



NMSU Doña Ana Community College

2019-2026 Facilities Master Plan



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1.0 Introduction

This document is a Facilities Master Plan (FMP) for NMSU Doña Ana Community College (DACC). It is the result of a collaborative planning effort by DACC administrators, faculty, and the DACC Advisory Board in cooperation with the New Mexico State University (NMSU) Facilities and Services Department.

A major goal of the plan is to develop and clearly communicate the college's long-range development strategy and capital requirements to meet expected program requirements and enrollment growth from 2019 to 2026.

The plan is divided into three parts:

- Introduction
- Plan Overview that discusses:
 - Background information about the mission, programs and existing facilities
 - Expected service area and enrollment growth
 - Expected facility needs to accommodate growth
 - Implications for the future and the chosen development strategy
 - Capital needs and resources required to make the plan a reality
- Appendices that provide background information regarding:
 - Existing conditions
 - Future conditions
 - Itemized capital improvements
 - Information Technology Master Plan

An index is also included that indicates the location of relevant information about DACC requested in Section X of the Five-Year Institutional Master Plan required by the New Mexico Higher Education Department (HED).

2.0 Summary

2.1 Summary

This document is a Facilities Master Plan to guide capital improvements at NMSU's Doña Ana Community College. The Facilities Master Plan identifies specific and general needs anticipated from 2019 to 2026. This plan updates planning data and strategies first developed and adopted in 1994 and refined in 1998, 2004, 2008, and 2014. These strategies include:

- DACC will continue to be agile and responsive to service area growth and demand for new programs.
- Providing educational opportunities to a diverse community of learners in support of workforce and economic development will remain DACC's fundamental mission.
- Enrollment declines will shift focus from facility growth to facility and instructional technology renewal to stay at the forefront educational delivery.
- DACC seeks to identify projects that align with state and service area priorities.

Specifically, DACC will:

- Continue to expand the East Mesa Campus to accept anticipated central area enrollment growth and relieve the Espina Campus at NMSU
- Maintain enrollment at the Central Campus at NMSU at levels appropriate to its site capacity.
- Improve southern area campuses to improve retention.

Plan to phase satellite center development to respond to service area growth, demographics and available resources.

The capital strategy anticipates modest enrollment growth to 2025. The recent general higher education downward trend caused in part by a declining supply of high school graduates and concerns about higher education value are somewhat offset by a rising population and a positive service area economic climate. A major emphasis of the 2019-2026 Capital Strategy is for site and facility renewal with an emphasis on security and safety, information technology, and classroom upgrades.

Capital needs will be met through combining issuance of local general obligation bonds (GO bonds) with requested state matching funds. DACC will ask voters to approve \$16 million in GO bonds in 2019 (Bond Cycle 6), and \$16 million in 2023 (Bond Cycle 7). With potential state matches, the capital strategy encompasses \$48.86 million. The plan is based on a target of about 30% state funding assistance over the course of its implementation.

Specific projects include:

- Area Security / Safety Upgrades: Makes improvements to Security and Surveillance access / control and camera systems, exterior locks, and site lighting at all DACC locations guided by the 2018 Technologies Systems Master Plan.
- Infrastructure Improvements: Funds for maintenance and repair, and site development to DACC sites
- Classroom Upgrades / Facility Renewal / Renovations: Renovation to selected instructional areas at all DACC sites, including room configuration, furniture, room finishes, and instructional equipment guided by a Classroom Renovation Master Plan
- Information Technology / Upgrades / Equipment Acquisition: Make improvements to IT infrastructure, IT service rooms, and audio visual spaces at all DACC locations based on a 2018 Technologies Systems Master Plan
- Facilities:

In the 2019-2022 funding cycle (Cycle 6), DACC has the following priorities:

- Creative Media Facility: Construct a new facility at NMSU Arrowhead Research Park to support the DACC creative media programs in proximity to the Las Cruces Film Studio project (15,300 gross square feet, \$5.4 million, request a state match of \$1.5 million)
- Gadsden Center Advanced Technology Facility: Provides flexible class / labs to support DACC advanced technology programs (15,828 gross square feet, \$5.5 million, request a state match of \$2.5 million)

In the 2022-26 funding cycle (Cycle 7), DACC identified the following priorities that will be validated prior to the 2023 election:

- College/Industry Partnership in Student Learning Project: A new facility to provide opportunities for community engagement and student internships
- Future Program Enhancements (new and expanded): New construction to provide instructional classrooms and laboratories to support new programmatic initiatives and enhancements
- Physical Plant Facility: New construction to provide warehouse, shop and office facilities to support site and facility maintenance

2.2 Background

2.2.1 History and Organization

In 1965, the New Mexico Department of Education designated Doña Ana County as an appropriate site in southern New Mexico for an area vocational-technical school. In 1971, the Boards of Education of the Gadsden, Hatch, and Las Cruces school districts requested that New Mexico State University establish a branch community college. It was to be located on the NMSU campus in Las Cruces and offer postsecondary vocational-technical education in Doña Ana County. The New Mexico State University Board of Regents approved the request in 1972, and the voters in Doña Ana County approved an operational mill levy in May 1973. The institution became an official entity on July 1, 1973. It began offering vocational training programs on September 4, 1973, as the Doña Ana County Occupational Education Branch of New Mexico State University.

NMSU Doña Ana Community College is accredited by the North Central Association of Colleges and Schools.

2.2.2 Governance and Funding

DACC is a branch of New Mexico State University and is governed by the Board of Regents of the university through an operating agreement between the university and the three school districts in Doña Ana County. The community college Advisory Board, comprised of representatives of the three school boards, approves the budget, initiates mill levy and bond issue elections, and advises the college on program needs. The Board of Regents sets tuition and personnel policies, determines curricula and degrees, and handles all records, funds, receipts, and disbursements for the community college.

The college pays for operating expenses from state-appropriated funds, a property tax within the three school districts in the county, federal education funds, special grants, and tuition paid by students.

2.2.3 Mission / Programs

DACC offers a supportive atmosphere emphasizing student success and the need for continuing education. It offers instruction leading to occupational associate degrees and certificates, and preparing for further academic work. The college serves a broad range of the community's educational needs, from adult basic education and community education to customized training for employees in the workplace. The Small Business Development Center also serves the private sector. Exhibits 1 and 2 describe the college's mission and programs.

Exhibit 1 DACC Mission, Vision and Values

Mission Statement

DACC is a responsive and accessible learning-centered community college that provides educational opportunities to a diverse community of learners in support of workforce and economic development.

Vision Statement

DACC will be a premier learning college that is grounded in academic excellence and committed to fostering lifelong learning and active, responsible citizenship within the community.

Values Statement

As a learning-centered community college, DACC is committed to the following core values:

Education that —

- offers lifelong learning opportunities
- fosters dynamic learning environments designed to meet the needs of our students
- guarantees equality of rights and access
- ensures integrity and honesty in the learning process
- provides comprehensive assessment of learning

Students who will be —

- respected for their diversity
- provided with a safe and supportive learning environment
- challenged to become critical and independent thinkers
- expected to take an active role in their learning process

Leaders and employees who —

- practice tolerance and inclusiveness in decision-making and shared governance
- encourage and support professional growth
- demonstrate high ethics and integrity
- encourage collaborative interaction among faculty and staff
- practice responsible fiscal management and personal accountability
- ensure equal opportunities for a diverse faculty and staff

Communities that —

- build partnerships, including educational alliances
- strengthen industry partnerships to provide workforce development services and programs in support of economic development
- develop and adapt instructional programs in response to changing economical needs

Exhibit 2
DACC Programs



2.2.4 Existing Locations

East Mesa Campus is DACC's primary campus. The East Mesa Campus opened in fall 2003 and occupies a 60-acre parcel on Las Cruces' east mesa. The East Mesa Campus currently has about 200,000 gross square feet (GSF) of facilities housing and about 1,300 student FTEs.

The Espina Campus at NMSU is the oldest DACC campus, located on 15.5 acres on the southwest edge of NMSU's campus in Las Cruces. The Central Campus has ~233,000 GSF and is at its planned capacity serving about 1,400 student FTEs. All academic divisions offer programs at this site.

Other satellite centers in southern part of the county that offer occupational education and lower division university courses are:

- Gadsden Center. This center was occupied in 1999 and has about 32,500 GSF of permanent facilities.
- Sunland Park Center. This center was completed and occupied in 1996, and has about 32,500 GSF of permanent facilities.
- Chaparral Learning Center opened in 2012 and contains about 10,800 GSF of facilities.



DACC's East Mesa Campus

Customized training and small business development are predominantly offered at the 32,000 GSF Workforce Center in Las Cruces.

Adult Basic Education (ABE) is offered at all DACC locations and at community sites throughout the county.

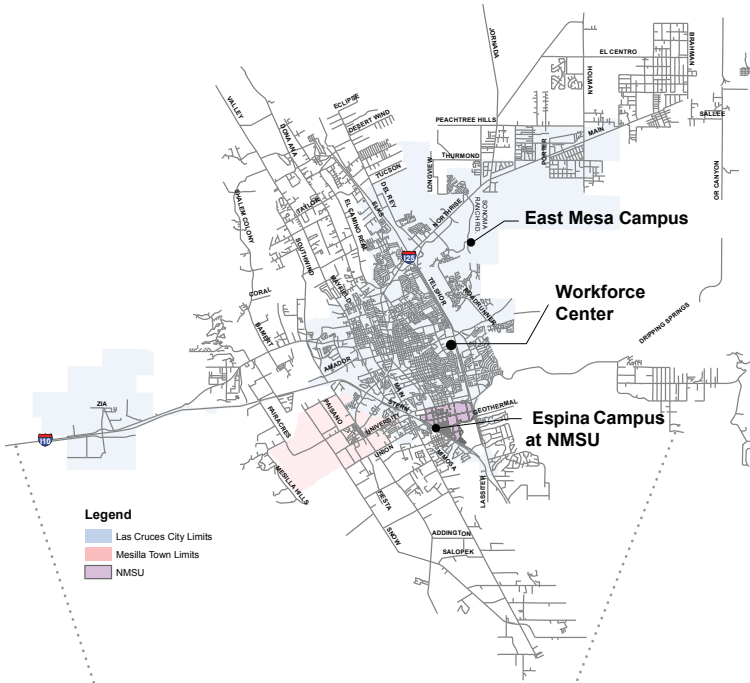
Community education is offered at the East Mesa Campus and various other locations in Las Cruces.

Most facilities are relatively new (in excellent to good physical condition). Ongoing building renewal activities will address physical deficiencies and Americans with Disabilities Act (ADA) issues.

Please see Exhibit 3 for the location of existing facilities. Appendix Section 3.1.5 provides site and floor plans of all sites.

See Appendix 3.1.5 for additional information about DACC's sites and facilities

Exhibit 3
DACC Locations



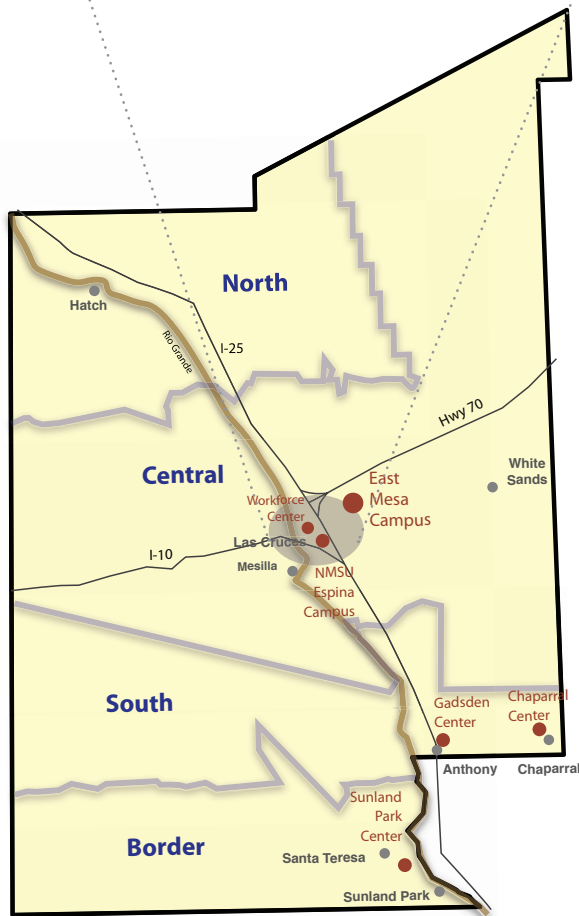
East Mesa Campus



Workforce Center



Espina Campus at NMSU



Gadsden Center



Chaparral Center



Sunland Park Center

2.3 Growth Factors

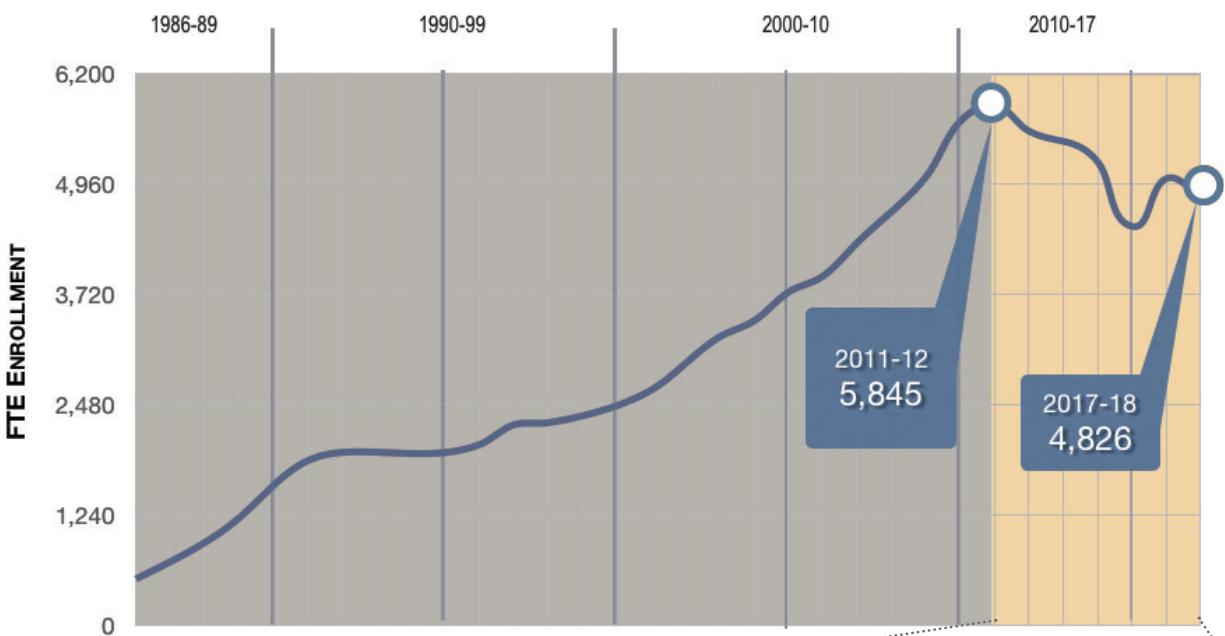
2.3.1 Historic Program / Enrollment Growth

See Appendix 3.1.6 for additional information about Growth Factors

In 1987, DACC began to serve all students who required remedial coursework in math or English as NMSU began to phase out remedial education offerings. Developmental studies were responsible for much of the growth between 1987 and 1990. Occupational education has also increased significantly. The college established many new health programs in the 1990s. Since 1998, there have been increases in most programs, particularly General Studies as DACC began offering lower division transfer coursework.

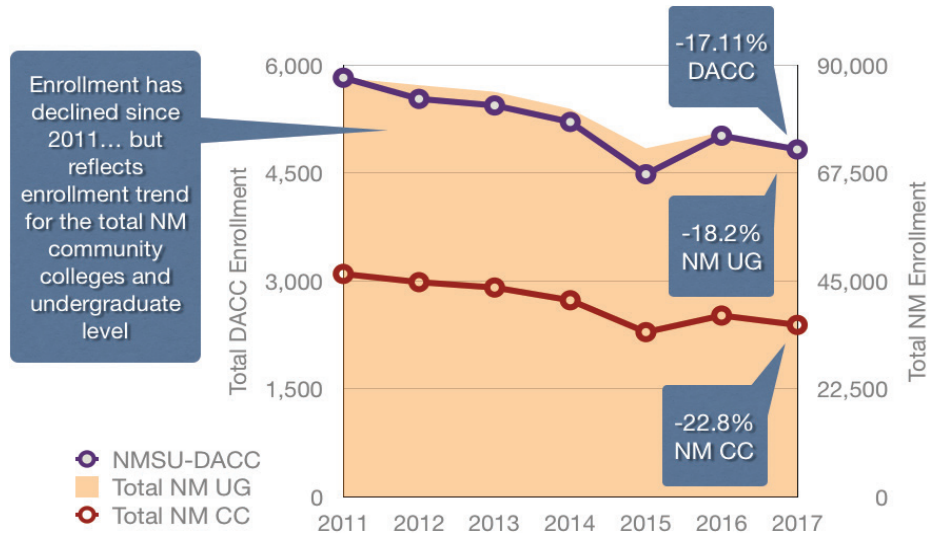
DACC has seen continuous growth until 2011, when enrollment declined, reflecting both national and regional trends (see Exhibits 4 and 5).

Exhibit 4
DACC Fall Full-Time Equivalent (FTE) Enrollment 1986-2017



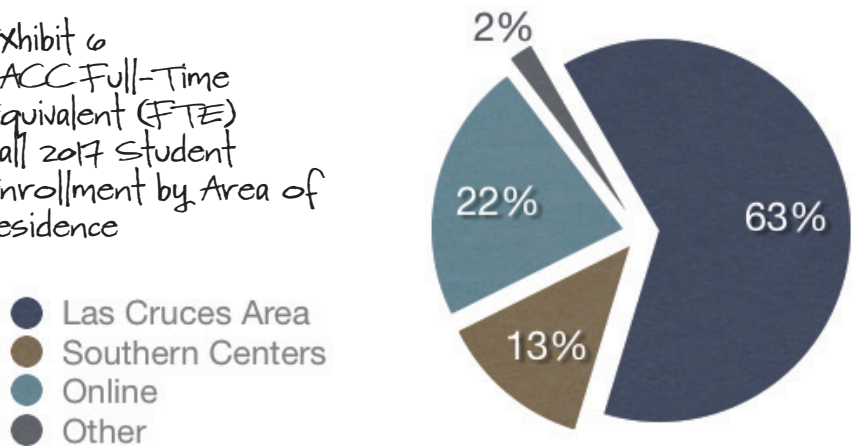
	Fall Semester						
	2011	2012	2013	2014	2015	2016	2017
NMSU-DACC FTE	5,822	5,528	5,437	5,208	4,482	5,017	4,826
NMSU-DACC Headcount	9,900	9,330	8,928	8,530	8,252	8,157	7,917
% FTE / Headcount	58.8%	59.2%	60.9%	61.1%	54.3%	61.5%	61.0%

Exhibit 5
DACC Full-Time Equivalent (FTE) Fall Enrollment 2011-2017, Compared to New Mexico total Undergraduate and Community College Enrollments



At DACC, 63% of Fall 2017 students attended classes in the Las Cruces Centers; 13% attended one of the southern centers, 22% were online students, and 2% were at other locations (Exhibit 6). About 30% of DACC students who live in the southern area attend a Las Cruces area campus.

Exhibit 6
DACC Full-Time Equivalent (FTE) Fall 2017 Student Enrollment by Area of Residence

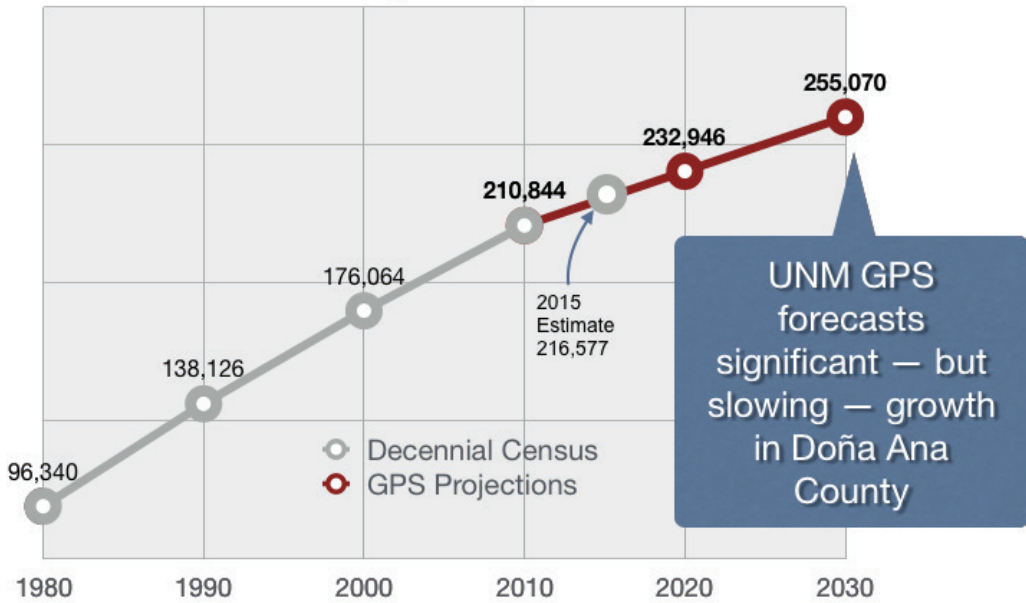


2.3.2 Service Area Growth / Demographics

Population Trends

- UNM Geospatial and Population Studies forecasts significant but slowing growth for Doña Ana County, rising from an estimated population of 213,963 in 2015 to 255,070 by 2030 — an increase of 41,107 persons.
- Declining birth rates and slowing in-migration to New Mexico contribute to slowing population growth.
- UNM GPS projects the young adults age cohort (20-34 years) will decline slightly from 51,150 to 50,106 by the year 2015, and continue to decline to 47,939 by 2030 (see Exhibit 7). Working age and retiree populations will continue to grow.
- ARC projects that growth distribution will be geographically similar to historic growth patterns, adding over 40,000 people to the central, border and southern areas by 2030 (see Exhibit 8).

