization

"In Utah degree-granting institutions for fall 2021,
42,680 FTE was generated through online courses"
NCHEMS Enrollment Analysis

While USHE institutions have remote work/ telecommuting policies, most are not linked to the allocation of office space.



Common Metrics to Measure Office Utilization

- Total Space Occupancy
- Workstation Occupancy
- Point-in-Time Occupancy
- Peak Usage or Capacity
- Desk-to-Employee Ratios

These metrics cannot be calculated without additional data and/or the use of occupancy sensors in office areas.

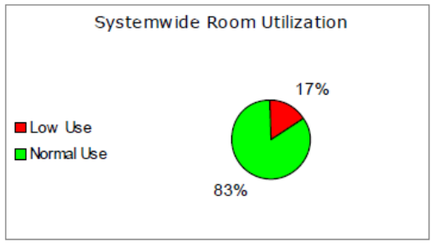
SPACE GUIDELINES/STANDARDS: ADJACENT STATES

Space Standards / Policies from Adjacent States

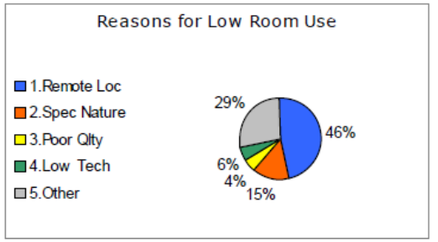
- A move away from systemwide standards in **Colorado** and **Arizona**
- Systems in **Idaho** and **New Mexico** shifted authority to institutions with oversight
- **Nevada** System of Higher Education is like Utah with utilization standards, space guidelines and the calculation of space needs

Nevada System of Higher Education
Instructional Space Utilization Report
LOW ROOM USE[1] EXCEPTION SUMMARY REPORT
Fall 2019 / FY 2020
NSHE Systemwide

SPACE USE CODE / INSTITUTION	TOTAL NUMBER OF ROOMS	NUMBER OF LOW USE ROOMS	PERCENT OF TOTAL ROOMS		REASONS FOR LOW ROOM USE: REMOTE LOCATION	SPECIAL NATURE OF ROOM	POOR ROOM QUALITY	LOW/NO TECHNOLOGY	OTHER
110 - CLASSROOMS									
CSN01 - College of Southern Nevada	269	60	22%		39	7	3	1	12
GBC01 - Great Basin College	70	30	43%		11	6	2	4	9
NSC01 - Nevada State College	24	1	4%		0	1	0	0	0
TMCC1 - Truckee Meadows Community College	93	5	5%		0	0	0	0	5
UNLV1 - University of Nevada Las Vegas	207	7	3%		1	2	1	0	3
UNR01 - University of Nevada Reno	156	25	16%		12	5	0	4	6
WNC01 - Western Nevada College	53	20	38%		9	2	1	0	11
TOTAL:	**872**	**148**	**17%**		**72**	**23**	**7**	**9**	**46**



CLASSROOMS



DATA COLLECTION

FINDINGS AND CHALLENGES

Contemporary space guidelines cannot be fully developed without key data points.

- New data components needed:
  - Standardized employee data
  - Definitions and data on employee alternative work arrangements (Remote/Hybrid)
  - Instructional program codes for Teaching Laboratory Classification
  - On-Campus FTE and FTE breakdowns by campus
- A lack of consistency in space coding between institutions.
- Due to the range of diversity of institutional role, mission, and programs, greater accuracy requires more intricate space models with a greater number of variables and inputs. This requires greater effort in data collection, human resources, and data management.
- The business processes and the resources required to develop space models should be aligned with the capital investment strategies.

DATA COLLECTION

DIFFERENCES AMONG INSTITUTIONS

- Space survey highlighted differences between Utah institutions with data collection and reporting practices.

FIGURE 2.12 SURVEY QUESTION #15 RESULTS

ARE OPEN COLLABORATION SPACES BEING TRACKED AS PART OF THE SPACE INVENTORY AT YOUR INSTITUTION?

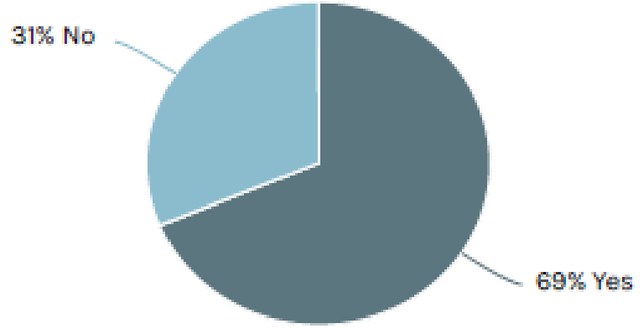


FIGURE 2.13 SURVEY QUESTION #16 RESULTS

DOES YOUR INSTITUTION HAVE A REMOTE WORK/ TELECOMMUNICATING POLICY IN PLACE FOR EMPLOYEES?