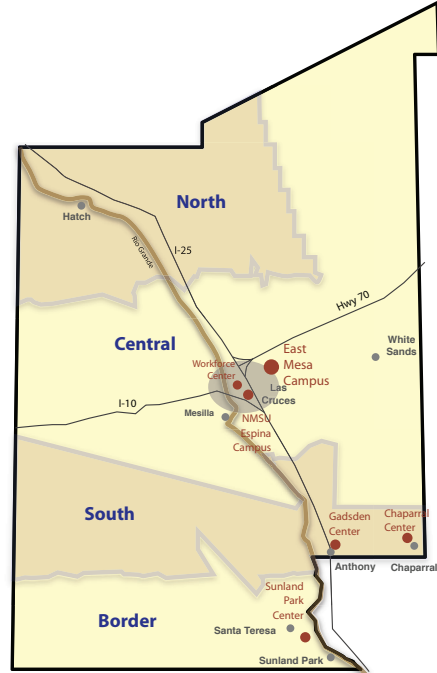
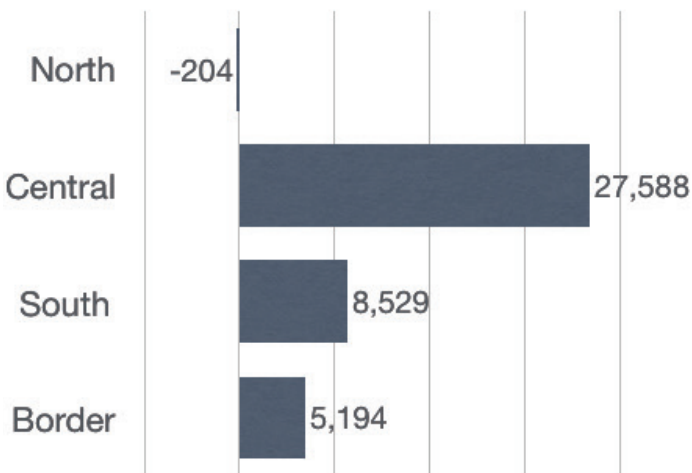
Exhibit 7
Doña Ana County Historic and Projected Population



Sources:

US Decennial Census (1980-2010); American Communities Survey (ACS) 5-Year Estimate, 2011-2015; and UNM Geospatial and Population Studies (GPS, formerly Bureau of Business and Economic Research/BBER)

Exhibit 8
Doña Ana County Forecasted Growth by Subarea



Employment and Economy

- Doña Ana County economy remains strong
 - The Bureau of Economic Analysis shows that total county employment has trended up since 2010, adding 6,038 jobs by 2016 (95,698 to 101,736).
 - The New Mexico Department of Workforce Solutions (NMDWS) shows steady / mild growth in most industries. Manufacturing declined, but health care and accommodations / food services experienced significant increases. NMDWS data show a small (500 jobs) decrease from 2016 to 2017. More recent data indicate a continuing drop in job growth in the Las Cruces area of 1.9% from 2017 to 2018.
 - Historically, Las Cruces area job growth has often been the highest in the state.
 - NMDWS projects the largest growth in the Las Cruces metropolitan statistical area (MSA) in 2022 to be in health care (+2,890) and education (1,680). Professional services and wholesale trade have the highest percentage growth — 26.6% and 24.7% respectively.
 - Not adjusting for inflation, annual wages have grown slightly over the past ten years (\$24,835 in 2006 to \$32,852 in 2016). Doña Ana County still lags behind the statewide averages.

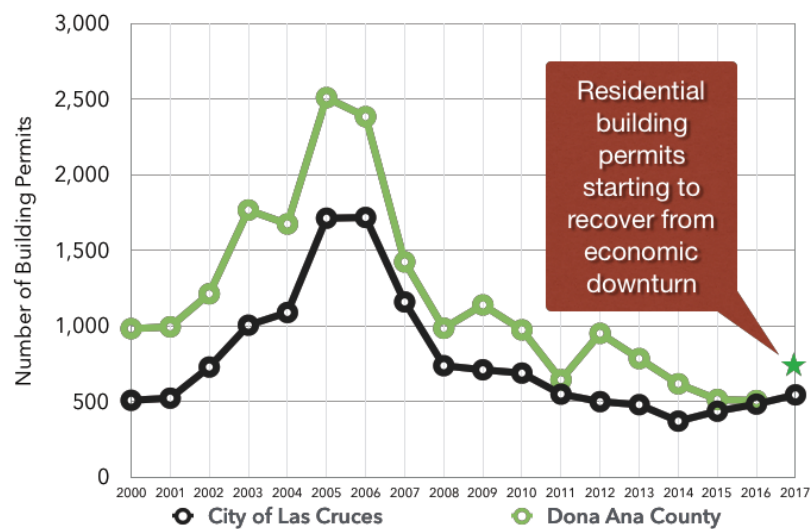
Housing and Development

- American Communities Survey (ACS) shows minimal growth in the number of housing units in Doña Ana County — approximately 1% per year.
- The City of Las Cruces and Doña Ana County have seen rising building permits in the last several years after a sharp decline from the peak in the 2005-06 period (Exhibit 9).

Enrollment and Education

- On a national level, the National Center for Educational Statistics (NCES) projects that high school graduates will increase 5% between 2012-13 to 2025-26 to 3.7 million. NCES projects high school graduates in New Mexico will increase 3.2% in this period (18,590 to 19,850).

*Exhibit 9
Permits for Residential New Construction in Doña Ana County and Las Cruces: 2000 to 2017*



★ Three of these building permits were for multi-family units containing a total 160 units. These building permits were for multi-family units containing a total 160 units

- The Western Interstate Commission on Higher Education (WICHE) projects total United States high school graduates to increase by 2015, and then decline by 2030. WICHE projects New Mexico High School graduates to mirror national trends by increasing from 20,401 in 2016, to 21,383 in 2025, and then to decline to 18,591 in 2030.
- Many sources are attempting to forecast what is in store for higher education in general, and in community colleges specifically. Some trends often mentioned are:
 - A general enrollment decline fueled by concerns about cost and access, and value of post-secondary education
 - A greater focus on careers and job placement
 - Focus on adult learners (age 25+) as the population ages
 - Use of public-private partnerships to help span the gap created by decreased state funding support and declining enrollments
 - More focus on collaboration-focused classroom spaces
 - More students seeking expertise (certificates and individual classes) rather than degree programs
 - Greater attention to online and mobile learning

*Exhibit 10
DACC Enrollment
Forecast 2020-2030*

2.3.3 Projected Enrollment Growth

ARC projects DACC total enrollment to see modest growth to 2030 (Exhibit 10). The recent general higher education downward trend caused in part by a declining supply of high school graduates and concerns about higher education value are somewhat offset by a rising population and a positive local area economic climate. ARC’s mid-range projection assumes that DACC retains similar market penetration to the 15-year historic averages. The low-range projection assumes a 10- to 15-year low penetration, and the high range assumes a 10-year average penetration. All projection scenarios are conservative with respect to peer college statistics. Further analysis assumes the mid-range projection series as the most likely.

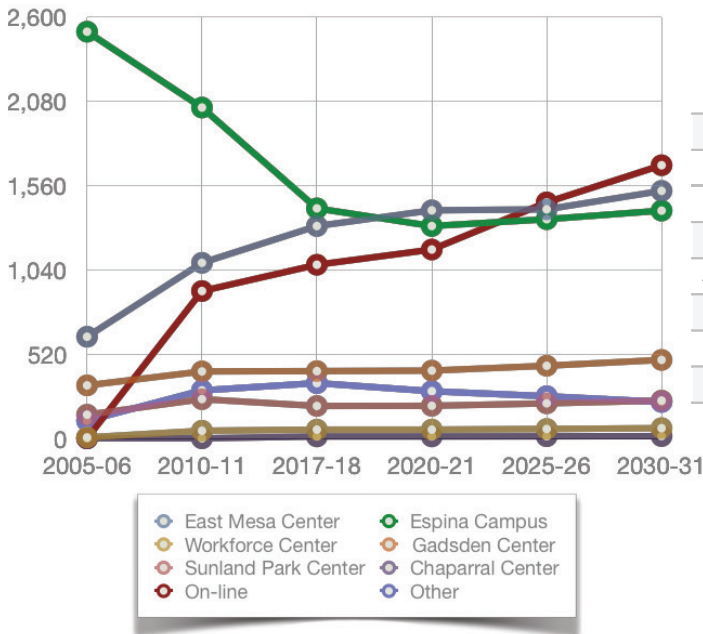
Online participation has increased from 12.5% of the FTE enrollment in 2007 to 22.2% in 2017. Based on this enrollment trend and general higher education trends, ARC assumes that online participation will continue to increase to almost 30% by 2025, enrolling 1,456 FTE.

ARC allocated enrollment to each campus based on expected geographic population growth and taking into account assumptions about the growth of online courses. See Exhibit 11.

Year	Service Pop. / FTE Ratio*	Fall DABCC FTE
Low Projection		
2017-18	46.23	4,826
2020-21	49.00	4,754
2025-26	50.50	4,841
2030-31	52.00	4,905
Mid Projection		
2017-18	46.23	4,826
2020-21	48.00	4,853
2025-26	47.00	5,201
2030-31	45.40	5,618
High Projection		
2017-18	46.23	4,826
2020-21	46.00	5,064
2025-26	43.00	5,685
2030-31	40.00	6,377

*FTE per 1,000 Service Population (Assuming UNM GPS projection: 2017 = 223,125, 2020 = 232,946, 2025 = 244,445, 2030 = 255,070)

Exhibit 11
DACC Fall FTE Enrollment Forecast 2020-2030 by Campus



	2005	2010	2017	Projected		
				2020	2025	2030
East Mesa Center	627	1,083	1,310	1,407	1,413	1,527
Espina Campus	2,509	2,041	1,419	1,310	1,352	1,405
Workforce Center	6	47	54	54	58	63
Gadsden Center	327	413	415	418	448	484
Sunland Park Center	146	242	200	201	216	233
Chaparral Center	0	0	12	12	13	14
On-line	0	909	1,071	1,165	1,456	1,685
Other	109	296	341	291	260	225
Total	3,724	5,032	4,822	4,859	5,217	5,635

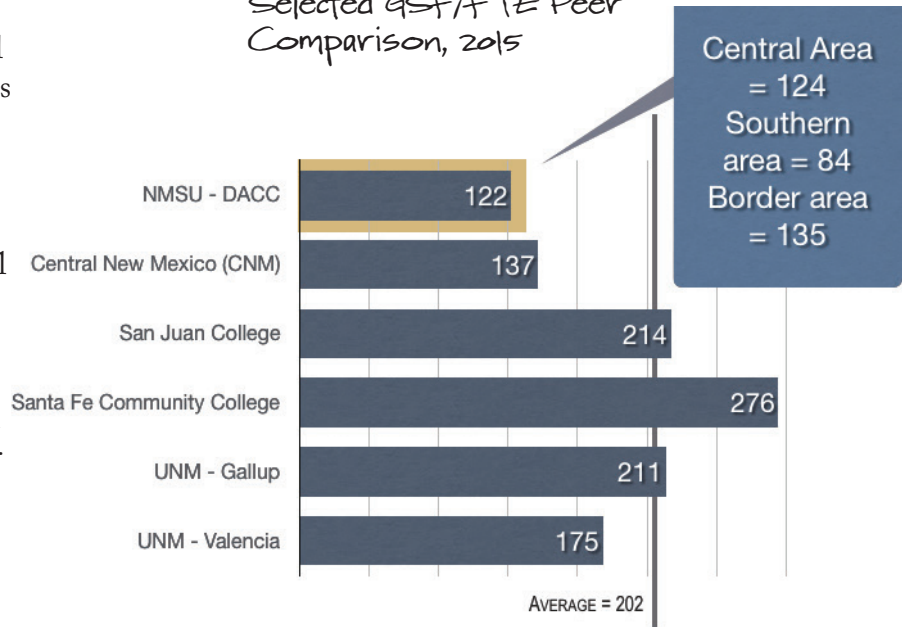
2.3.4 Comparison to Peer Colleges

One broad measure of space utilization is the total amount of space (gross square feet) divided by the total for full-time equivalent students (FTE). The lower the number, the better the space use.

NMSU DACC has the lowest Gross Square Foot / Full Time Equivalent (GSF/FTE) student of any New Mexico higher education institution. Exhibit 12 shows a comparison with selected New Mexico peer institutions.

The Southern Centers (Gadsden and Sunland Park) have the lowest current and projected GSF/FTE within DACC.

Exhibit 12
Selected GSF/FTE Peer Comparison, 2015



2.3.5 Stakeholder Input

Executive Team Interviews

ARC held interviews with all members of the DACC executive team to understand existing functional organization and issues, and any significant changes in their respective program areas and associated capital requirements. Some of the major interview themes that emerged included:

- Look for opportunities to keep students on campus — improve retention (e.g., student-centered spaces, upgrade / refresh instructional areas)
 - Improve wayfinding / signage
 - Improve information technology infrastructure ... support devices, Wi-Fi, and cloud-based services
 - Improve safety and security
 - Look for opportunities to engage with the local community, provide work opportunities for students
- Opportunities for new programs
 - Aircraft Mechanics, Ag Mechanics, Robotics, Mechanic Tech, Construction Management, HR Management, Ag Business, Logistics, OT/PT Assistants, Law Enforcement
 - Physical Therapy/Massage Therapy
 - New certificates in Plumbing, Building Analyst, and Carpentry

Online Survey

Students, staff, and community members were also given the opportunity to provide their opinions about the kinds of instructional program changes they would like to see to help the college better serve students and the community, what campus facilities or spaces they like and what physical building- or site-related changes they would like to recommend to improve the quality of life for students, staff, faculty, administration, visitors, and the community.

Results of the survey are in Appendix 3.14. Some highlights of the survey included:

- Suggestions about various course offerings, including additional weekend classes, more schedule options, and suggested additional vocational technical courses
- Physical improvements, including:
 - More trees, shade structures and seating
 - More food / snack bar choices
 - Improved student-centered spaces and hang-out spaces
 - Improved signage / wayfinding
 - Many suggestions for various renovations and facility improvements

See Appendix 3.1.4 for additional information about the results of the online survey.

2.3.6 Instructional Technology (IT) Assessment

Bridgers and Paxton Consulting Engineers, Inc. (BPCE) assessed instructional technology (IT) needs at all DACC campuses through interviews, site visits, and document reviews. The assessment identified existing characteristics, functionality, limitations and vulnerabilities of the IT/Data/AV systems serving DACC. Based on this assessment, BPCE identified \$4.72 million of capital needs (see Exhibit 13). Improvements include:

*Exhibit 13
Instructional Technology Capital
Cost Needs at DACC Campuses*

		Cost Basis	Subtotal Budget	Total Budget
Infrastructure Upgrades	Cabling / WIF	All sites and facilities*	\$1,684,400	\$1,684,400
IT Spaces	IT Rooms	28 Rooms	\$167,494	\$167,494
Security & Surveillance Systems	Cameras	All sites and facilities	\$402,870	\$993,703
	Video Server Storage	5 Spaces	\$113,000	
	Access Control	All sites and facilities	\$477,833	
Audio-Visual Systems	Spaces Refreshed	87 Rooms	\$1,133,349	\$1,875,220
	Lecture Capture Spaces	5 Rooms	\$120,000	
	Collaboration Spaces	5 Rooms	\$236,500	
	Open Labs To Upgrade	7 Rooms	\$176,925	
	Conference Rooms	21 Rooms	\$208,446	
*Except the Chaparral Campus			Total	\$4,720,817

1. IT Infrastructure (impacts all campuses and facilities except Chaparral, which has up-to-date systems)

- Completes Wi-Fi upgrades at all campuses/all buildings.
- Replaces all Category 3, Category 5, and eventually Category 5e cabling with new Category 6 standard (includes jacks, patch panels and patch cords).
- Removes all old, abandoned cabling from all pathways (conduit, cable trays, etc.). This removal will allow existing pathways to be used for new category cabling installations/upgrades.
- Adds UPS/4-hour battery backup to IT rooms that house security headend equipment, access control, and security cameras.
- Adds emergency/generator power to the data center.
- Expands critical component replacement stock to include switches and routers in case of a failure in order to minimize “down” time.

2. IT Spaces (impacts 28 IT rooms)

- Removes all old, abandoned cabling from all pathways (conduit, cable trays, etc.) to allow existing pathways to be used for new category cabling installations/upgrades.
- Moves all external IT spaces indoors.

- Removes materials not related to IT to observe proper working clearances in each IT space.
- Provides proper cable management, both horizontal and vertical for all data racks and cabinets.
- Adds proper cooling to IT rooms that exceed 78 degrees F. due to electrical/heat loads.
- Adds UPS/4-hour battery backup to IT rooms that house security headend equipment, access control and security cameras.
- Adds emergency/generator power to the data center.
- Provides HVAC unit for the data center; needs to be on backup/generator.

See Appendix 3.4 for additional information about the Information Technology Assessment and Master Plan

3. Security and Surveillance Systems (impacts all sites and facilities)

- Adds cameras to all sites and facilities. Migrates from analog to IP security cameras.
- Provides video server storage at 5 sites.
- Adds Access Control/Lockdown functionality to all sites and facilities.

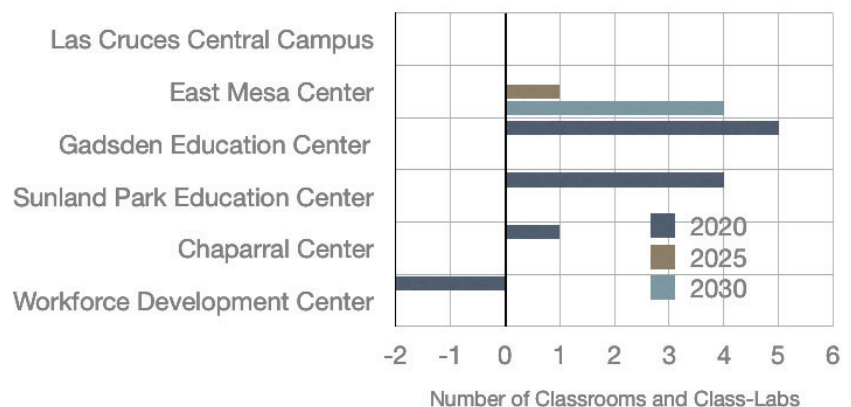
4. Audio-Visual Systems (impacts all sites and facilities. Refreshes 87 instructional spaces, 8 lecture spaces, 5 collaboration areas, 7 open labs, and 21 conference rooms). acts

- Adds Apple TV.
- Upgrades old projectors.
- Upgrades remaining projectors.
- Upgrades remaining baluns/transmitters to HDBaseT transmitters.
- Replaces projection screens.
- Upgrades projector ceiling mounts.
- Upgrades ceiling speakers.

2.3.7 Instructional Classroom Needs

Classroom need analysis uses mid-range enrollment projections by site and historic ratios of FTE to classroom and lab to project classroom needs at each DACC location. After completion of the 2015-2018 Capital Plan which allocated \$5.0 million for additional instructional spaces at the Gadsden Center, DACC will have capacity at all sites to accommodate anticipated enrollments in existing programs.

Exhibit 14
Projected Classroom Need by Campus



The focus will be on replacement of portable facilities with permanent, renovation and programmatic expansions at East Mesa Center and Gadsden (Exhibit 14), and classroom updates guided by a classroom renovation plan.

2.4 Capital Strategy

2.4.1 Capital Resources

DACC's capital strategy is based on a "cycling" financing approach that uses a combination of local General Obligation (GO) bond funding and assumptions about potential state funding support. Each cycle is four years long. Local GO bond debt is managed to maintain a consistent tax rate. Statewide GO bonds are issued every two years (even years). State allocations are competitive and generally encourage a local match of anywhere from 25% to 75%.

DACC's Facilities Master Plan identifies capital needs for the next eight years, or for two GO bond cycles, and revisits and validates anticipated capital needs prior to the second GO bond election. DACC is in the process of completing its 5th GO bond cycle. GO bond Cycles 6 and 7 will address capital needs from 2019 to 2026. Based on analysis by DACC's Financial Advisor (RBC Capital Markets), the college plans to ask voters to approve \$16 million in GO bonds in 2019 (Cycle 6), and \$16 million in 2023 (Cycle 7).

2.4.2 2019-2026 Capital Strategies

The college originally adopted basic planning strategies in 1994 which the current master planning process validated. These strategies include:

- DACC will continue to be agile and responsive to service area growth and demand for new programs.
- Providing educational opportunities to a diverse community of learners in support of workforce and economic development will remain DACC's fundamental mission.
- Enrollment declines will shift focus from facility growth to facility and instructional technology renewal to stay at the forefront of educational delivery.
- DACC seeks to identify projects that align with state and service area priorities.

Specifically, DACC will:

- Continue to expand the East Mesa Campus to accept anticipated central area enrollment growth and relieve the Espina Campus at NMSU
- Maintain enrollment at the Central Campus at NMSU at levels appropriate to its site capacity. Improve southern area campuses to improve retention.
- Plan to phase satellite center development to respond to service area growth, demographics and available resources.

2.5 Capital Needs

DACC will meet its capital needs through combining issuance of local general obligation bonds (GO bonds) with requested state matching funds. The college will ask voters to approve \$16 million in GO bonds in 2019 (Cycle 6) and \$16 million in 2023 (Cycle 7). With potential state matches, the capital strategy encompasses \$48.86 million. The plan is based on a target of about 30% state funding assistance over the course of its implementation.

Exhibit 15 shows the proposed capital plan to be implemented in the next two funding cycles.

*Exhibit 15
DACC Capital Strategy, 2019 - 2026*

Area	Campus / Project	Planned					
		Upcoming Election			2023-26		
		2019-22 Total Cycle 6			Total Cycle 7		
		Local Funding	Potential State Funding	Total	Local Funding	Potential State Funding	Total
Central	(East Mesa Campus, Espina Campus, Workforce Development Center)	\$11,000,000	\$5,050,000	\$16,050,000	\$12,300,000	\$3,775,000	\$16,075,000
	East Mesa Campus	\$0	\$0	\$0	\$8,050,000	\$1,650,000	\$9,700,000
	College/Industry Partnership in Student Learning Project				\$2,900,000		\$2,900,000
	Future Program Enhancements (New and Expanded)				\$3,800,000	\$1,200,000	\$5,000,000
	Physical Plant Facility				\$1,350,000	\$450,000	\$1,800,000
	Creative Media Facility	\$3,900,000	\$1,500,000	\$5,400,000	\$0	\$0	\$0
	New Facility at Arrowhead Park	\$3,900,000	\$1,500,000	\$5,400,000			
	Area Security / Safety Upgrades	\$1,200,000	\$600,000	\$1,800,000	\$0	\$0	\$0
	Infrastructure Improvements	\$1,400,000	\$700,000	\$2,100,000	\$750,000	\$375,000	\$1,125,000
	Classroom Upgrades / Facility Renewal / Renovations	\$1,500,000	\$750,000	\$2,250,000	\$1,750,000	\$875,000	\$2,625,000
	Information Technology /Upgrades / Equipment Acquisition	\$3,000,000	\$1,500,000	\$4,500,000	\$1,750,000	\$875,000	\$2,625,000
South	(Gadsden, Sunland Park, and Chaparral Centers)	\$5,000,000	\$3,500,000	\$8,500,000	\$3,700,000	\$1,550,000	\$5,250,000
	Gadsden Center	\$3,000,000	\$2,500,000	\$5,500,000	\$0	\$0	\$0
	Advanced Technology Addition	\$3,000,000	\$2,500,000	\$5,500,000			
	Sunland Park Center	\$0	\$0	\$0	\$1,800,000	\$600,000	\$2,400,000
	Replace Portables with Permanent / Student Center				\$1,800,000	\$600,000	\$2,400,000
	Area Security / Safety Upgrades	\$200,000	\$100,000	\$300,000	\$0	\$0	\$0
	Infrastructure Improvements	\$300,000	\$150,000	\$450,000	\$400,000	\$200,000	\$600,000
	Classroom Upgrades / Facility Renewal / Renovations	\$500,000	\$250,000	\$750,000	\$750,000	\$375,000	\$1,125,000
	Information Technology /Upgrades / Equipment Acquisition	\$1,000,000	\$500,000	\$1,500,000	\$750,000	\$375,000	\$1,125,000
	Total	\$16,000,000	\$8,550,000	\$24,550,000	\$16,000,000	\$5,325,000	\$21,325,000

	Upcoming Election					
	2019-22 Total Cycle 6			2023-26 Total Cycle 7		
	Local Funding	Potential State Funding	Total	Local Funding	Potential State Funding	Total
Central Area	\$11,000,000	\$5,050,000	\$16,050,000	\$12,300,000	\$3,775,000	\$16,075,000
South Area	\$5,000,000	\$3,500,000	\$8,500,000	\$3,700,000	\$1,550,000	\$5,250,000
Total	\$16,000,000	\$8,550,000	\$24,550,000	\$16,000,000	\$5,325,000	\$21,325,000
% Potential State Match	35%			25%		

Total Strategy 2019-2026 (All Sources) \$45,875,000

Specific projects include:

- Area Security / Safety Upgrades: Improves Security and Surveillance access / control and camera Systems, exterior locks, and site lighting at all DACC locations guided by the 2018 Technologies Systems Master Plan
- Infrastructure Improvements: Funds for maintenance and repair, and site development to DACC sites
- Classroom Upgrades / Facility Renewal / Renovations: Renovation to selected instructional areas at all DACC sites, including room configuration, furniture, room finishes, and instructional equipment guided by a Classroom Renovation Master Plan
- Information Technology / Upgrades / Equipment Acquisition: Makes improvements to IT infrastructure, IT service rooms and audio visual spaces at all DACC locations, based on a 2018 Technologies Systems Master Plan.

• Facilities:

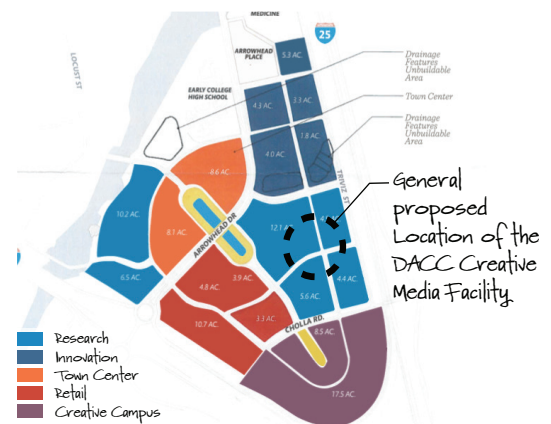
In the 2019-2022 funding cycle (Cycle 6), DACC has the following priorities:

- Creative Media Facility: Construct a new facility at NMSU Arrowhead Research Park to support the DACC creative media programs in proximity to the Las Cruces Film Studio project (15,300 gross square feet, \$5.4 million, request a state match of \$1.5 million)
- Gadsden Center Advanced Technology Facility: Provides flexible class / labs to support DACC advanced technology programs (15,828 gross square feet, \$5.5 million, request a state match of \$2.5 million)

In the 2022-26 funding cycle (Cycle 7), DACC identified the following priorities that will be validated prior to the 2023 election:

- College/Industry Partnership in Student Learning Project: A new facility to provide opportunities for community engagement and student internships
- Future Program Enhancements (new and expanded): New construction to provide instructional classrooms and laboratories to support new programmatic initiatives and enhancements
- Physical Plant Facility: New construction to provide warehouse, shop and office facilities to support site and facility maintenance

Exhibit 16
General Location of the DACC Creative Media Facility at the NMSU Arrowhead Research Park



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3.0 Appendix

3.1 Existing Conditions

3.1.1 Information Index

The index in Exhibit A-1 shows where to find relevant information about DACC requested in Section X of the Five-Year Institutional Master Plan required by the New Mexico Higher Education Department.

*Exhibit A-1
Information Index*

Report Section Where Found

Item	2	3.1	3.2	3.3
I. Facility Planning Decisions		■		
II. Needs	■	■	■	■
III. Assessment				
<i>A. Instructional Facilities</i>				
1. Adequacy	■		■	■
2. Room Utilization	■		■	
<i>B. Non-instructional Facilities</i>			■	
IV. Projects and Costs	■			■
V. Bonding Capacity	■	■		
VI. Funding Sources		■		■
VII. Maps				
<i>A. Required Maps</i>				
1. Current Campus Buildings	■	■		
2. Anticipated Changes Resulting from New Projects	■			
3. Campus Master Plan Map (10-20 years)		■		
<i>B. Other Possible Maps</i>	■			

3.1.2 Facility Planning Decisions

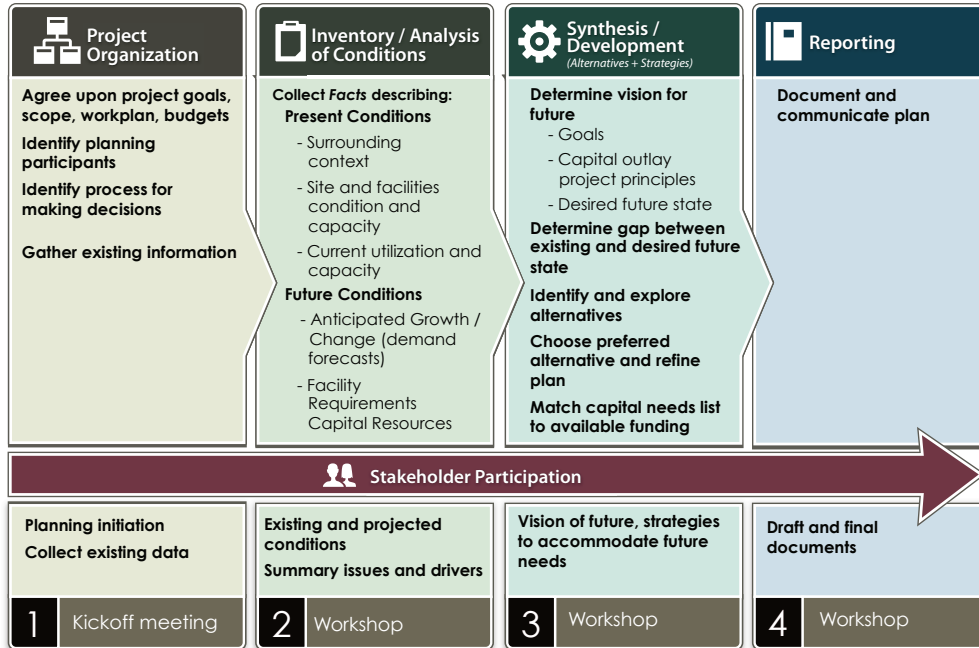
The recommendations in this report result from a planning process involving key administrative and educational personnel with periodic briefings to the Advisory Board. This process was facilitated by a professional planning consultant. The capital outlay planning decision-making flow, and roles and responsibilities are.

- Advisory Board – One of the roles of the advisory board is to advise and consent to capital outlay recommendations made by the administration. The board is kept informed at each board meeting regarding the progress of the planning process. A full presentation to the board presents recommended courses of action.
- Campus President – The role of the Campus President is to establish an ongoing planning process, organize the parties involved in the effort, and make recommendations to the advisory board regarding future courses of action. The campus executive officer receives assistance in this endeavor from the campus finance officer.
- Strategic Planning Committee – The Strategic Planning Committee is an ongoing committee with an advisory role to the campus executive officer and the planning consultant. The strategic planning committee prepared the Campus Strategic Plan which provides overall guidance for campus development. This committee is composed of key members of the administration, instructional and support areas. It meets periodically to review material developed by the planning consultant and advise regarding capital projects and priorities.
- NMSU Architect and Campus Planning Officer – The NMSU Architect's office participates in planning workshops and reviews master plan recommendations.
- Planning Consultant – The planning consultant acts as an advisor to the campus director. The consultant's role is to facilitate the planning process by developing a database of existing and projected conditions. The consultant also develops preliminary concepts regarding future courses of action and prepares verbal and written presentations that describe this information.

The planning consultant organized the planning process in Exhibit A-2.

1. Project Organization – During this step, the planners identified existing plans, reports, organizational charts, space allocation standards, utilization data and other data relevant to the study. The planners met with campus representatives to discuss the planning proposal and identify project goals and issues. This step established participants in the study and a decision-making framework, and participants reached an agreement on the project work plan, schedule and proposed budgets.
2. Inventory Analysis of Conditions – The planners collected information about existing and projected future conditions using questionnaires, interviews and on-site evaluations. Information included: facilities data, user data, facility conditions and use data, office and educational space utilization projections, and space requirement projections.
3. Development of Alternatives and Strategies – Participants explored various development scenarios to accommodate present and future programs. They chose an option as the basis for developing a Capital Improvement Plan. The planners developed capital project recommendations based upon the information collected in the previous steps.

Exhibit A-2
DACC Master Planning Process

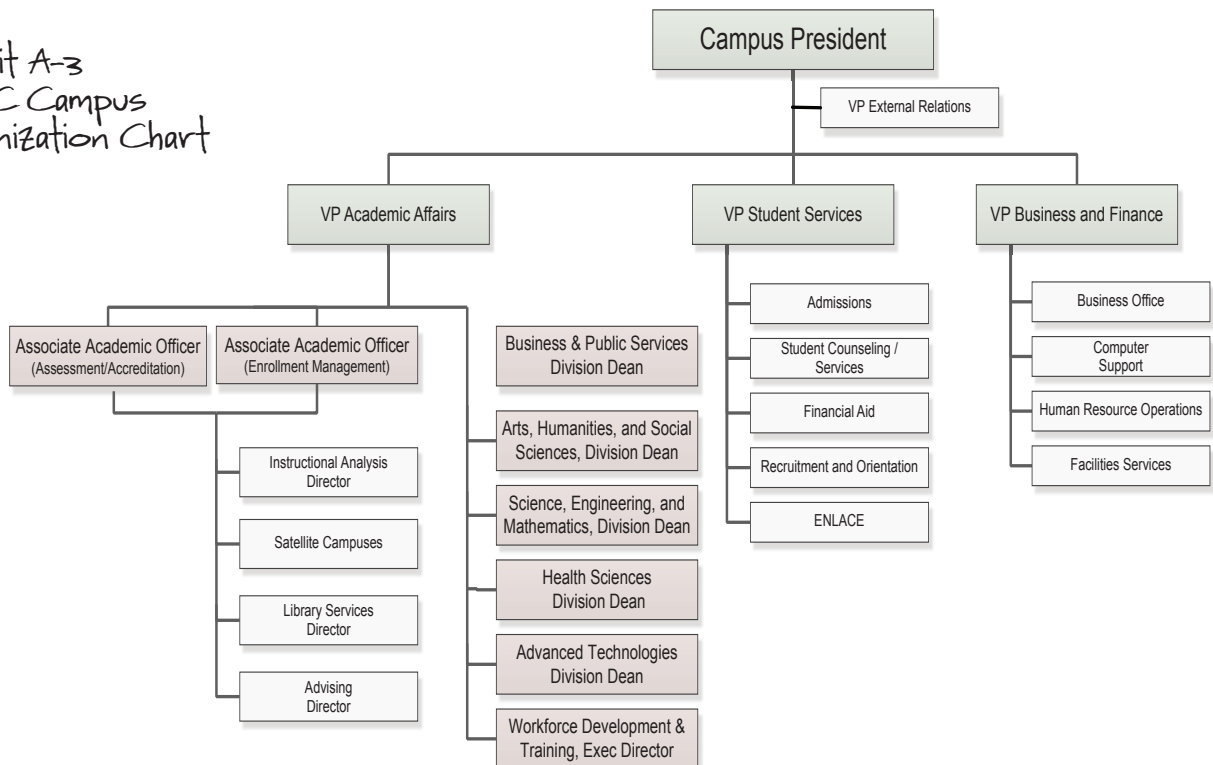


4. Final Report – Participants developed the final report, which met New Mexico Higher Education Department guidelines.

3.1.3 Campus Organization

Exhibit A-3 is an organization chart of DACC.

Exhibit A-3
DACC Campus Organization Chart



3.1.4 Facilities Master Plan Survey

Planners solicited input from students, faculty, staff members and administrators via a web-based survey from May 1 to May 31, 2018. A total of 79 persons took the opportunity to complete the survey. Exhibits A-4a through A-4i summarize the results of the survey.

*Exhibit A-4
Facilities Master Plan Survey
Results*

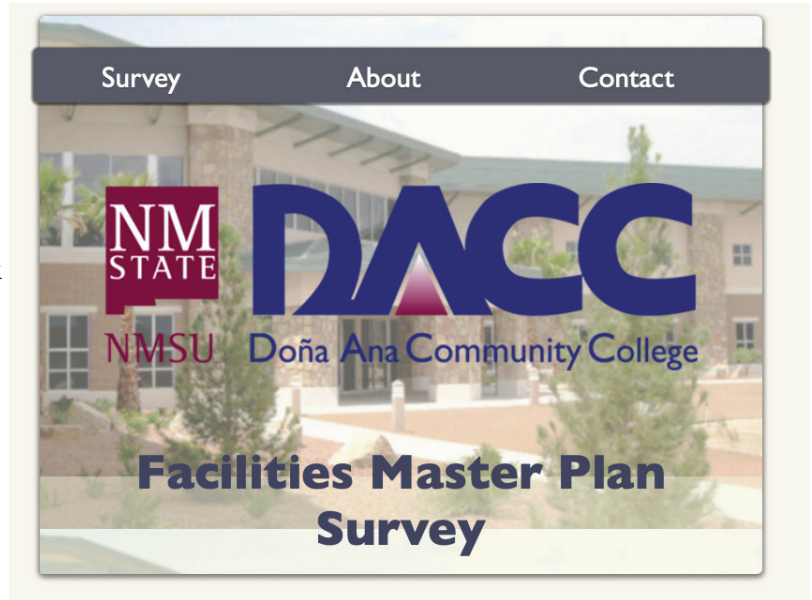


Exhibit A-4a

• Who Responded

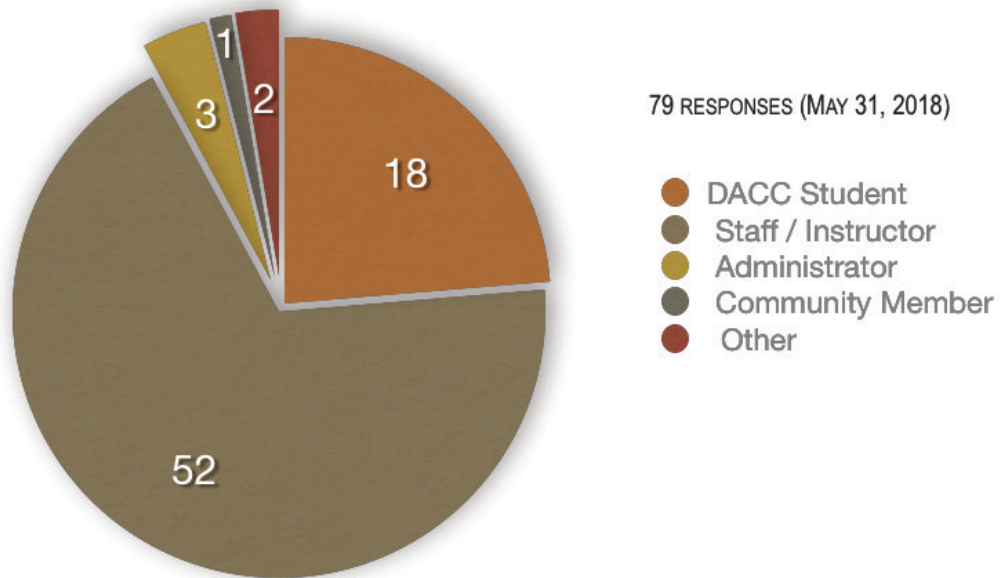
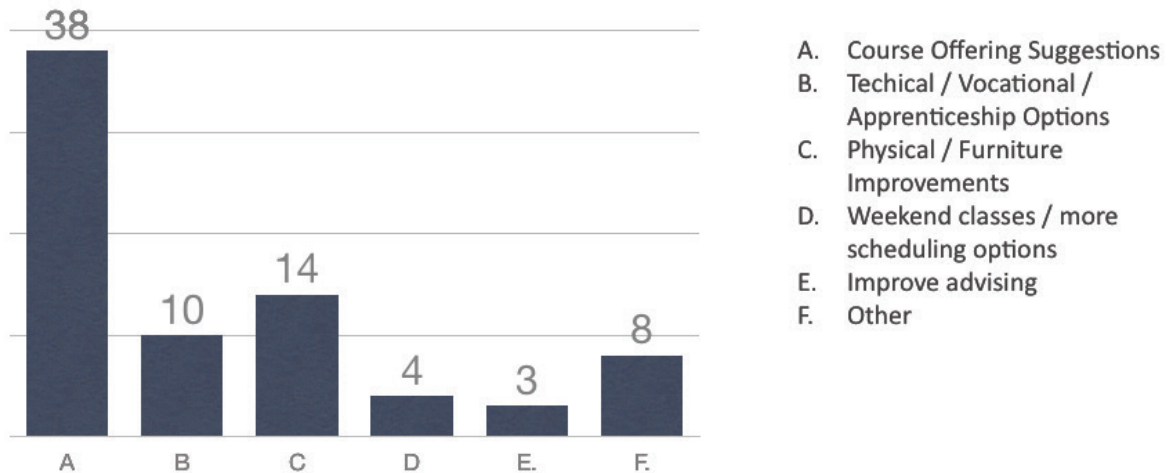