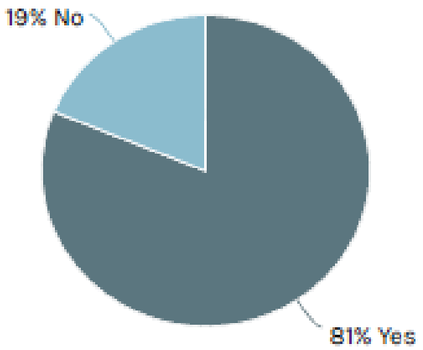
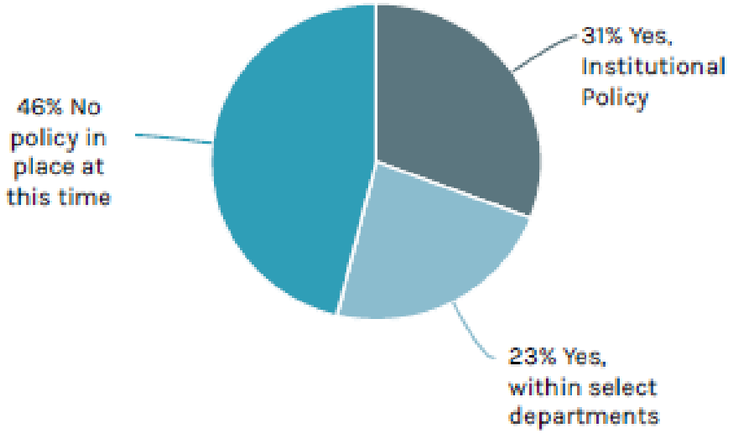


FIGURE 2.14 SURVEY QUESTION #17 RESULTS

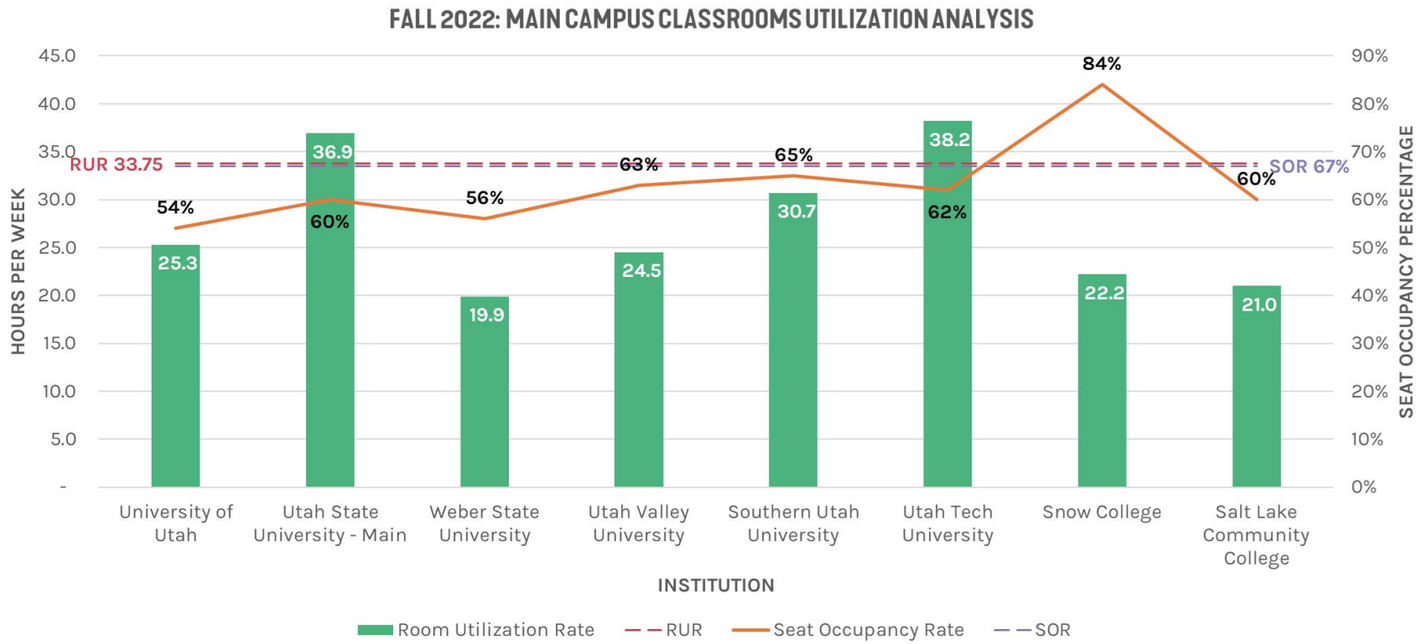
DOES THAT POLICY ADDRESS OFFICE ARRANGEMENTS SPECIFIC TO REMOTE OR HYBRID EMPLOYEES?