Exhibit A-4b

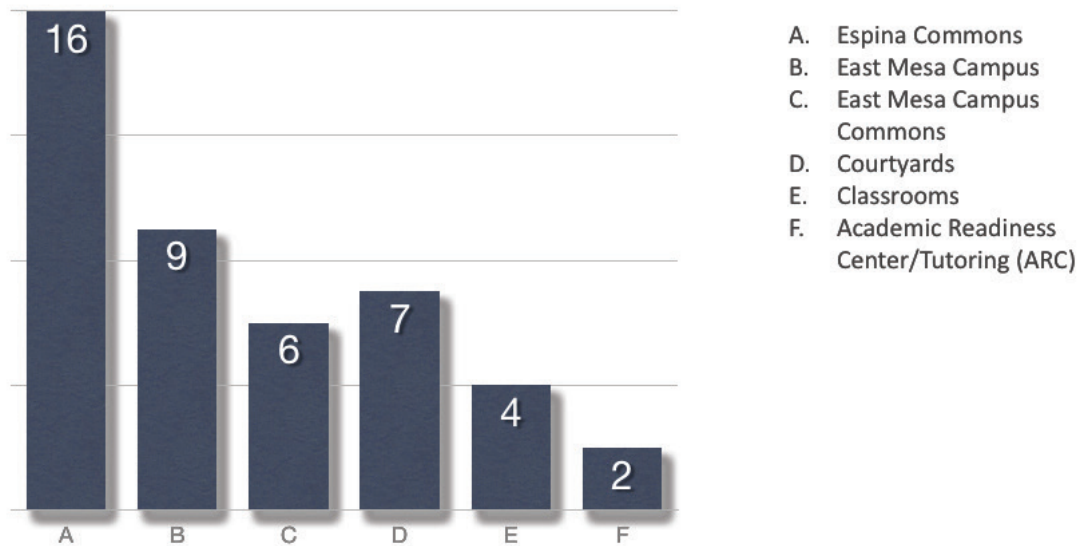
- **Question 1 - What kinds of instructional program changes would you like to see to help the college better serve students and the community?***



*MAY INCLUDE MULTIPLE IDEAS FROM A SINGLE RESPONDER. SOME RESPONDERS DID NOT ANSWER ALL QUESTIONS)

Exhibit A-4c

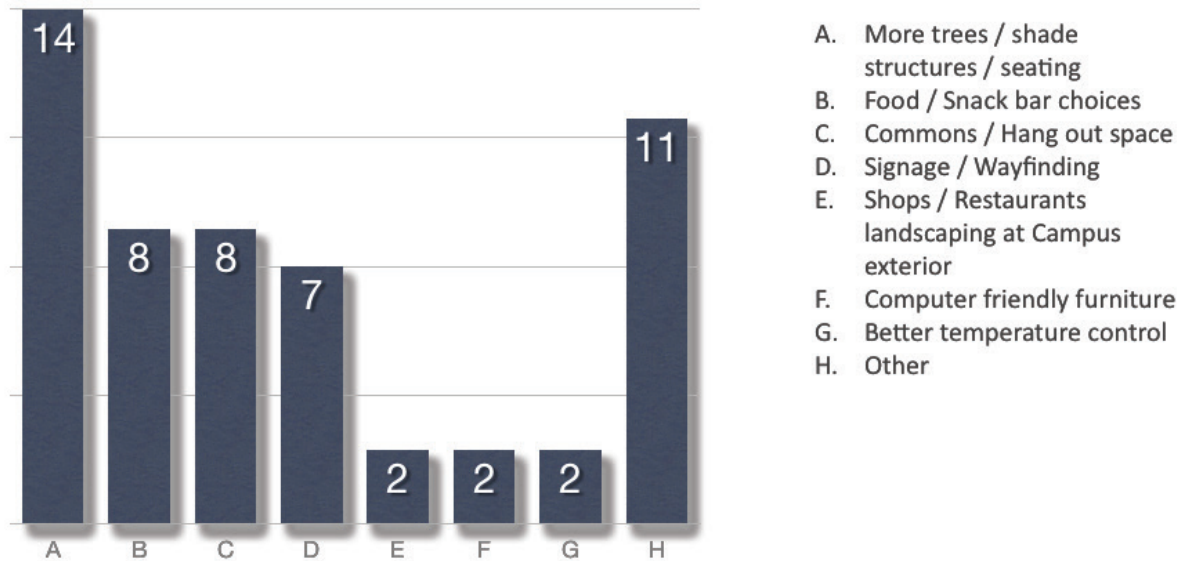
- **Question 2 - What DACC campus facilities or spaces do you like the most (for example, certain buildings, classrooms, offices, support spaces, courtyards, etc.)?***



*MAY INCLUDE MULTIPLE IDEAS FROM A SINGLE RESPONDER. SOME RESPONDERS DID NOT ANSWER ALL QUESTIONS. DOES NOT INCLUDE ITEMS WITH A SINGLE RESPONSE

Exhibit A-4d

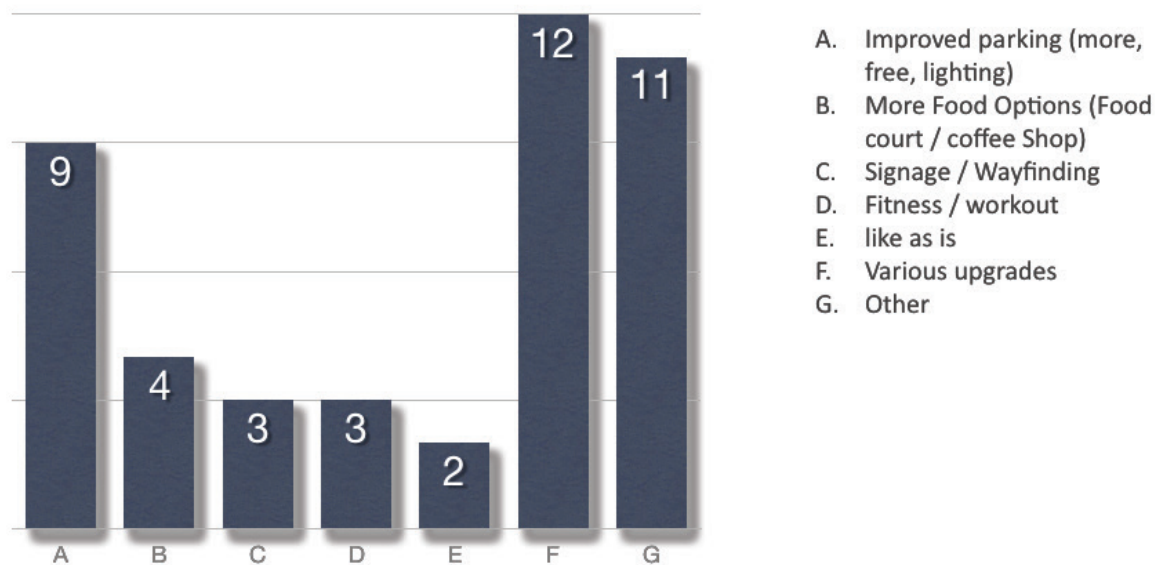
- **Question 3a - What physical building- or site-related changes do you recommend to improve the quality of life for students, staff, faculty, administration, visitors, and the community? - at East Mesa Campus***



*MAY INCLUDE MULTIPLE IDEAS FROM A SINGLE RESPONDER. SOME RESPONDERS DID NOT ANSWER ALL QUESTIONS. SINGLE RESPONSES IN "OTHER"

Exhibit A-4e

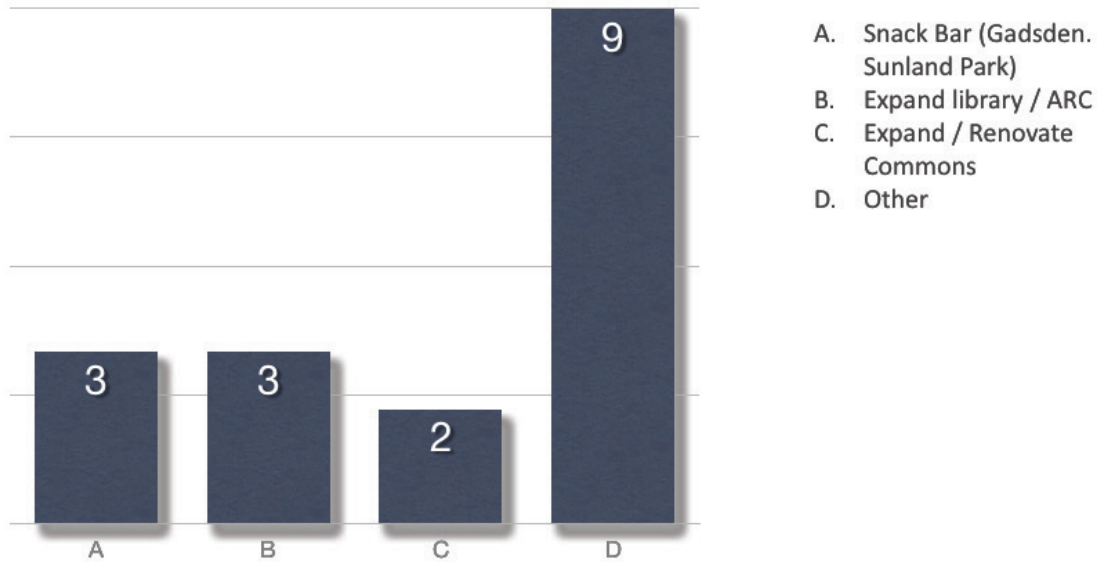
- **Question 3b - What physical building- or site-related changes do you recommend to improve the quality of life for students, staff, faculty, administration, visitors, and the community? - at Espina Campus***



*MAY INCLUDE MULTIPLE IDEAS FROM A SINGLE RESPONDER. SOME RESPONDERS DID NOT ANSWER ALL QUESTIONS. SINGLE RESPONSES IN "OTHER"

Exhibit A-4f

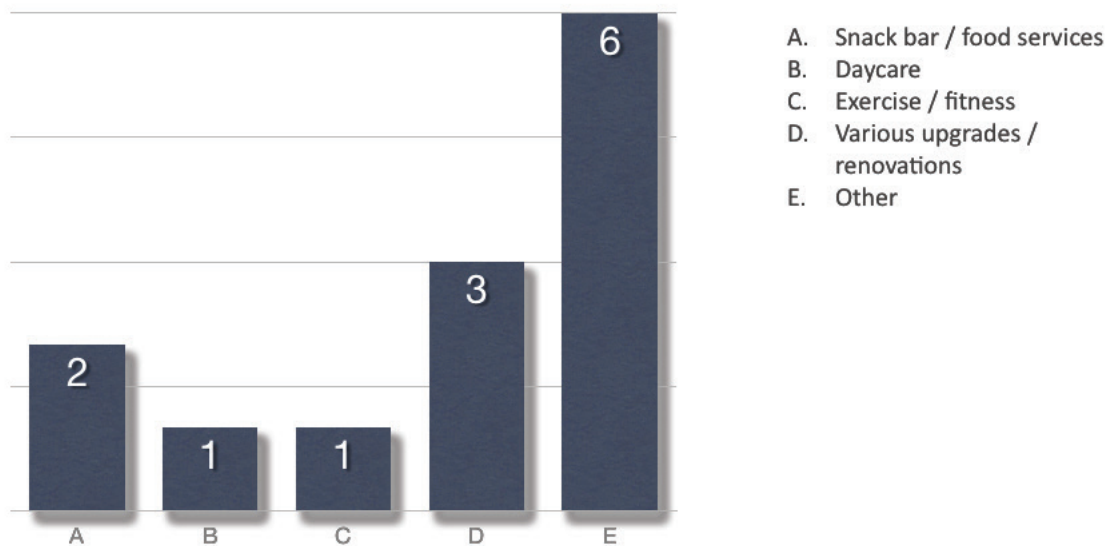
- **Question 3c - What physical building- or site-related changes do you recommend to improve the quality of life for students, staff, faculty, administration, visitors, and the community? - at South County Centers (Gadsden Center, Sunland Park Centers)? ***



*MAY INCLUDE MULTIPLE IDEAS FROM A SINGLE RESPONDER. SOME RESPONDERS DID NOT ANSWER ALL QUESTIONS. SINGLE RESPONSES IN "OTHER"

Exhibit A-4g

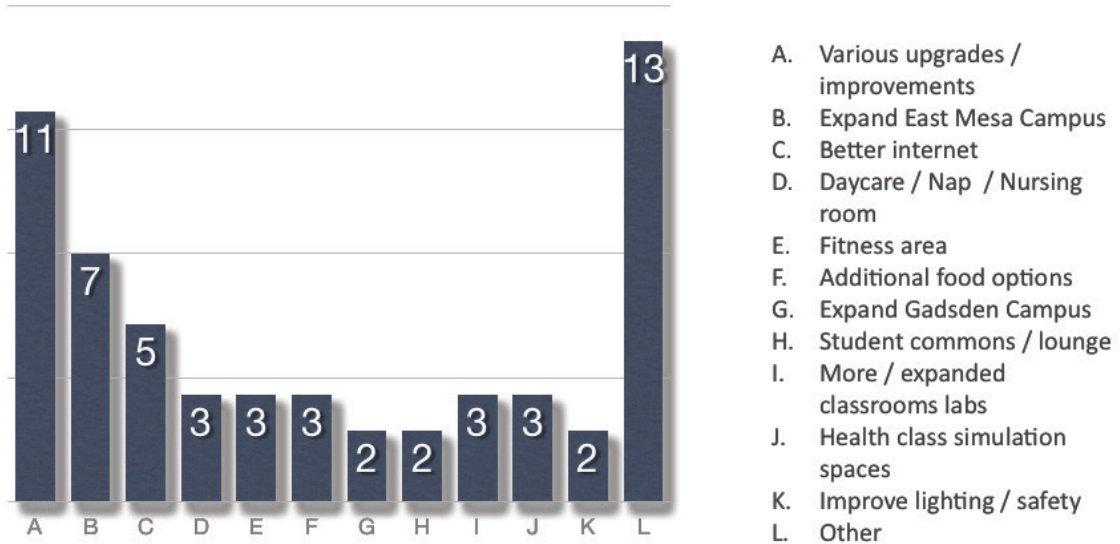
- **Question 3d - What physical building- or site-related changes do you recommend to improve the quality of life for students, staff, faculty, administration, visitors, and the community? - at At Chaparral Center)? ***



*MAY INCLUDE MULTIPLE IDEAS FROM A SINGLE RESPONDER. SOME RESPONDERS DID NOT ANSWER ALL QUESTIONS. "NON-PHYSICAL" SINGLE RESPONSES IN "OTHER"

Exhibit A-4h

• **Question 4 - What do you think is the one most important physical building- or site-related improvement for DACC to complete over the next 10 years? ***



*MAY INCLUDE MULTIPLE IDEAS FROM A SINGLE RESPONDER. SOME RESPONDERS DID NOT ANSWER ALL QUESTIONS. "NON-PHYSICAL" SINGLE RESPONSES IN "OTHER"

Exhibit A-4i
Question 1 Detail Responses

Weekend classes / more scheduling options (4)

I would like to see the courses set to a block schedule so that students can schedule their classes in a routine way. Once the courses are using a block schedule, it would be nice to offer the same course at different parts of the day (morning, afternoon, and evening) to accommodate non traditional and working students. I would also like to see career services moved to the DASR building where the other student services are. I don't think most students will travel to the workforce center.

Faster progress through remedial classes (maybe a self-paced so the hard workers could progress through 2 classes in one semester)

Students often ask for longer hours and access to facilities as they do not have access to off campus.

There are a good number of us who have a learning disability, stutter and/or suffer from dyslexia. It takes us double and triple the time to read and study to get good grades.

Improve advising (3)

I think we offer a variety of programs, but I think we do a disservice to students in the medical programs. We do not educate students on their entrance requirements and how unlikely it is that 600 declared majors will somehow make it into a program with only 10 entry slots. I think this is our greatest disservice to students. We should have intensive education for students interested in competitive entry programs.

More one to one tutoring.

An orientation talk about the standards, expectations and rigor of college courses for incoming students. Too many students expect easy courses and hand-outs from instructors. It helps the students to learn how to study and come up to the bar for their future success. There is plenty of tutoring and student success resources for them to take advantage of. I think the culture has become such that students complain and standards are lowered. Lowering the bar provides a disservice to the students.

Technical / Vocational / Apprenticeship Options (10)

Provide good vocational courses.

More nursing related programs and classes. Maybe even a vocational nurse program that starts at the high school then ends at DACC for the final semester. Maybe a nursing program at one of the satellite campuses.

More apprenticeship programs, it's the way of the future....but I see DACC just dropped the electrician apprenticeship so that's probably not going to happen and that's very sad.

Plumbing

Building Construction

Flight Academy and Airplane mechanic, since the Las Cruces Airport is looking to expand. Also to assist for Spaceport opportunities.

Solar Tech

Turbine Tech

A diesel tech program like Caterpillar or John Deere or Bob Cat. Finding a sponsorship/partnership from a Brand company. Example: My previous school Manchester Community College in New Hampshire has an Audi partnership.

<https://www.mccnh.edu/academics/programs/automotive-technology>

Course Offering (38)

More online courses.

Computer Coding

STEM-focused skill building

Well publicized pathways for certifications in demand that can be paid for by WIOA dollars

Transportation & Logistics industry management level instruction

High paying/high demand career certifications that can be earned while in high school

Advanced manufacturing pathways with clearly articulated workforce applications

More 2+2 with NMSU

More healthcare for high school students

Offer more graphic design classes teaching design and not just how to use the software.

“More class offerings of the difficult classes to get into (A & P).”

Add an LPN program, a dedicated LPN-RN program and expand capacity in the ADN program.

Offer general studies courses (English, Math, Communication, etc.) in the evening to better serve students who work during the day.

Writing across the curriculum and or an expanded writing center. We need to bring reading and writing back into our curriculum across the board.

Bring community education classes back--the “fun” classes. The online community education courses don’t provide one-on-one interaction in a class setting. These classes serve to bring prospective students to the community college. There are many people in the community who are life-long learners and the community education classes served this audience. These courses are in line what many in the community perceive the “community college” to be. “

Coding courses. Students can take a 3-month course in San Francisco and start earning 80k\$/yr salary.

We need to go ipad one-to-one sooner than later for all instructional programs.

Whatever the high demand jobs are now. Anything in the medical and computer fields.

Work with Border Patrol to set up a program of some sort. Homeland Security Training.

More online class options.

More common areas around campus.

Students need to attend an online or face-to-face CANVAS training, many enroll in online classes and don’t know how to use CANVAS. Student assure that they know technology but not so many of the times.

Support growth identified through the Grey Associates workshop.

Please develop Student Involvement programs that are also community based to promote the importance of DACC student and community involvement. This campus seems to be isolated from the immediate area.

Better programs to help students transfer. Better outcomes for health pathway students (not in programs)

Consolidating LAWE and CJ into one strong CJ program.

Allowances of solid articulation with secondary programs to allow secondary CTE instructors access to up-to-date information and teaching techniques

computer networks courses on campus

Offer math classes at both campuses.

More Chem, Physics, Math classes.

More Special Topics~Advanced Camera, Astrophotography, Time Lapse, Landscape, Photo Collage. This school could offer workshops like the Santa Fe Workshops. There are MANY retired people that would gladly take these classes if available.

“Massage therapy program

More short courses and small certification courses like first aid and CPR in Spanish and English.

More evening and online courses

Developing programs that provide DACC an identity. Maybe it is because of our relationship with NMSU, but it feels like the programs we advertise do not catch on with our students as much. Or maybe the value of getting your first two years of general ed credits needs to be explained more. I don't know if Aggie pathway does that.

Some programs instructors teach what they know and want and not what they should based on: curriculum design of the course

Physical / Furniture Improvements (14)

Couches and sofas instead of the big round tables.

Relocate the Academic Readiness Center to a visible place on the lower floor so that students will see it as a place of belonging, community, and will connect it to other campus resources on the ground floor. Doing so will boost activity and visibility so that it works as effectively as the Espina campus.

Update and expand the Career and Technical Education (CTE) program offerings by improving the physical spaces and labs in which these programs are housed. Some programs are limited by the physical space they are afforded or the space is not properly equipped.

Provide an art gallery

Provide more computer class rooms.

Provide a 24hr fabrication Lab for the Architecture Program which would also be utilized by the patronage of the Las cruces community.

More integrated technology during presentations.

Better equipped health labs with modern technology.

The Architecture Construction Technologies Department could do with their own dedicated building to support the career technical education of the Pre-Architecture, Architecture Technology and Civil engineering programs.

Update labs and equipment, especially on Espina campus

Continue to update signage (bathroom signs and maps on display)

Think about adding at least one or two sports and a facility

Think of ways to improve safety and communication in case of an emergency

Continue to update HVAC and maintain

Day care to improve retention. Competitive salaries for faculty and staff; elimination of half of the admin/VP positions.

We are the only college in Southern New Mexico. We need help marketing to all the high schools in our geographical area.

I would like to see an increased emphasis on DACC as a transfer institution to university. Thus, an increase in academic transfer course enrollment.

More marketing to attract students and inform students through social media

An intercampus shuttle - I think this is an overdue solution to the transportation struggles many students face.

Consistency on grading welding work and what type of machine that students are allowed to use for assignment. For example, one instructor say you can use a certain machine for an assignment and another instructor tell you, you can use it.

I would like to see less propaganda coming from professors and teachers. I wish they would keep politics out of the instructional class setting.

I would also like to see more opportunities for possible extra credit from teachers if you get involved in the community that pertains to your major or the class you are taking.

Exhibit A-4j
Question 5 Detail Responses

All

Update labs and equipment, especially on Espina campus

Another huge thing, which we've wanted for years, is a daycare. Many of our students have children! If we are worried about retention, this would be a huge help to many of them who struggle to juggle family life with their school work. If nothing else, at least adding some more kid friendly areas in strategic areas where student/parents are likely to be (registration, the tutoring center, etc.).

Renovation (initiate and/or complete) of the Espina Campus and Gadsden Campus as East Mesa is much newer and nicer.

To keep the buildings maintained and updated with the most current technology for students to use in their classroom instruction.

While it is probably very tempting to allocate more space to general classrooms, CTE programs need additional space as well. CTE programs face rapid changes in technology, equipment, etc. If we are going to remain up to date, our CTE programs need sufficient, well-designed space to not only meet today's needs, but also room for expansion in the future.

"Maybe a cycle of individual department review to check on their facilities more regularly. A recurring problem in our area was just solved. This was literally years in the making. I think the problem was looked at for a short-term solution and not to figure out the cause. Having departments reflect on something that has been fixed multiple times, but wasn't actually fixed permanently might help.

-better HVAC and presentation lighting in DASR commons. We have a lot of events there, but it is not the most comfortable or user-friendly."

Administration has little idea how to succeed in technician courses/programs. They are all major in English and all seems okay for them. We are down in enrollment, closed some programs and very likely to close down some more due to very poor understanding how to run technical courses/programs. Leadership teams in all these areas has no interest in education and the major players are all from liberal arts while all programs are technical programs. There is no resonance. This is the worst administration DACC has seen so far in its history. But they are powerful and don't expect any changes and bow before their power.

East Mesa Campus

Better equipped health labs with modern technology.

DACC East Mesa is the nicest campus by far. The campus should expand and take over for the Espina and Workforce campuses which have been significantly renovated but still lacks all the amenities that East Mesa has.

Wi-Fi and Apple TVs for all classrooms; Renovate ARC and DASR commons to be like the commons area at Espina

An emphasis on updating and expanding the Career and Technical Education (CTE) program offerings by improving the physical spaces and labs in which these programs are housed. Some programs are limited by the physical space they are afforded or the space is not properly equipped. I believe some new buildings or major renovations are required to address some of the issues.

I would like a 24hr fabrication Lab for the Architecture Program which would also be utilized by the patronage of the Las cruces community.

EMC Offices really need a facelift the hospital green trim is sad. Need a modern upgrade reminds me of the 70s and 80s

Fixing the overly hot classrooms problem. Also, perhaps renovating the rest of DASH and the DACL, particularly the DACL classrooms. They are looking a little aged. Some artwork to the hallways to make the building look less sterile.

The Espina campus still has roof leaks and is in a general state of disrepair. While the DASH building was completely renovated and looks much nicer inside, the rest of the buildings really need a facelift inside

Espina Campus

Courtyards at Espina are unkept with weeds, especially along entrance and parking lots

The Academic Readiness Center needs a MAJOR makeover and perhaps a relocation to a more student-friendly space. It is rather "hidden" upstairs in an area rarely traveled by most students. Food vendors in the outdoor courtyard during peak lunch hours might also be a nice change. Lastly, the auditorium sits mostly empty all year. Why?

Add some more comfortable seating in DASH and DACL. We want our students to hang out and feel comfortable between classes. They took away the old sofas and replaced them with hard benches which sends the message, don't linger!

Update Internal Services - furniture, paint, carpet. The set up at the EMC campus is what I would like to see Espina Campus look like if possible with the main room for fleet and copier services, mail and paper room connected to main room and office for supervisor and Fiscal Assistant to use still connected.

Espina Courtyards, parking lots, and outdoor spaces need a facelift. Too many weeds and overgrown plants the area around the campus looks run down. More gathering places outside, some of the courtyard benches are covered in bird excrement — students, and faculty are unable to sit on them.

Espina campus buildings could use some refreshing and updating.

Espina lacks an identity of a community college. Espina is grouped with NMSU geographically and takes away from DACC being integrated yet separate from the rest of the system.

Update elevator in the Quintana Learning Center, it smells horrible.

Update elevator in Espina Bookstore building.

DAHL needs a modern upgrade throughout the classrooms and faculty offices. Also needs new fresh common areas for students to gather and study in the building. Snack and water vending machines in the building.

Espina - Some of the Bathroom could use work. There used to be a thing that you could place books or bag on in each stall, and a lot of the stalls are missing that. I recently took a Chem class at the DAHL building and the lab seemed kinda outdated.

Workforce Center

Workforce Center. Expansion of laboratories for CTE programs

The Workforce Center is too small.

I did not see the work force center listed as a possible option for improvement, which is where all of the engineering, manufacturing and aerospace programs are taught at. I feel these programs are going to see a rapid growth in the next couple of years and it would be nice to consider them for improvements and be proactive instead of reactive to changes in our community.

Southern Campuses

Wet science lab added to Sunland Park.

Expand the capabilities to offer industrial technology courses at Sunland Park.

Southern Centers: A dedicated classroom for lecture of electronic and manufacturing courses taught there would be nice. We currently share the manufacturing lab floor to do both, but having computers and manufacturing equipment in the same environment is neither conducive for learning, nor is it a very safe practice.

Not familiar with that campus, but they should be closed, too many resources being used for the number of students being served, El Paso Community College doesn't waste that kind of money. Students can drive to Espina Campus or East Mesa Campus or get online classes.

3.1.5 Existing Site and Facilities

Exhibit A-5
NMSU DACC Facilities, 2018

			NASF		Building Efficiency***	GSF (calculated)	
			NASF*	(less non-assignable)*			
Central Area							
East Mesa Center			180,168	127,250	198,370	64%	189,925
	East Mesa Campus	DAEM	44,814	30,198	50,666	60%	45,072
	Digital Media	DADM	15,073	10,567	16,738	63%	15,772
	Academic Resources	DAAR	46,874	37,080	52,864	70%	55,343
	Auditorium	DAAU	10,105	6,218	11,593	54%	9,281
	Student Resources	DASR	63,302	43,187	66,509	65%	64,458
Espina Campus at NMSU			202,638	153,553	233,280	66%	229,184
	Alex Sanchez Hall (Main Building)	DAMA / DASH	95,246	71,740	107,644	67%	107,075
	Technical Studies	DATS	36,568	31,437	39,485	80%	46,921
	Learning Resources Center	DALR	18,791	14,385	23,836	60%	21,470
	Classroom Building	DACL	18,637	11,473	20,578	56%	17,124
	Health and Public Services	DAHL	33,396	24,518	41,737	59%	36,594
Workforce Center			31,905	24,508	32,132	76%	36,579
South Area							
Gadsden Education Center			29,794	22,589	32,447	70%	33,715
	Gadsden Center	DAGC	27,814	20,609	30,155	68%	30,760
	Portable a	DAGC	990	990	1,146	86%	1,478
	Portable b	DAGC	990	990	1,146	86%	1,478
Chaparral Education Center			7,350	4,918	10,814	45%	7,340
	Chaparral Learning Center	DACH	6,280	3,848	9,662	40%	5,743
	Portable f	DACH	535	535	576	93%	799
	Portable g	DACH	535	535	576	93%	799
Border Area							
Sunland Park Education Center			32,287	25,358	32,410	78%	37,848
	Sunland Park	DASP	30,682	23,753	30,682	77%	35,452
	Portable C	DASP	535	535	576	93%	799
	Portable D	DASP	535	535	576	93%	799
	Portable E	DASP	535	535	576	93%	799
Total All Campuses			484,142	358,176	539,453	66%	534,591

*From NMSU room inventory database (does not include non-assignable space such as hallways, stairs, mechanical / electrical spaces)

**From NMSU drawings and ARC takeoffs

***NASF / GSF

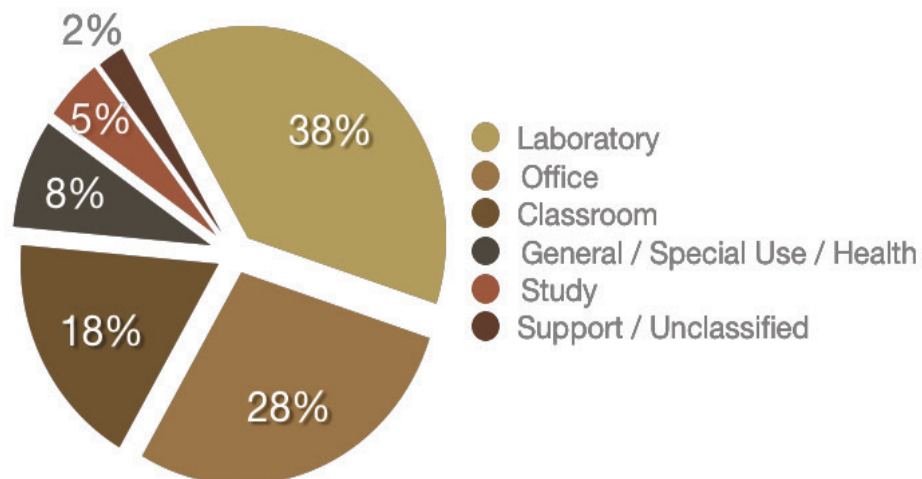
Red – calculated or estimated

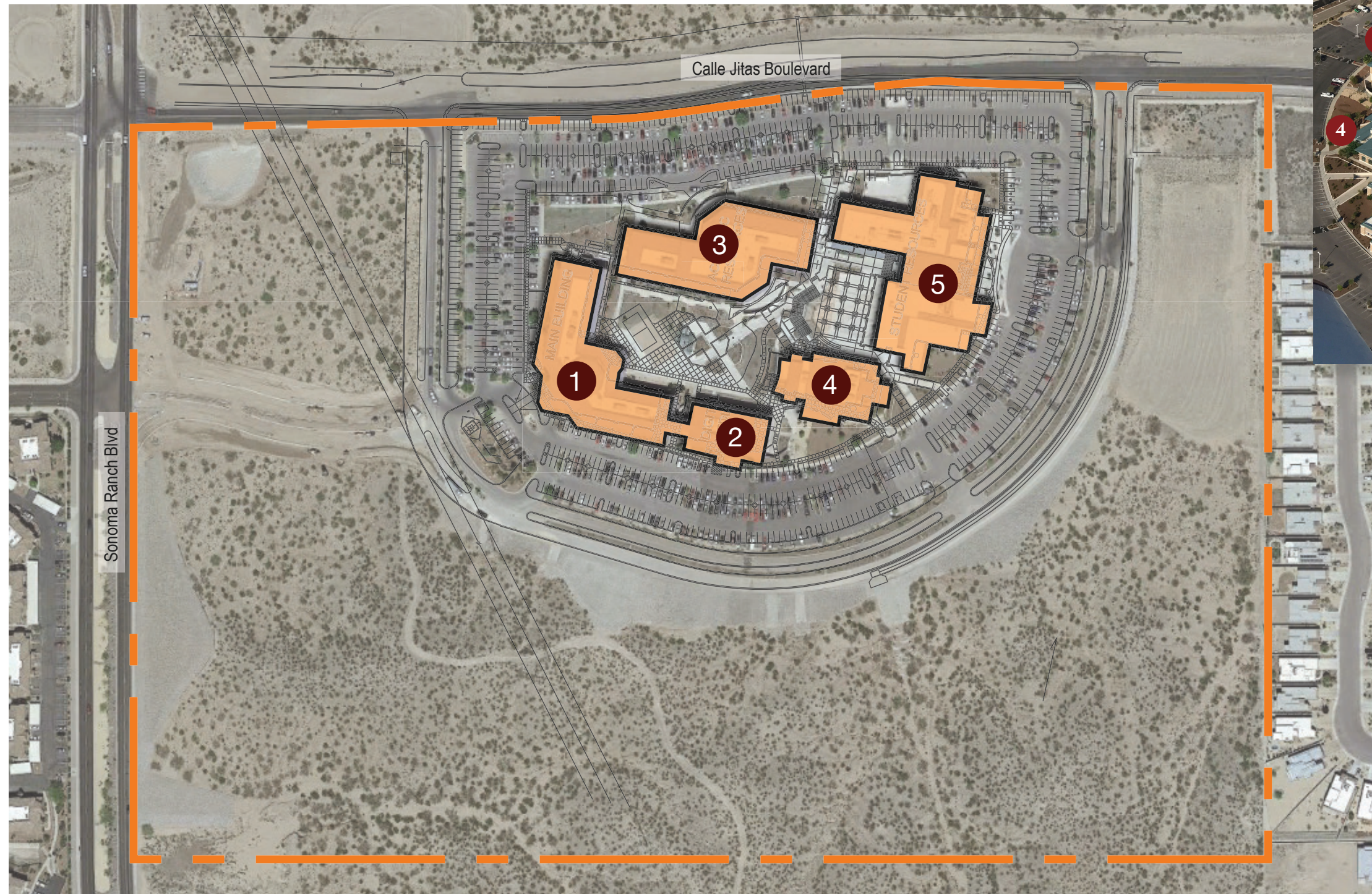
Green - BRR 2013

Exhibit A-6
 NMSU DACC Facilities, 2018 - Distribution by FICM* Code
 (*Facility Inventory Classification Manual)

FICM Code		NSF	% Total	% Assignable
100	Classroom Facilities	64,622	13.3%	18.0%
200	Laboratory Facilities	137,280	28.3%	38.3%
300	Office Facilities	101,424	20.9%	28.3%
400	Study Facilities	17,140	3.5%	4.8%
500	Special Use Facilities	2,538	0.5%	0.7%
600	General Use Facilities	27,260	5.6%	7.6%
700	Support Facilities	6,123	1.3%	1.7%
800	Health Care Facilities	172	0.0%	0.0%
0	Unclassified	1,617	0.3%	0.5%
Non-Assignable				
W	Circulation Area	89,932	18.6%	
X	Building Service Area	16,472	3.4%	
Y	Mechanical Area	20,097	4.1%	
		Total	484,677	

Total Assignable 358,176 73.9%





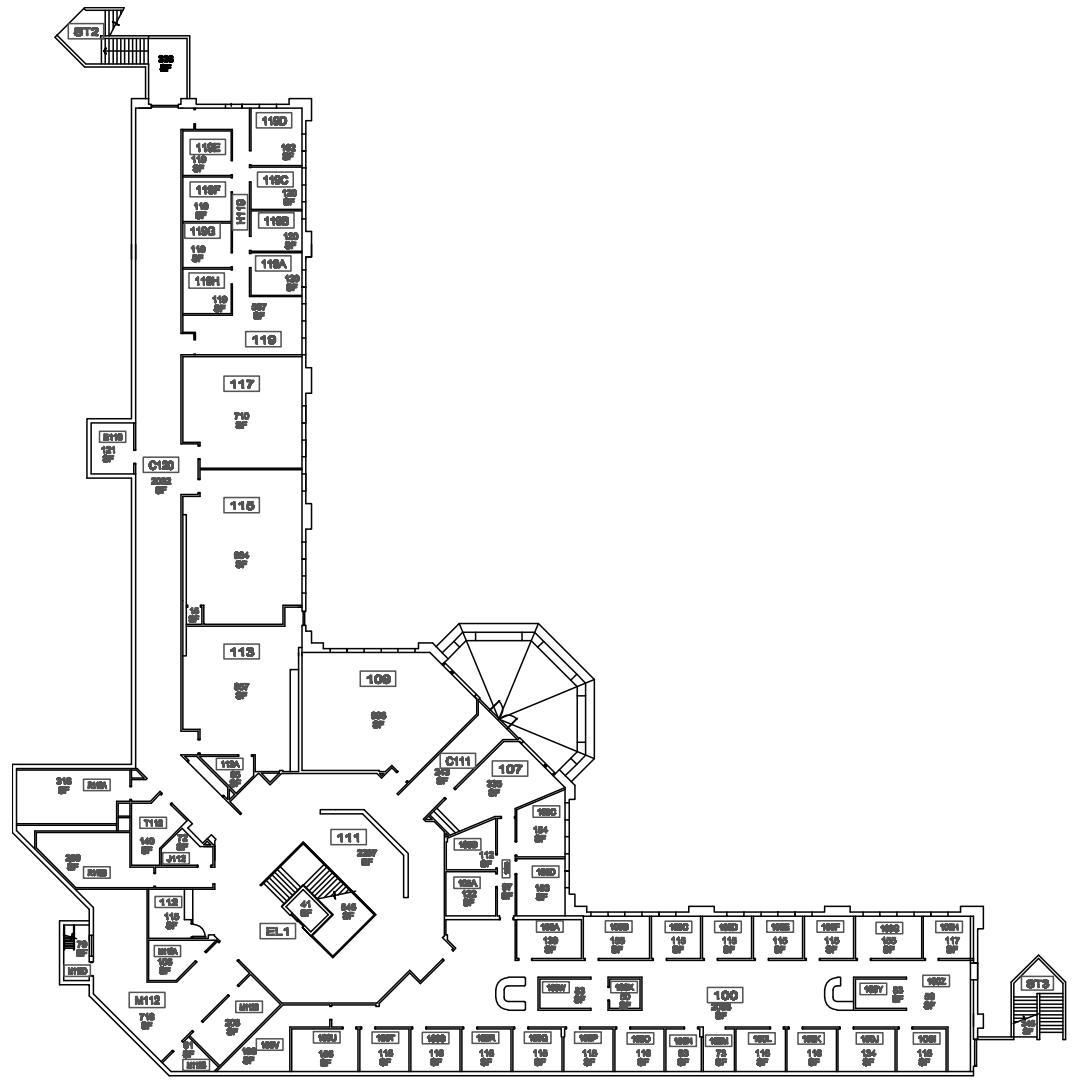
View looking southwest

1. DAEM – East Mesa
2. DADM – Digital Media
3. DAAR – Academic Resources
4. DAAU – Auditorium
5. DASR – Student Resources