UTILIZATION
SMITHGROUP

CLASSROOM UTILIZATION OUTCOMES: DEGREE GRANTING

- Institutions generate their own utilization outcomes based on USHE parameters. Each institution has different software and internal processes to calculate utilization outcomes.
- The consultant's utilization analysis outcomes differed from those submitted to USHE. Some differences were significant.
- Classrooms not utilized for scheduled instruction are not included in utilization outcomes.
- Classroom utilization outcomes suggest that most degree-granting institutions have adequate space

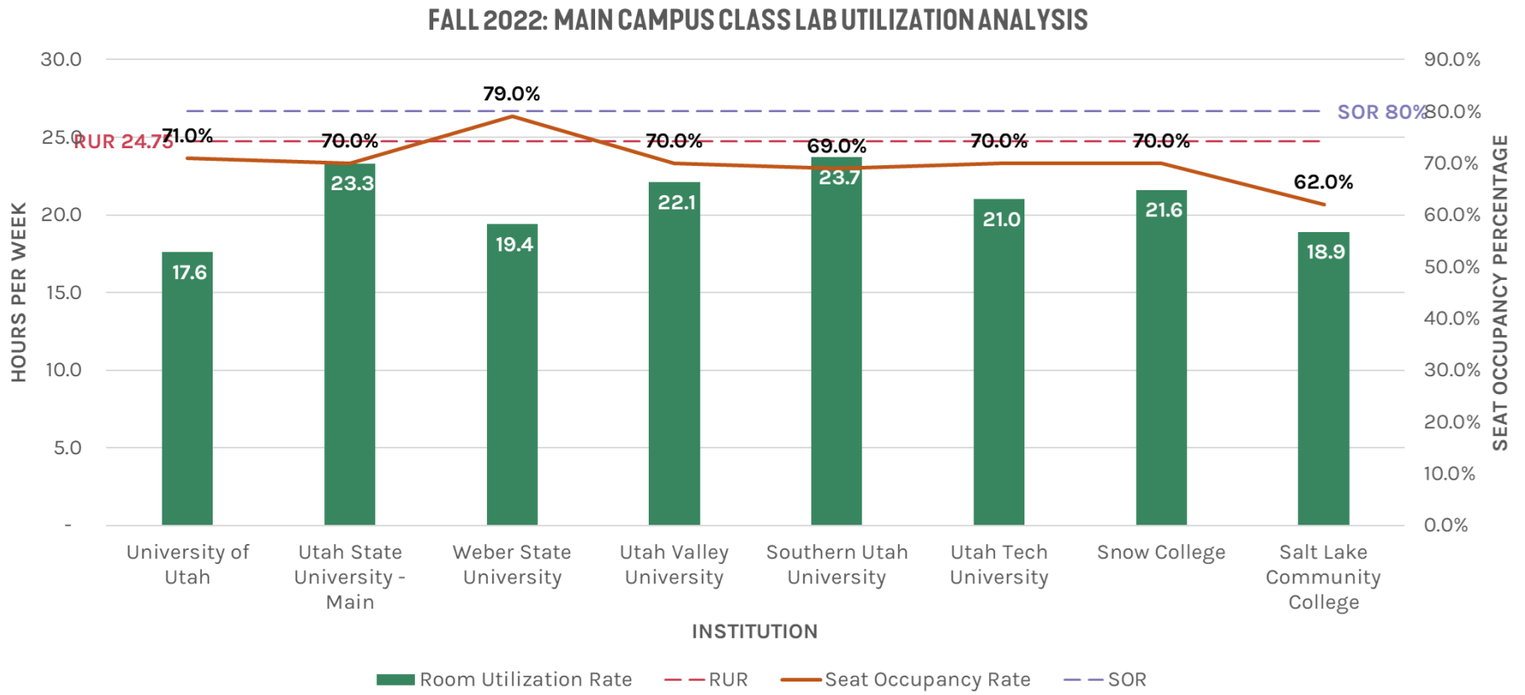


- **Recommendation**: Develop procedures and software to conduct utilization analyses internally from data submitted by each institution.

Note: This analysis does not address condition, suitability, or configuration of space.

TEACHING LAB UTILIZATION OUTCOMES: DEGREE-GRANTING

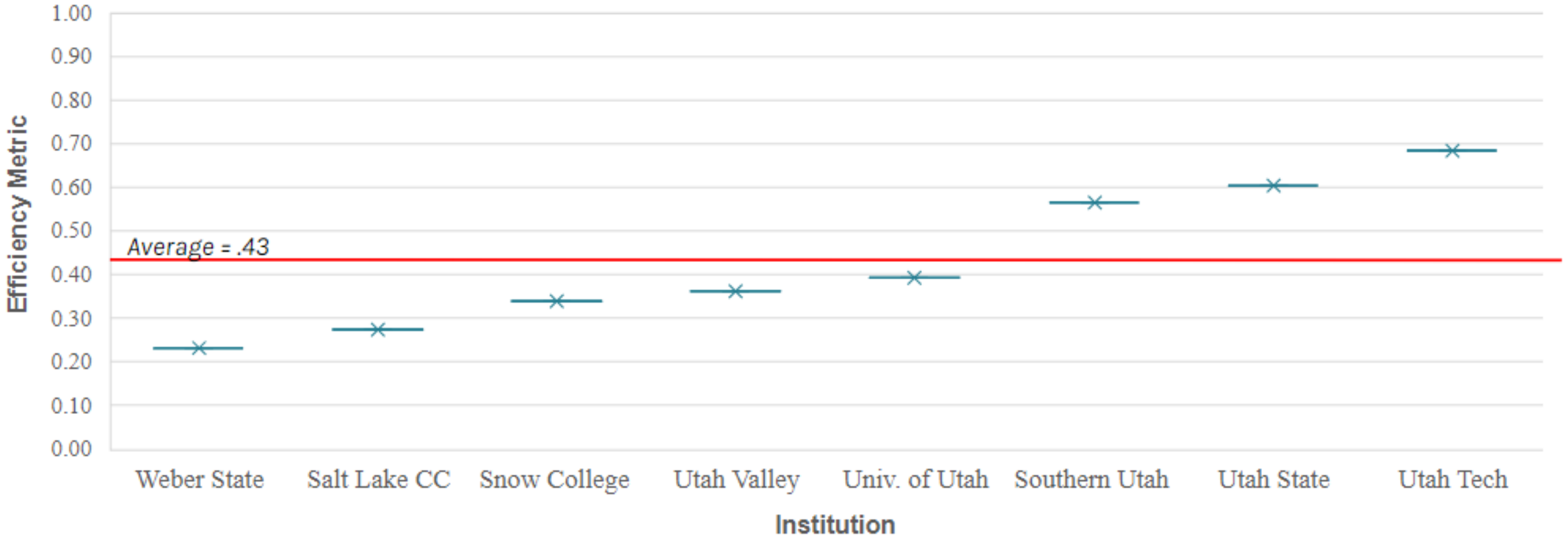
- Institutions generate their own utilization outcomes based on USHE parameters.
- Teaching labs that were not utilized for scheduled instruction were not included in utilization outcomes.
- The consultant's utilization analysis outcomes differed from those submitted to USHE. Some differences were significant.
- Utilization outcomes suggest that most degree-granting institutions have adequate lab space



Note: This analysis does not address condition, suitability, or configuration of space.

CLASSROOM EFFICIENCY METRIC RECOMMENDATION

- Consultant recommends a single metric to determine classroom efficiency for ease and accuracy.
- Metric can be calculated with existing data submitted to USHE.
- This numeric metric has a value between 0 and 1.00. But extreme values are likely not achievable in practice.
- Most institutions are in the .30 to .70 range, with .80 likely representing full capacity.
- The red line represents the average, not a target.



UTILIZATION IN TECHNICAL COLLEGES

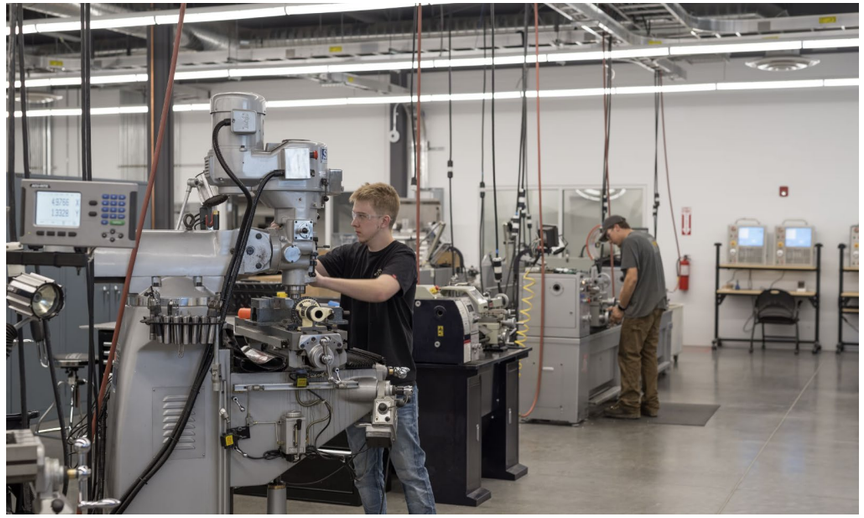
Degree-Granting Institutions

English 101, 8:30 am – 10:00 am, Monday & Wednesday

- Course schedule is fixed (Defined time of day and day of week)
- Defined start and end dates (semester system)
- All students attend a course at the same time
- The number of students enrolled in a course is consistent over time
- The unit of analysis is the classroom or lab
- Uniformity allows for measurement of room utilization

Technical Colleges

Machining 101, Lab is open 8:00 am – Noon, Monday - Friday



- Course schedule is fluid (enrollment changes frequently)
- Open-entry, open-exit courses are often competency-based (students work at their own pace)
- Students arrive and depart at multiple times
- Multiple program on-ramps – many with no defined start/end times
- The unit of analysis is space dedicated to the *program*
- Lack of consistency makes it difficult to measure traditional utilization metrics

TECHNICAL COLLEGE UTILIZATION

CONCLUSIONS AND RECOMMENDATIONS

- SmithGroup was unsuccessful in calculating ***traditional*** utilization outcomes in Utah's eight technical colleges using specialized software-based tools.

- Based on findings, SmithGroup recommends abandoning traditional utilization approaches that use course data and standard utilization guidelines and metrics.