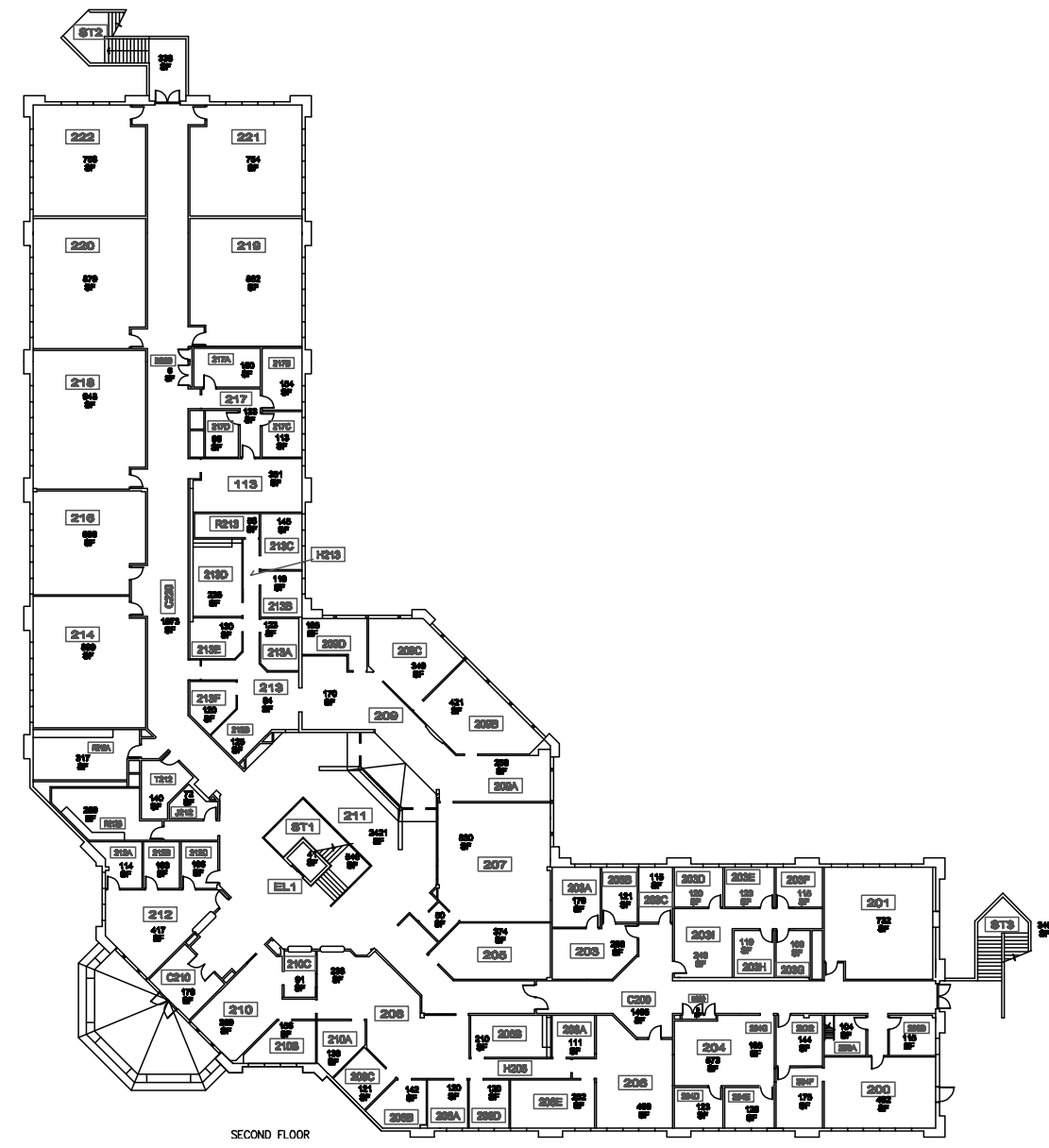
EAST MESA CAMPUS



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First Floor



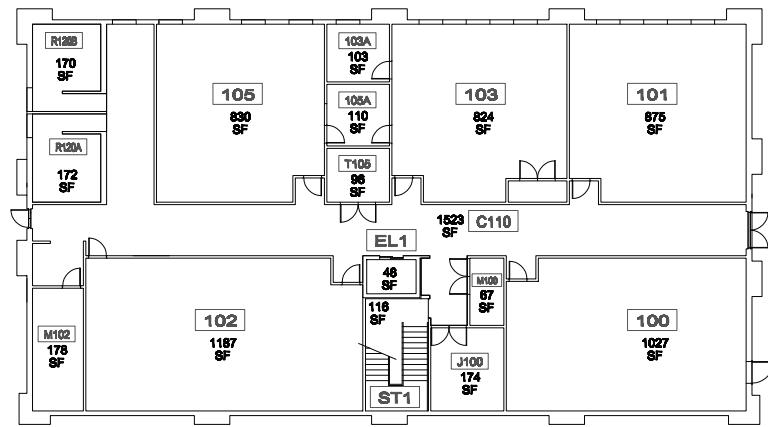
SECOND FLOOR

Main Building
(DAEM)

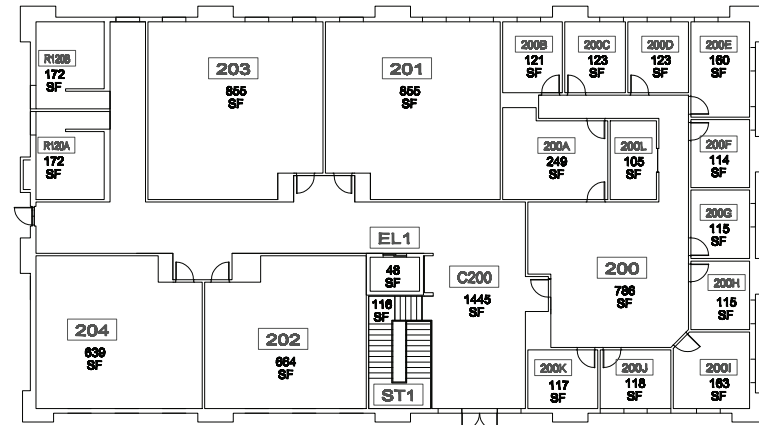
EAST MESA CAMPUS



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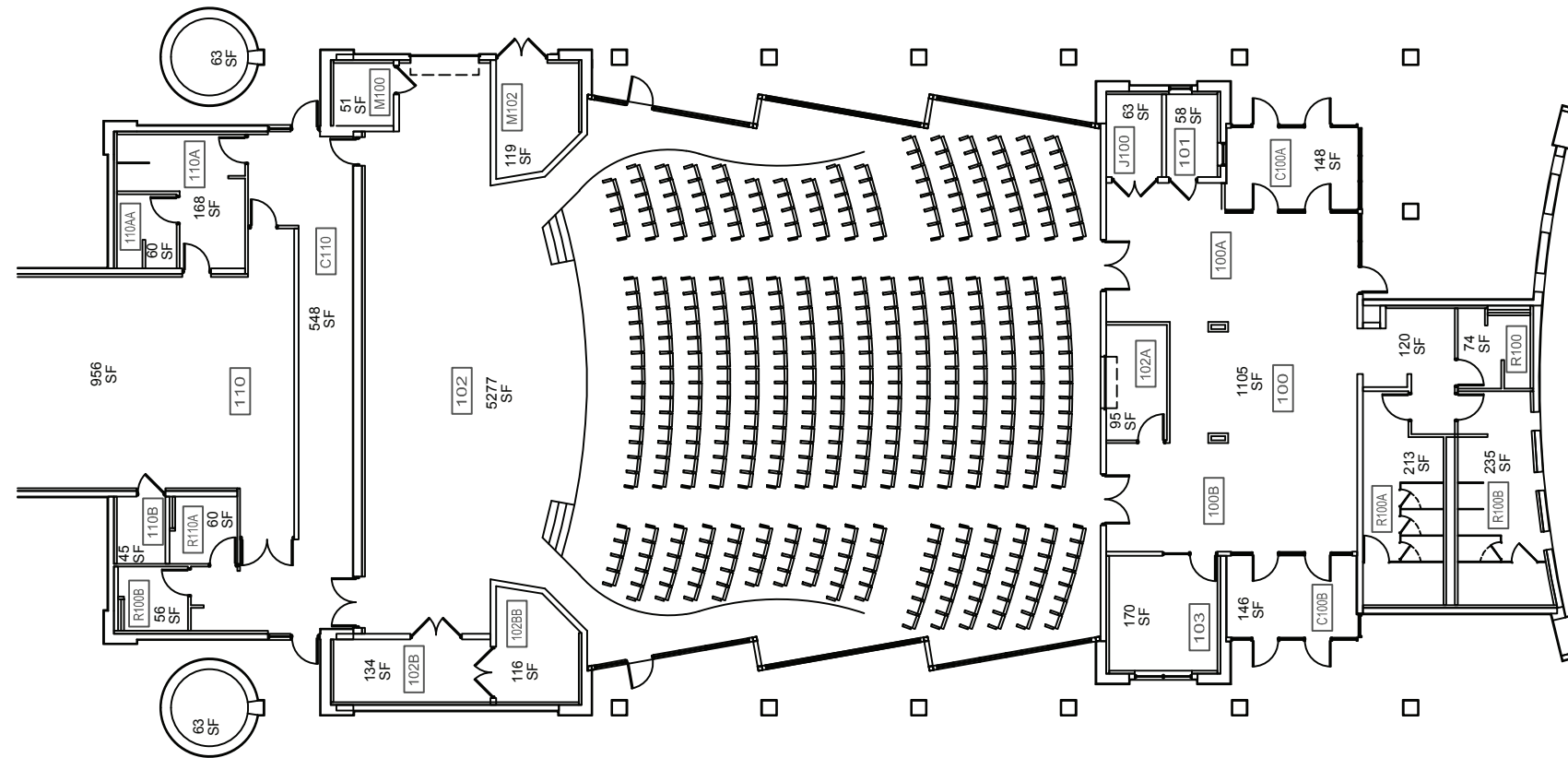


Lower Level



Upper Level

Digital Media (DADM)

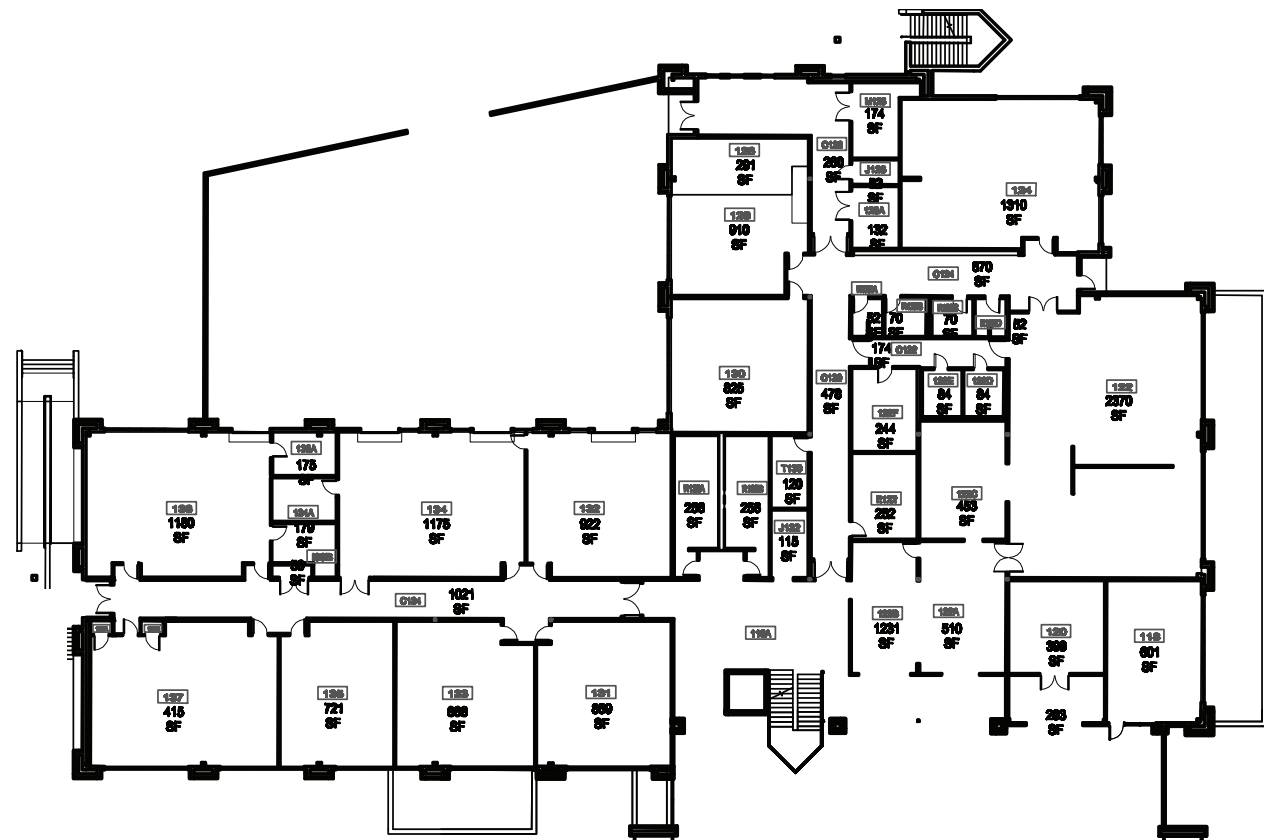


Auditorium (DAAU)

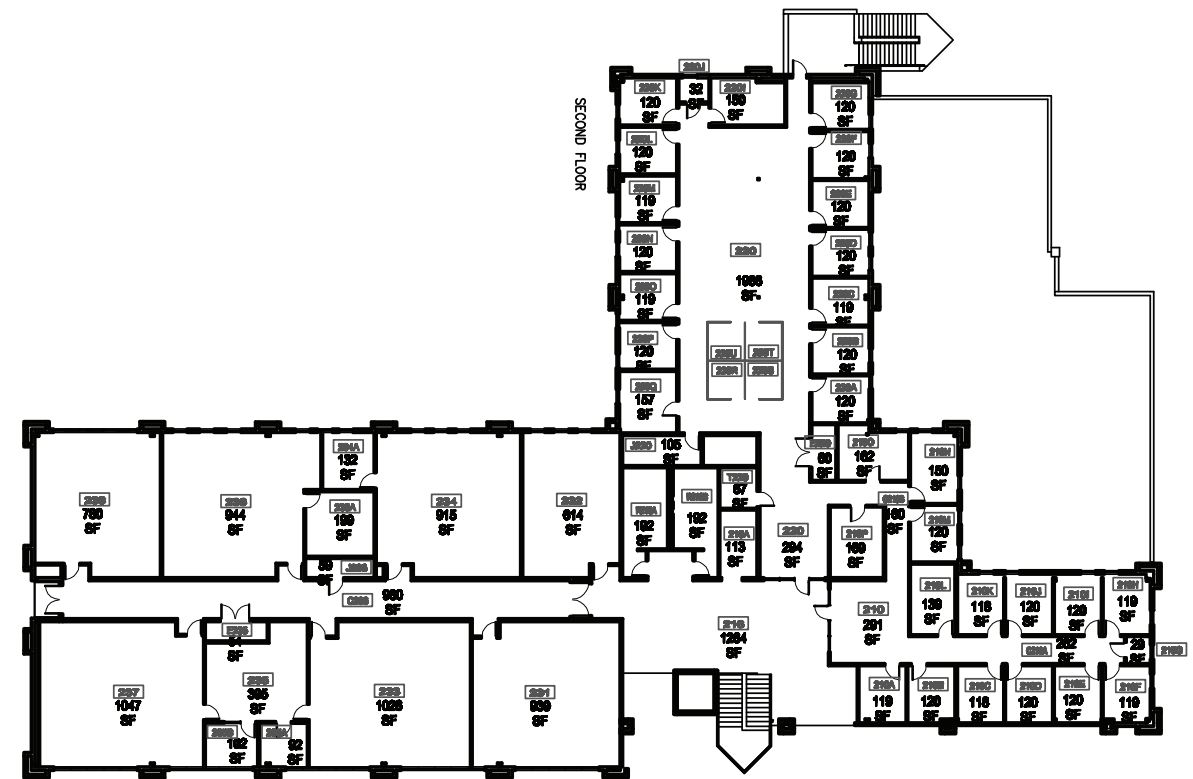
EAST MESA CAMPUS

NMSU Doña Ana Community College

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First Floor



Second Floor

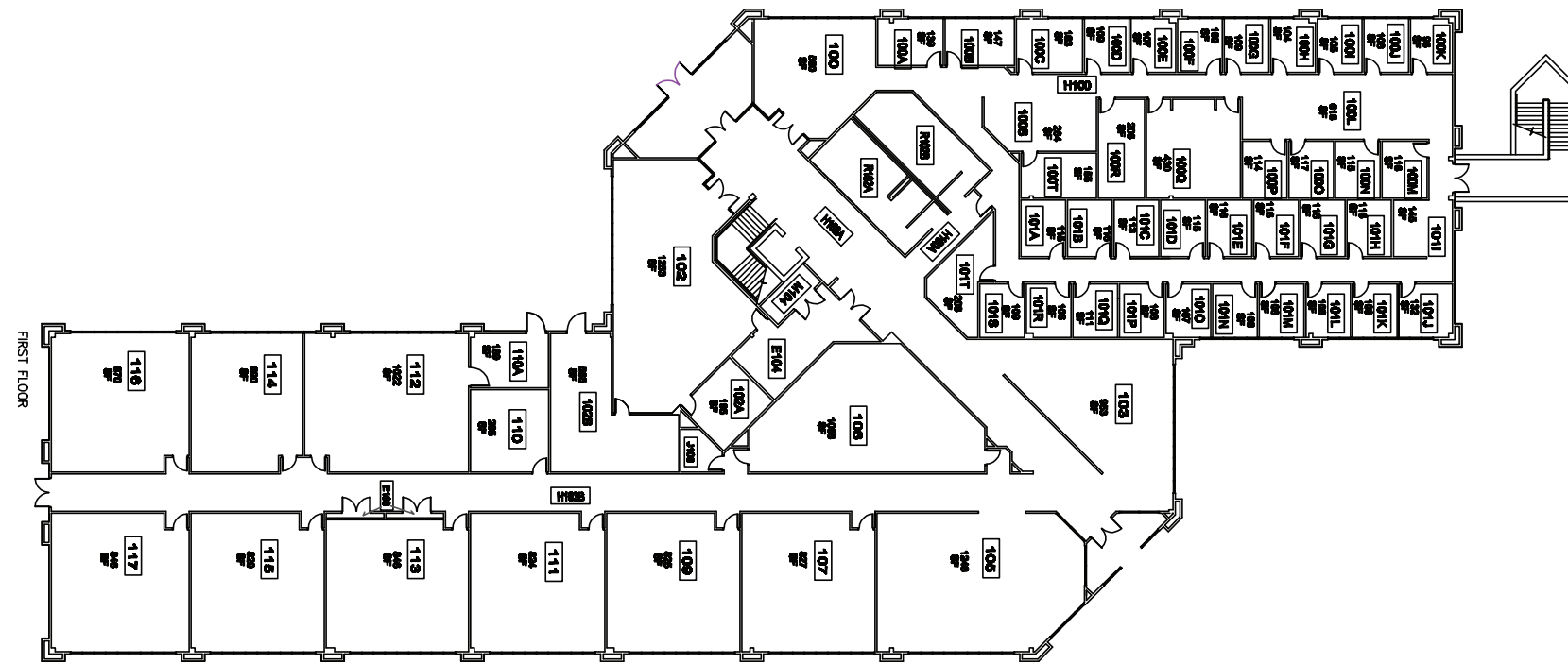


BUILDING

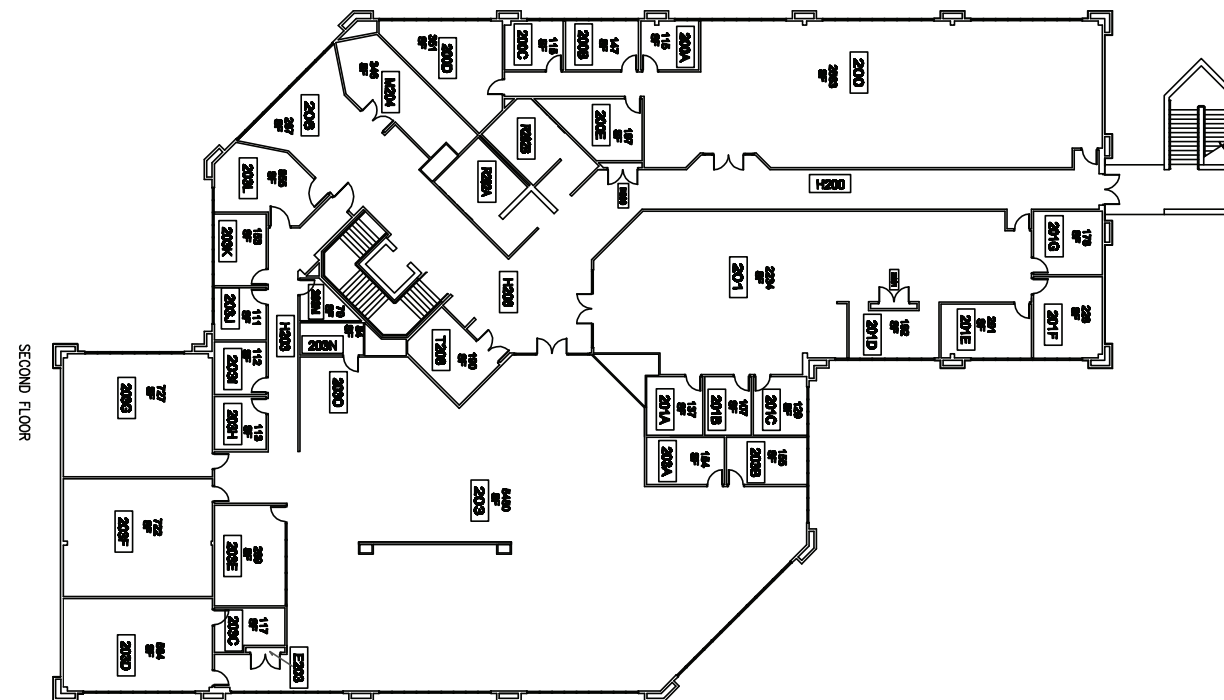
Student Resources (DASR)
EAST MESA CAMPUS



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First Floor



Academic Resources
(DAAR)

EAST MESA CAMPUS



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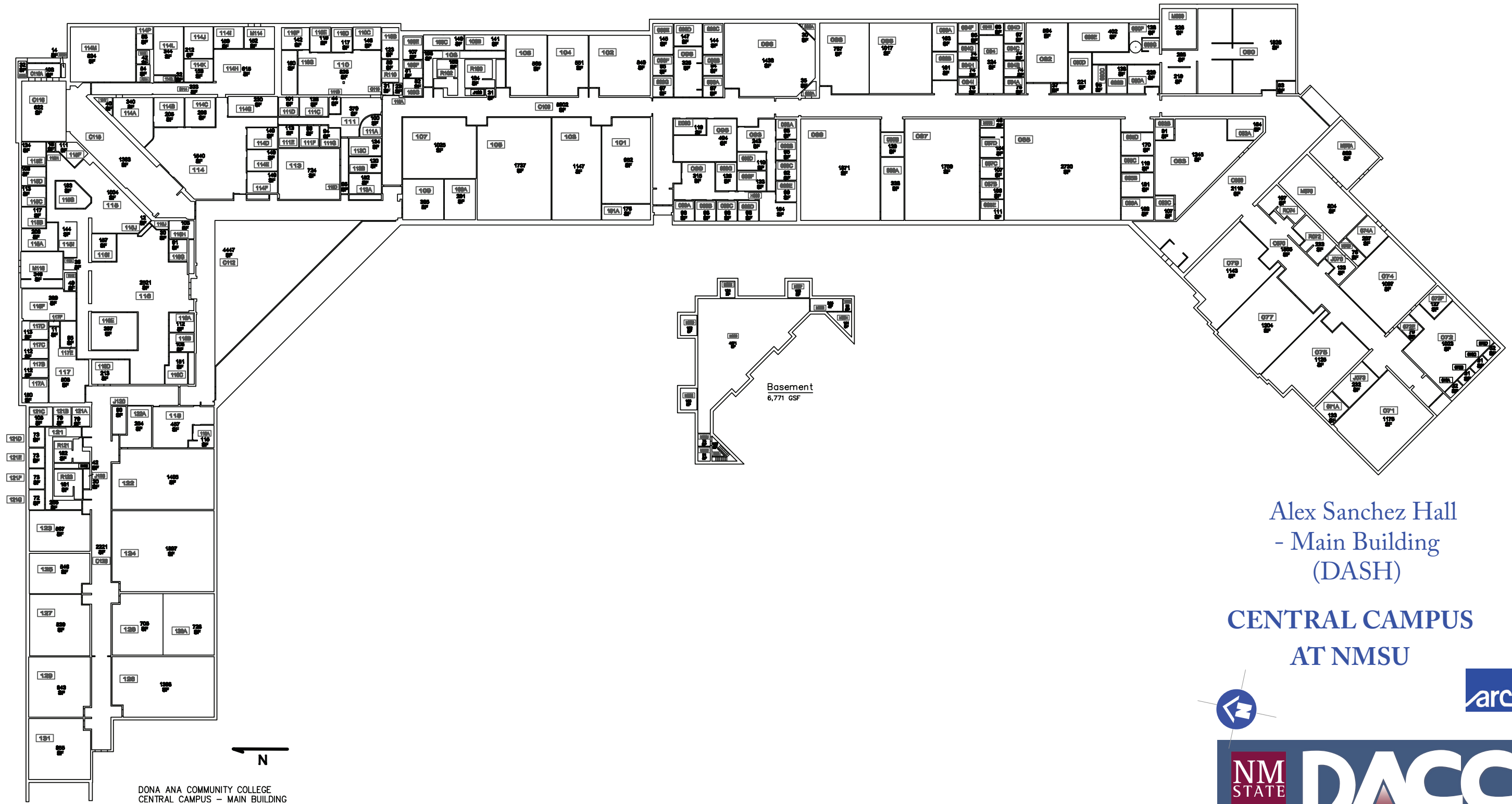


1. DAMA /DASH - Alex Sanchez Hall (Main Building)
2. DATA - Technical Studies
3. DALR - Learning Resources Center
4. DACL - Classroom Building
5. DAHL - Health and Public Services

ESPINA CAMPUS AT NMSU



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Alex Sanchez Hall
- Main Building
(DASH)

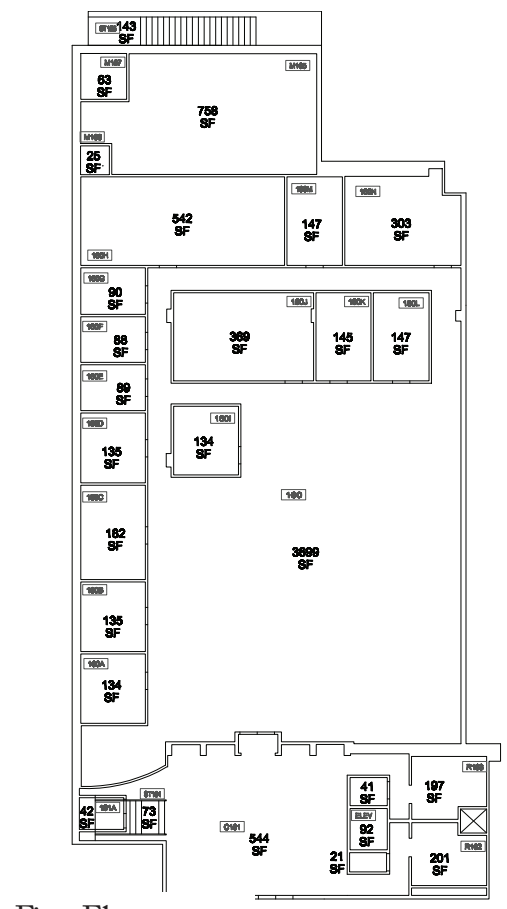
CENTRAL CAMPUS
AT NMSU



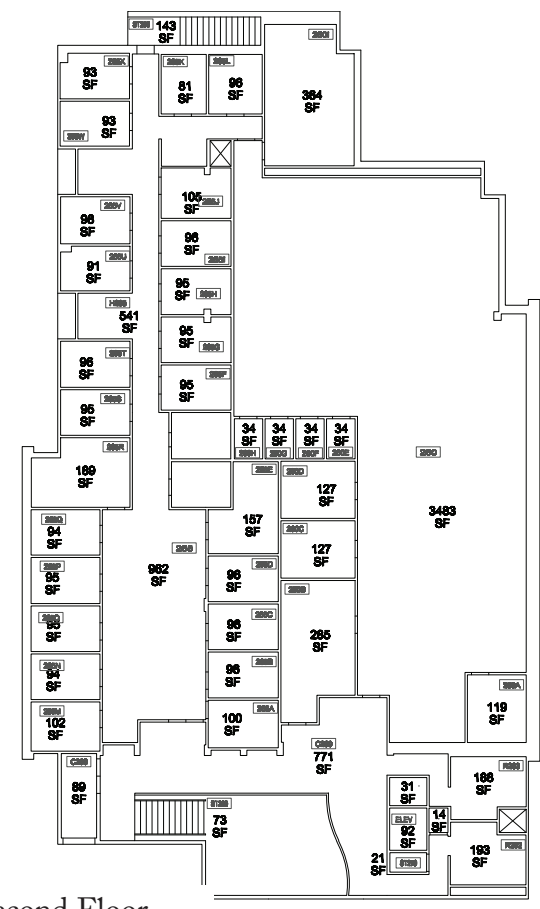
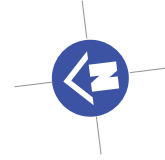
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Learning Resources Center (DALR)

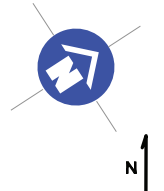
Technical Studies (DATS) CENTRAL CAMPUS AT NMSU



First Floor



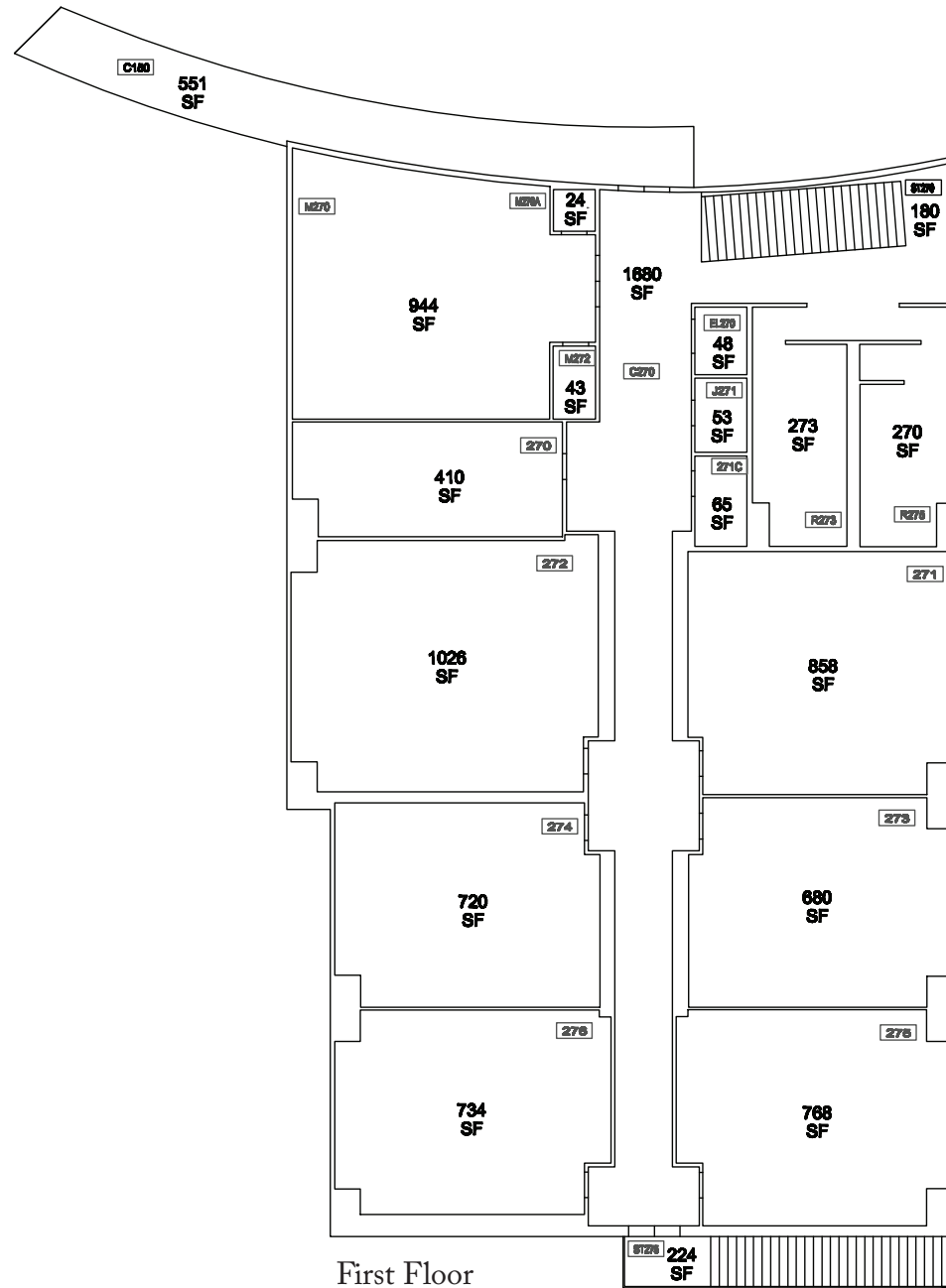
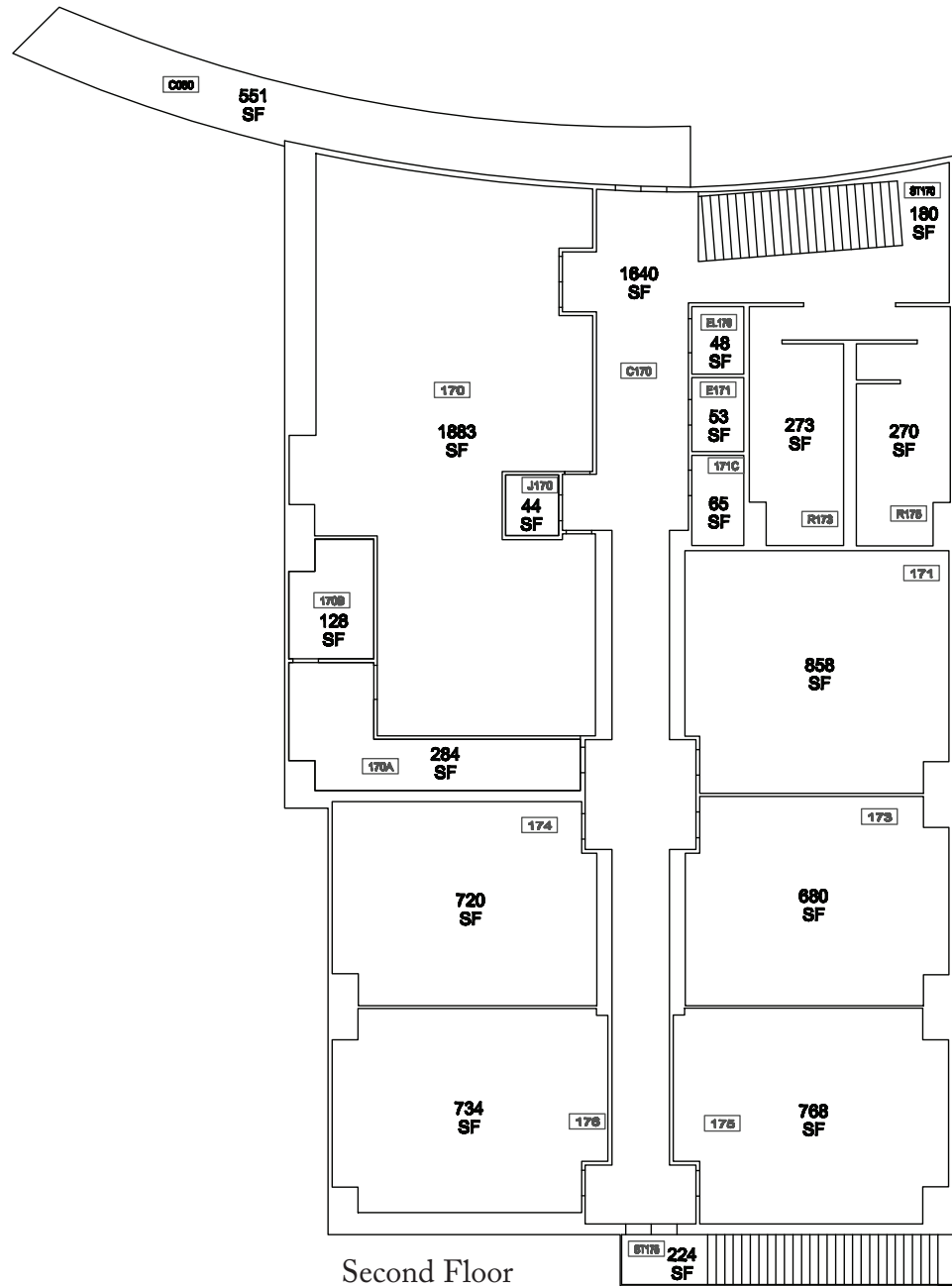
Second Floor



DOÑA ANA COMMUNITY COLLEGE



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Classroom Building (DACL)

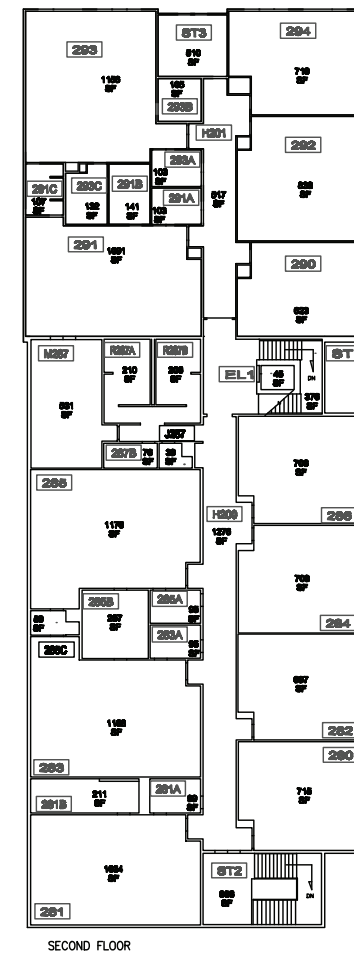
CENTRAL CAMPUS
AT NMSU



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First Floor



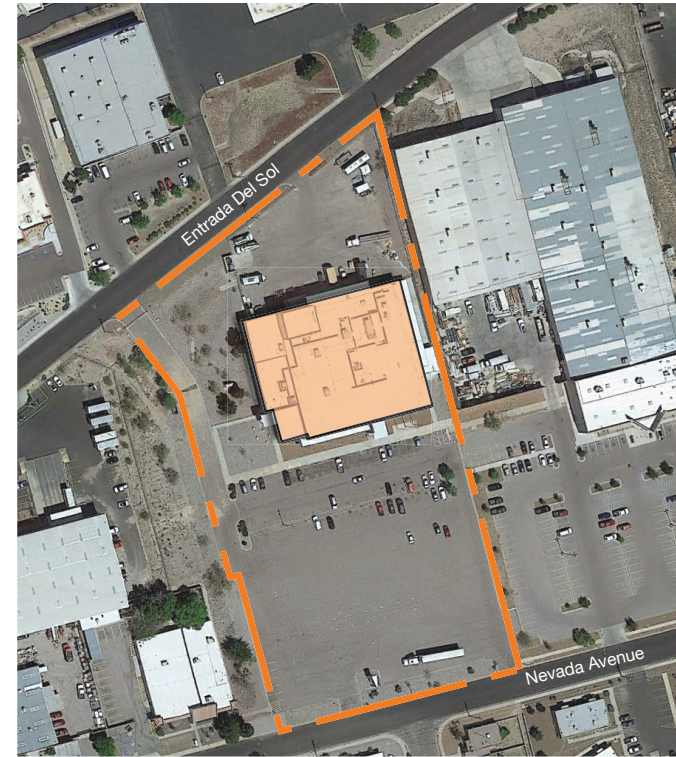
SECOND FLOOR

Health and Public
Services (DAHL)

**CENTRAL CAMPUS
AT NMSU**



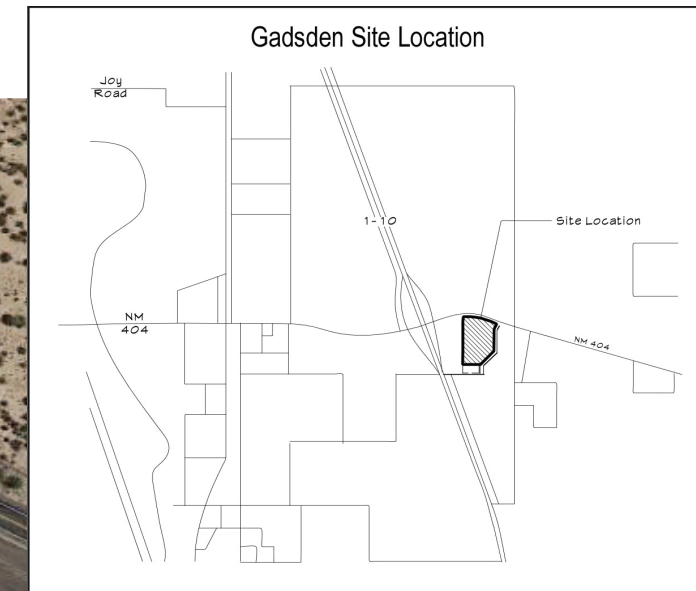
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WORKFORCE DEVELOPMENT CENTER (DAWD)