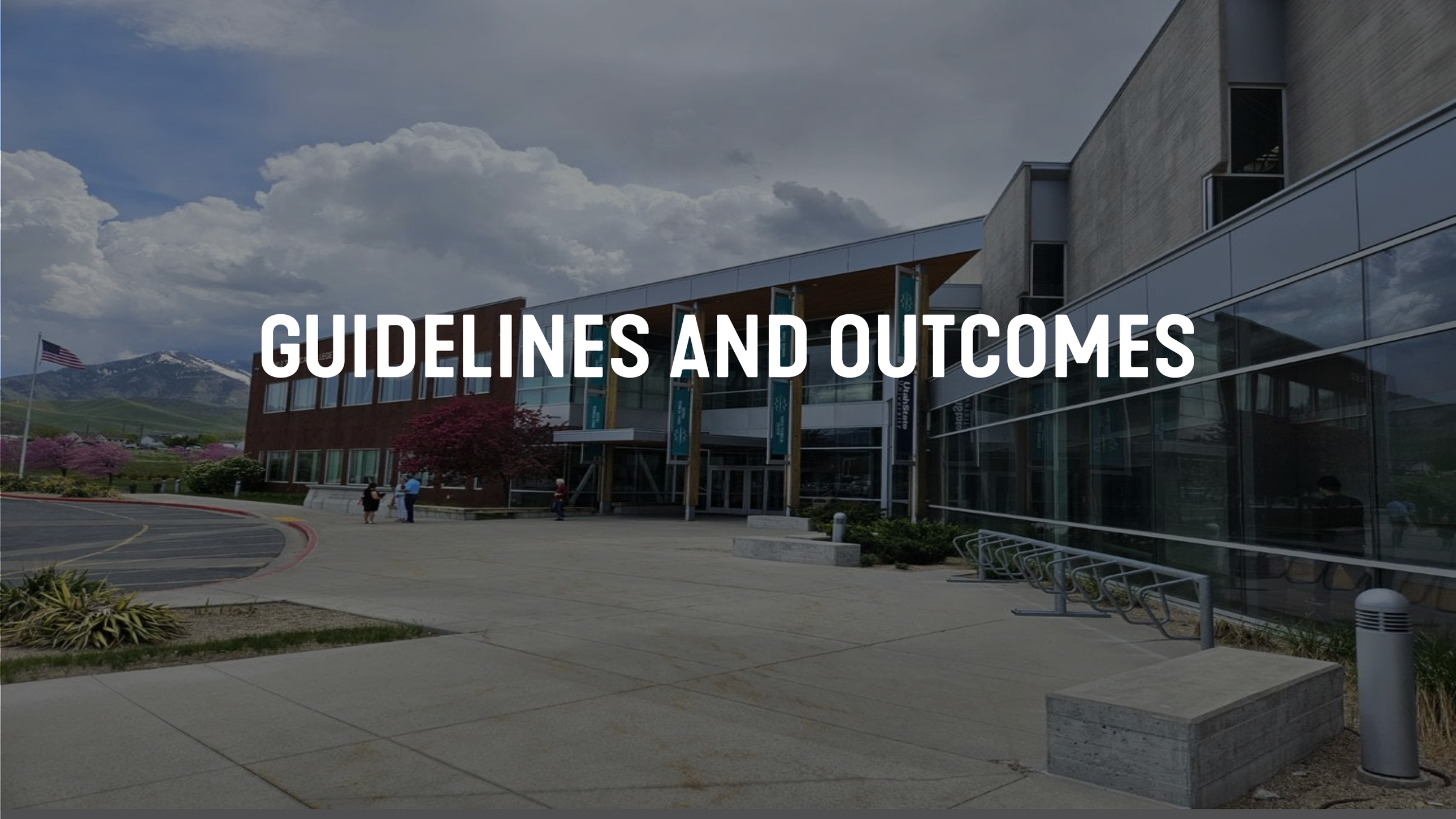
Recommendations:

- Focus efforts on **program *capacity analyses and/or ASF/student station guidelines*** to determine room optimization or efficiency.

- Each of these methods will require the submission of additional data elements and the development of software programs to calculate outcomes.

Program Capacity Analysis Example

Program	Enrollment			Program Capacity	
	FY 23 Headcount	FY 23 Membership Hours	Annual FTE Equiv. (Contact Hours/900)	Total FTE Laboratory Capacity per Year	% Lab Capacity
Welding	42	38,865	43	44	98%
Culinary Arts	38	23,734	26	32	82%
Machining Technology	45	25,375	28	21	132%
Biotechnology	7	2,801	3	5	58%
Automotive Technology	67	42,050	47	34	137%
Diesel Technology	63	38,925	43	30	145%
Collision Repair Technology	23	14,755	16	30	55%
Digital Media Design	96	42,780	48	50	95%
Information Technology/ Cyber	98	39,035	43	53	81%
Plumbing - Commercial	37	4,500	5	5	94%


GUIDELINES AND OUTCOMES

UTILIZATION GUIDELINES: DEGREE GRANTING INSTITUTIONS

SPACE POLICIES / GUIDELINES

- Reviewed statewide utilization trends (post-pandemic) prior to finalizing Utah utilization recommendations.
- After comparison, USHE classroom utilization guidelines are in alignment with guidelines from other state systems. Similar conclusion for teaching laboratories.

Recommendation:

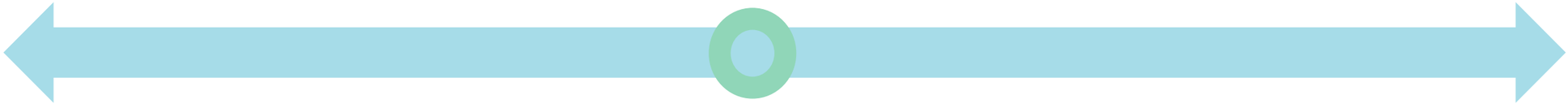
Maintain current USHE utilization guidelines for space needs analysis planning.

State	Weekly Room Hours*	Seat Occupancy Rate
California (CSU)	53	66%
Florida	40	60%
Indiana	32	66%
Minnesota	32	
New York (SUNY)	30	80%
North Carolina	35	75%
South Carolina	30	60%
Tennessee	30	60%
Texas	38	65%
Virginia	40	60%
Washington	35	70%
Average	***35.9***	***66.2%***
USHE	33.75	66.7%

**Note: not all states calculate instructional hours with the same formulas*

SPACE GUIDELINE GOALS

The type and quality of existing data determined the level of metric complexity and accuracy of outcomes.



One-size fits all Metrics with nominal inputs

Detailed Metrics with Complex Analytics

- The consultant strived to develop space metrics from the center of the continuum. Data availability and data accuracy limited options in some space categories.
- Due to the range of **diversity of institutional role, mission, and programs**, greater accuracy requires more intricate space models with a greater number of variables and inputs. This requires greater effort in data collection, human resources, and data management. The business processes and the resources required to develop space models should be aligned with the capital investment strategies.

SPACE GUIDELINE DIFFERENCES

EXISTING SPACE

Existing Space Percentages in Utah Institutions

Space Category	Degree-Granting		Technical Colleges	
	Percent of Existing Space	Number of Space Guidelines	Percent of Existing Space	Number of Space Guidelines
Classrooms	8%	1	11%	1
Instructional Laboratories	19%	1	58%	4
Offices	26%	1	14%	1
Total	***53%***		***83%***	
Total Number of Guidelines		7		9

Source: SmithGroup and USHE data files

Existing Space Percentages by Institutional Type

Space Category	Research Institutions	Dual Mission Institutions	Community Colleges
Classrooms	12%	16%	19%
Teaching Laboratories	8%	14%	18%
Offices	43%	32%	25%
Study Space	10%	14%	5%

Source: SmithGroup and USHE data files

- Differences in existing space between degree-granting institutions and technical colleges
- Differences in existing space between different institutional types in degree-granting institutions

Outcomes:

- Developed unique space guidelines between degree-granting institutions and technical colleges
- Adjustments to space guidelines based on institutional type in degree-granting institutions

SPACE GUIDELINE DIFFERENCES

TECHNICAL COLLEGES

FIGURE 5.13 ASF PER ANNUAL FTE BY COLLEGE

UTAH TECHNICAL COLLEGES

Technical College	Annual FTE*	Existing ASF	ASF per Annual FTE
Bridgerland Technical College	1,323	218,697	165
Ogden-Weber Technical College	1,559	250,073	160
Davis Technical College	1,754	270,397	154
Mountainland Technical College	1,891	216,035	114
Uintah Basin Technical College	534	136,320	255
Dixie Technical College	548	123,229	225
Southwest Technical College	417	87,533	210
Tooele Technical College	356	49,791	140

** Average of FY 2021-22 and FY 2022-23*

Assignable Square Feet per Annual FTE Differences based on size of institution:

- More than 1,000 FTE: 148 ASF/FTE
- Less than 1,000 FTE: 208 ASF/FTE

Recommendation:

A range of space guidelines based on annual FTE:

- Lower end or minimum guidelines for colleges with **more** than 1,200 FTE
- Higher end or maximum guidelines for colleges with **less** than 1,200 FTE

EXAMPLE OF SPACE GUIDELINE: OPEN LABS

DEGREE-GRANTING INSTITUTIONS

Space Guideline Recommendations
Utah Degree-Granting Institutions

Institution	Open Lab Guidelines		
	Base Allowance	Base Allowance FTE Limit	ASF/FTE Per Remaining Balance
Research Institutions			
University of Utah Central Campus	70,000	12,000	2.0
Utah State University, Logan	70,000	12,000	2.0
Dual Mission Institutions			
Weber State University -Ogden, Davis	50,000	7,500	2.5
Southern Utah University - Cedar City	50,000	7,500	2.5
Utah Technical University - St. George	50,000	7,500	2.5
Utah Valley University - Orem	50,000	7,500	2.5
Community Colleges			
Salt Lake Community College - All Campuses	30,000	4,000	3.0
Snow College - Ephraim, Richfield	30,000	4,000	3.0

ASF = Assignable Square Feet

- By FICM definition, open labs are *"informally scheduled, unscheduled, or open"*
- Differentiated guideline based on institutional type
- Guideline includes core allowance plus additional ASF for balance of FTE beyond base allowance limit

The overarching goal was to develop a consistent statewide methodology while adapting metrics to the unique mission of each institutional type (Research, Dual Mission, Community College).

SPACE NEEDS ANALYSIS OUTCOMES

5-YEAR SPACE NEEDS ANALYSIS: DEGREE GRANTING

Inputs:

- Average FTE enrollment growth of 3.3% between Fall 2019 and Fall 2022.
- Average FTE growth of 5.4% over the next five years
- Seven space guidelines used to generate space needs

Outcomes:

- Based on total ASF, all degree-granting institutions generated an *overall* surplus of space in Year 5. Some surpluses are higher than others.
- Capital projects in the pipeline will increase surplus of space but allow institutions to provide unique programs and services in purpose-built spaces.

FIGURE 4.33 FIVE-YEAR SPACE NEEDS ANALYSIS

DEGREE GRANTING INSTITUTIONS

Institution	Space Needs ASF Year 5			
	Current ASF	Guideline ASF	Surplus/(Deficit) (Fall 2027)	Capital Projects in pipeline
Research Institutions				
University of Utah	2,642,815	2,096,786	546,029	246,515
Utah State University	1,506,260	1,252,278	253,982	107,729
Dual Mission Institutions				
Weber State University -Ogden, Davis	1,064,096	755,854	308,242	-
Southern Utah University - Cedar City	592,460	458,052	134,408	40,697
Utah Tech University - St. George	521,217	476,446	44,771	78,950
Utah Valley University - Orem	1,202,983	1,163,568	39,415	138,750
Community Colleges				
Salt Lake Community College - All Campuses	835,251	697,151	138,100	76,660
Snow College - Ephraim, Richfield	452,718	237,208	215,510	19,304
TOTAL	***8,817,800***	***7,137,343***	***1,680,457***	***708,605***

5-YEAR SPACE NEEDS ANALYSIS: OPEN LABORATORIES

Outcomes:

- While there is an overall surplus of space within degree-granting institutions, there are space deficits in multiple space categories at the institutional level.
- Capital projects in the pipeline will impact over space needs.

SPACE NEEDS ANALYSIS - OPEN LABORATORIES

Institution	5-Year (Fall 2027)			
	Total Fall Term FTE	Existing ASF	Guideline ASF	Surplus / (Deficit)
Research Institutions				
University of Utah Central Campus	32,258	118,283	110,516	7,767
Utah State University, Logan	22,025	157,145	90,050	67,095
Dual Mission Institutions				
Weber State University -Ogden, Davis	17,776	96,062	75,691	20,371
Southern Utah University - Cedar City	9,009	50,804	53,774	(2,970)
Utah Tech University - St. George	8,471	16,561	52,428	(35,867)
Utah Valley University - Orem	26,391	149,049	97,227	51,822
Community Colleges				
Salt Lake Community College - All Campuses	14,365	28,613	61,096	(32,483)
Snow College - Ephraim, Richfield	3,887	65,066	29,662	35,404
TOTAL	**134,183**	**681,583**	**570,443**	**111,140**

ASF = Assignable Square Feet

5-YEAR SPACE NEEDS ANALYSIS: TECHNICAL COLLEGES

Inputs:

- Technical colleges have increased FTE enrollment by 24% since AY 2027-18
- Average enrollment growth of 5.2% projected between 2022-23 and 2027-28

Outcomes:

- Most Large technical colleges have space deficits by Year 5, but these deficits are being offset by new capital projects in the pipeline
- Mix of space surplus and deficits at smaller technical colleges. Space deficit at Tooele Tech is offset by a new capital project

FIGURE 5.16 FIVE-YEAR SPACE NEEDS ANALYSES

UTAH TECHNICAL COLLEGES | FY 2027-28

		5-Year Projection (FY 2027-28)					
Technical College	Projected Total Annual FTE	Existing ASF	Guideline: Low End	Guideline: High End	Minimum ASF Space Need	Maximum ASF Space Need	Capital Projects in Pipeline (Estimated ASF)
Bridgerland Technical College	1,444	218,697	209,843	241,701	8,854	(23,004)	59,475
Davis Technical College	2,046	270,397	287,878	325,787	(17,481)	(55,390)	33,878
Mountainland Technical College	2,042	216,035	297,514	341,145	(81,479)	(125,110)	120,670
Ogden-Weber Technical College	2,034	250,073	257,173	297,551	(7,100)	(47,478)	79,169
Subtotal	**7,566**	**955,202**	**1,052,408**	**1,206,185**	**(97,206)**	**(250,983)**	**293,192**
Dixie Technical College	706	123,229	103,824	118,667	19,405	4,562	-
Southwest Technical College	527	87,533	76,600	87,680	10,933	(147)	-
Tooele Technical College	369	49,791	50,027	56,094	(236)	(6,303)	32,801
Uintah Basin Technical College	511	136,320	72,423	83,031	63,897	53,289	-
Subtotal	**2,113**	**396,873**	**302,874**	**345,471**	**93,999**	**51,402**	**32,801**
TOTAL	**9,679**	**1,352,075**	**1,355,281**	**1,551,656**	**(3,206)**	**(199,581)**	**325,993**

ASF=Assignable Square Feet

SPACE NEEDS ANALYSIS BY INSTITUTION EXAMPLE

Outcomes:

- Space needs analysis generated at the institutional level. Analysis notes a mix of space surpluses and deficits.
- Space needs impacted by new capital projects:
  - 84,000 GSF Trades and Technology Building in Payson, Utah.
  - 101,647 GSF facility next to partner high school in Heber.

SPACE NEEDS ANALYSES

MOUNTAINLAND TECHNICAL COLLEGE

Lower End Guideline Application		3-Year (FY 2025-26)		5-Year (FY 2027-28)	
Space Category	Existing ASF	Guideline ASF	Surplus / (Deficit)	Guideline ASF	Surplus / (Deficit)
General/Computer Classrooms	31,843	25,675	6,168	26,013	5,830
Training Laboratories	1,392	4,923	(3,531)	4,993	(3,601)
Teaching Laboratories	41,688	43,450	(1,762)	44,022	(2,334)
Trade-Based Laboratories	88,773	118,500	(29,727)	120,060	(31,287)
Open Laboratories	3,212	3,771	(559)	3,813	(601)
Total Classroom/Laboratory ASF	***166,908***	***196,319***	***(29,411)***	***198,901***	***(31,993)***
Offices	23,088	45,315	(22,227)	45,945	(22,857)
Study/Gathering Space	6,243	20,140	(13,897)	20,420	(14,177)
College-Wide Services Space	9,162	10,070	(908)	10,210	(1,048)
Support Space	10,634	21,748	(11,114)	22,038	(11,404)
Total Other Space ASF	***49,127***	***97,273***	***(48,146)***	***98,613***	***(49,486)***
TOTAL ASF	***216,035***	***293,592***	***(77,557)***	***297,514***	***(81,479)***

ASF = Assignable Square Feet

SPACE NEEDS ANALYSIS

SUMMARY AND CAVEATS

Space surpluses and deficits are a starting place. Other factors need to be taken into consideration:

1. **Quality of the Data:** An accurate accounting of space based on consistent data definitions and procedures.

2. **Space in the Analysis:** Group Code A space (needs analysis) was used for space planning at degree-granting institutions. This represents the core of the academic enterprise, but only 48% of all space in within these institutions.

3. **Quantitative Analysis:** The space needs analysis outcomes and quantitative and do not address space quality and therefore do not provide a complete picture of space needs. The quality of existing space to effectively deliver programs for 21st century education needs to be considered.

4. **Maintenance and Lifecycle:** The condition and suitability of existing space can be more important for older buildings, especially those with poor quantity of space.

PUTTING IT ALL TOGETHER: RECOMMENDATIONS

SMITHGROUP

RECOMMENDATIONS SUMMARY

FIRST STEPS

The overarching goal is to streamline the data collection process for the institutions to ensure that all data received by USHE is accurate and consistent.

- USHE should work with representatives from the institutions to **review existing room use codes**, with the intent of creating new codes based on new space typologies, delete obsolete codes and modify existing definitions to reflect how space in being used today in higher education.
- USHE should develop and coordinate a program to **validate the accuracy of facility inventory data**. It would be in the best interest of USHE to include yearly training and guidance for campus representatives on space classification. SmithGroup encourages an annual review of taxonomy documentation with written and visual examples and presentation materials for ongoing reference.

- Provide definitions and consider condensing/removing **Room Grouping Codes**. As no other state has a system of using room grouping codes, USHE should consider the usefulness of these codes moving forward.
- **FTE and headcount enrollment data at the campus level** should be standardized and reported each semester. As some extended campus locations have low enrollments, standardized guidelines used for main campuses may need to be adjusted.

RECOMMENDATIONS SUMMARY

ADDITIONAL RECOMMENDATIONS: OPERATIONAL CHANGES

- Develop **low utilization thresholds** for classrooms and laboratories as a proactive process to increase room use efficiencies. Consider sending an "exceptions report" to institutions for low-use classrooms and teaching labs.
- Calculate space occupancy of **all instructional spaces**, not only those with utilization.
- While Utah's eight technical colleges offer similar programs, course structure varies across each institution. A room or program **capacity analysis** is the best alternative to determining how efficiently space is being utilized in technical colleges.
  - The calculations would require data not currently submitted to USHE, including annualized FTE by program and the days and times program / laboratory spaces are accessible for student use.
- Review existing data dictionaries and determine if additional data fields are needed to **identify space designated for technical college programs** for those institutions with dual program options and potential shared space.
- This study developed space guidelines used to generate space needs analyses for each of the USHE institutions. These guidelines were developed by existing space parameters and available data. Therefore, any projected surplus or deficit should be considered a **starting point to better understand** how the spaces are currently being used and determine any updates to space.

DISCUSSION Q&A