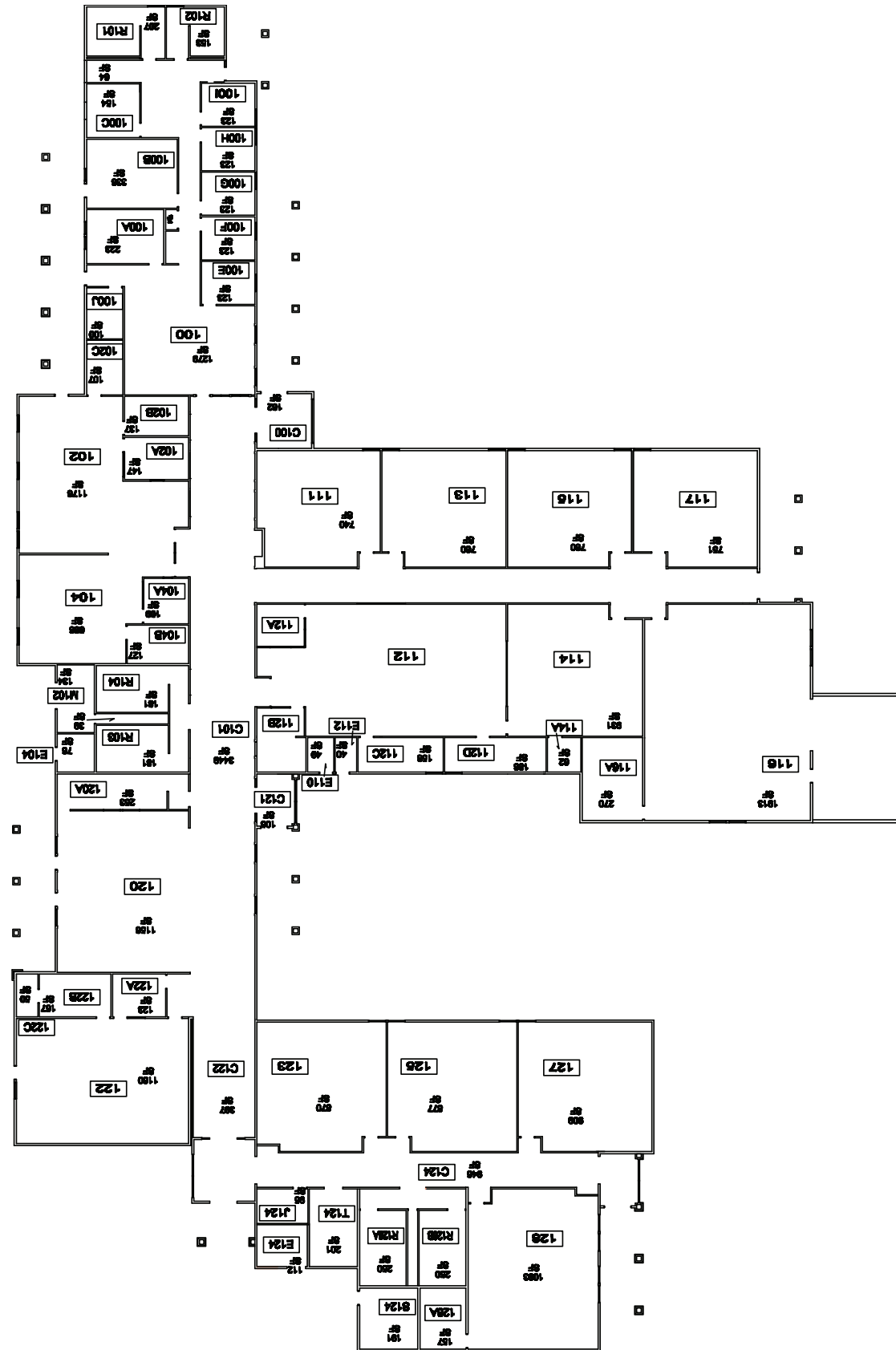
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GADSDEN CENTER



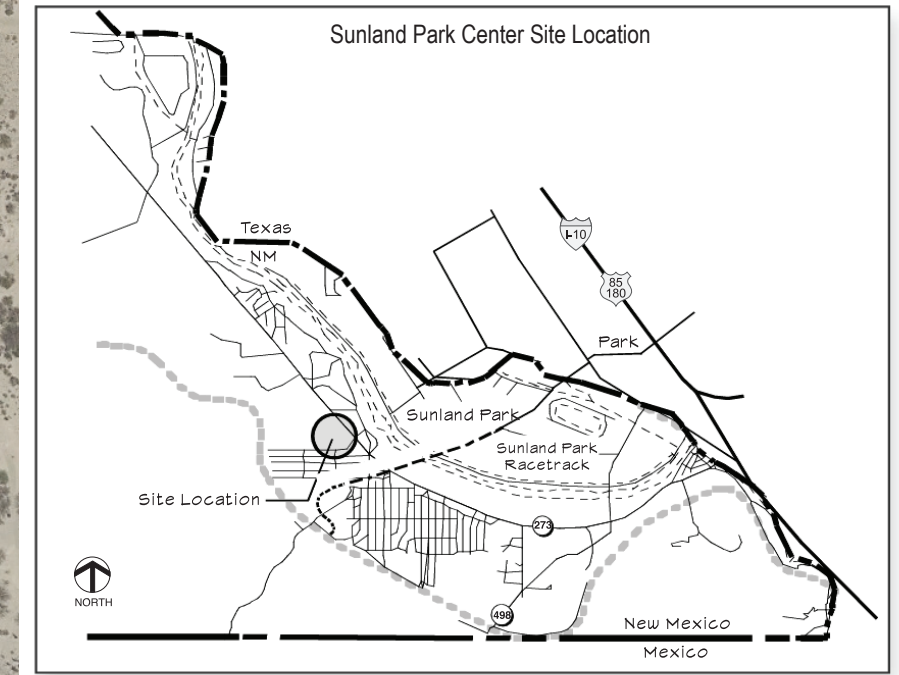
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GADSDEN CENTER (DAGC)



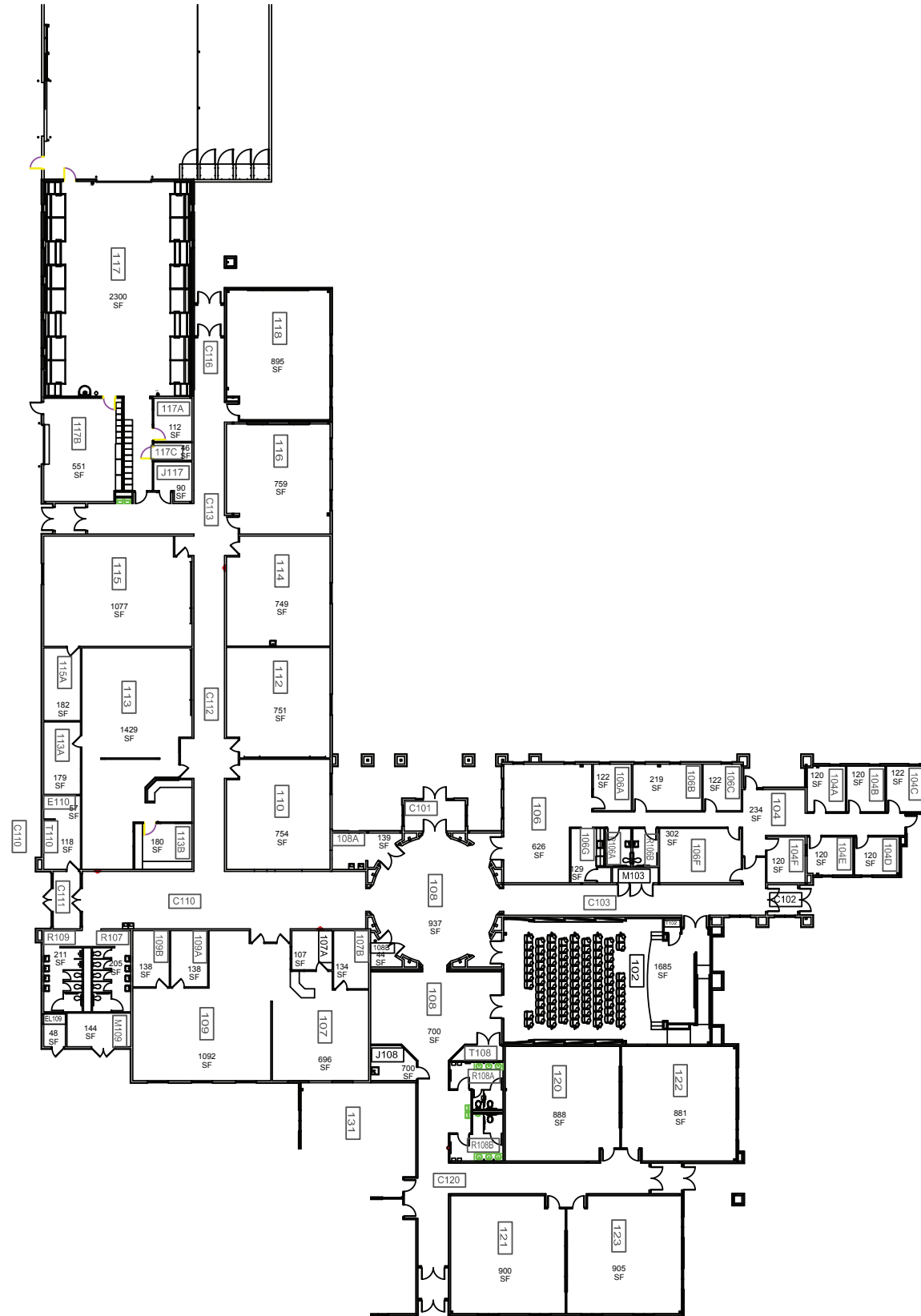
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SUNLAND PARK CENTER



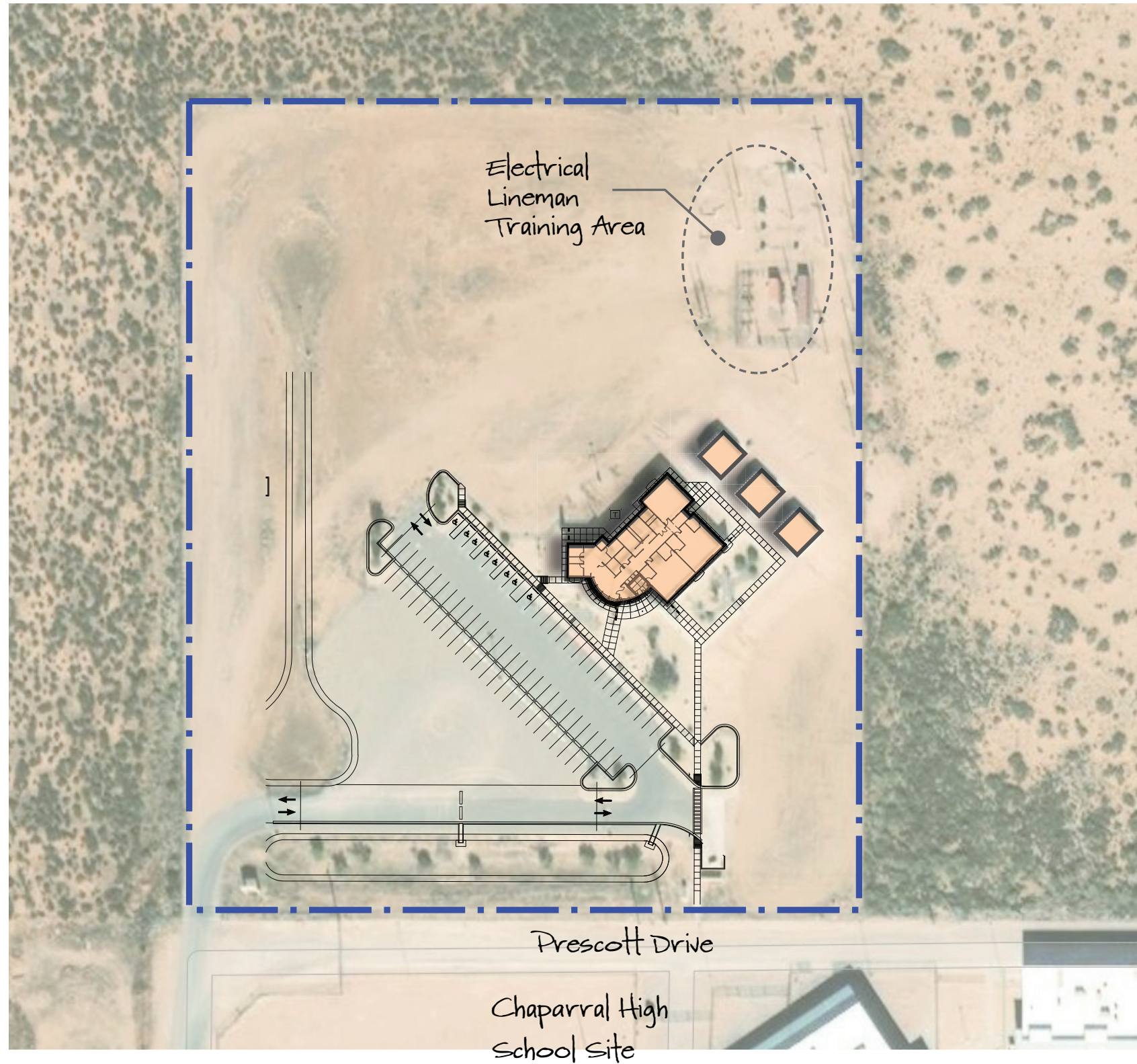
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SUNLAND PARK CENTER (DASP)



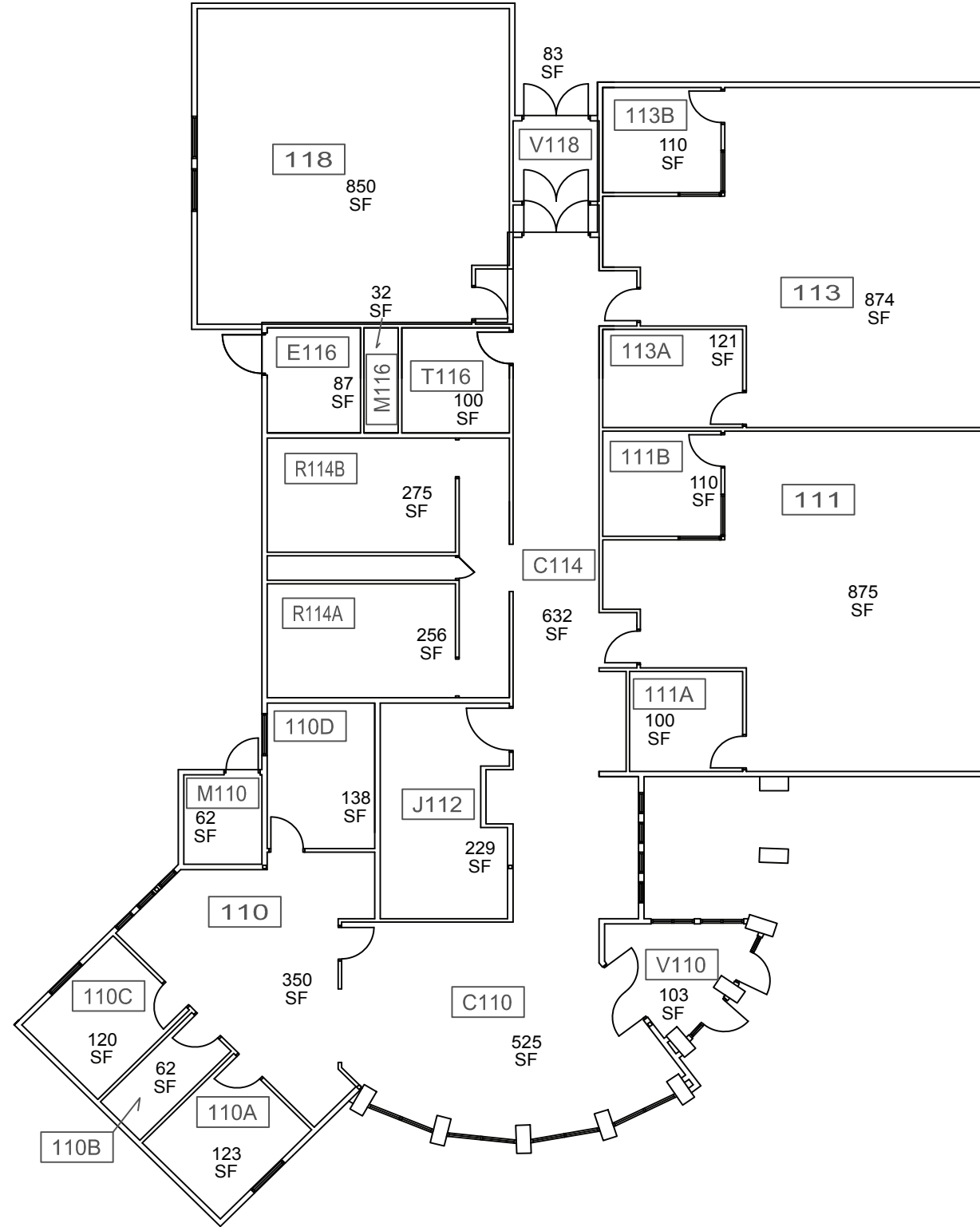
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CHAPARRAL CENTER



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CHAPARRAL CENTER (DACH)



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3.1.6 Historic Enrollment and Student Location

Exhibit A-24
NMSU DACC Historic FTE Enrollment, 1986-2017

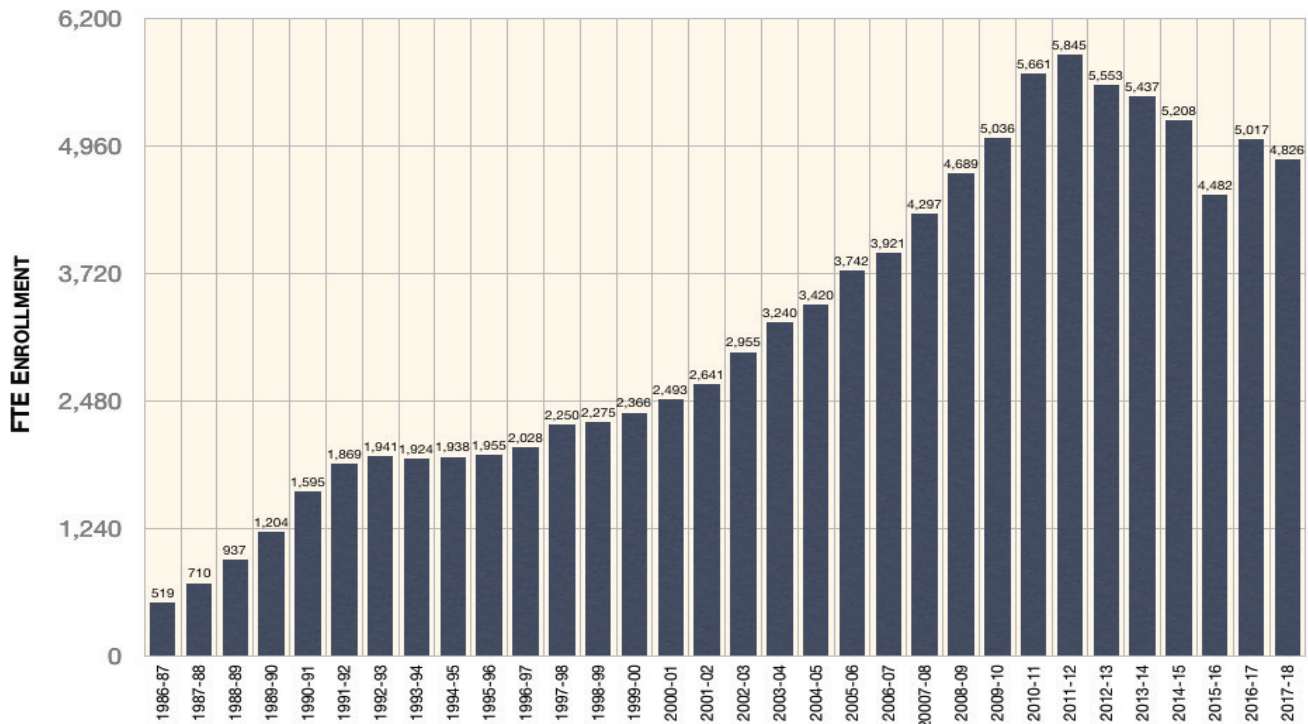


Exhibit A-25
NMSU DACC
Historic
Enrollment, 2017-
2018

Fall 2017-2018				
	Persons (Headcount)	Credits	FTE	% Total
East Mesa Campus	2,207	19,652	1,310	27%
Espina Campus	2,391	21,279	1,419	29%
Workforce Center	95	812	54	1%
Gadsden Center	662	6,226	415	9%
Sunland Center	286	3,001	200	4%
Chaparral Center	16	177	12	0%
Online Center	1,764	16,068	1,071	22%
Alta Vista Center	73	499	33	1%
Arrowhead Center	319	3,005	200	4%
Other Center	126	1,608	107	2%
Total	7,939	72,327	4,822	100%

Fall 2017-2018				
	Persons (Headcount)	Credits	FTE	% Total
LAS CRUCES CENTERS	4,693	41,743	2,783	58%
SOUTHERN CENTERS	964	9,404	627	13%
ONLINE	1,764	16,068	1,071	22%
OTHER	518	5,112	341	7%
Total	7,939	72,327	4,822	100%

Exhibit A-26
Where Students Live and Attend - All Campuses

	Where DACC students live	Where DACC Students Attend				
		EARLY COLLEGE HS	LAS CRUCES CLUSTER	ONLINE CLUSTER	OTHER CLUSTER	SOUTHERN CLUSTER
North	153	0	101	27	25	0
Las Cruces	4,849	306	3,487	974	46	36
South	1,956	85	573	335	21	942
Other	980	1	566	361	33	19
Total	7,938	392	4,727	1,697	125	997

	Where DACC students live	Where DACC Students Attend (% of their cluster)				
		EARLY COLLEGE HS	LAS CRUCES CLUSTER	ONLINE CLUSTER	OTHER CLUSTER	SOUTHERN CLUSTER
North	153	0.0%	66.0%	17.6%	16.3%	0.0%
Las Cruces	4,849	6.3%	71.9%	20.1%	0.9%	0.7%
South	1,956	4.3%	29.3%	17.1%	1.1%	48.2%
Other	980	0.1%	57.8%	36.8%	3.4%	1.9%
Total	7,938					

READ ACROSS

~30% of students living in the southern area attend DACC Las Cruces area campuses

Exhibit A-27
 Where Students Live and Attend - All Campuses

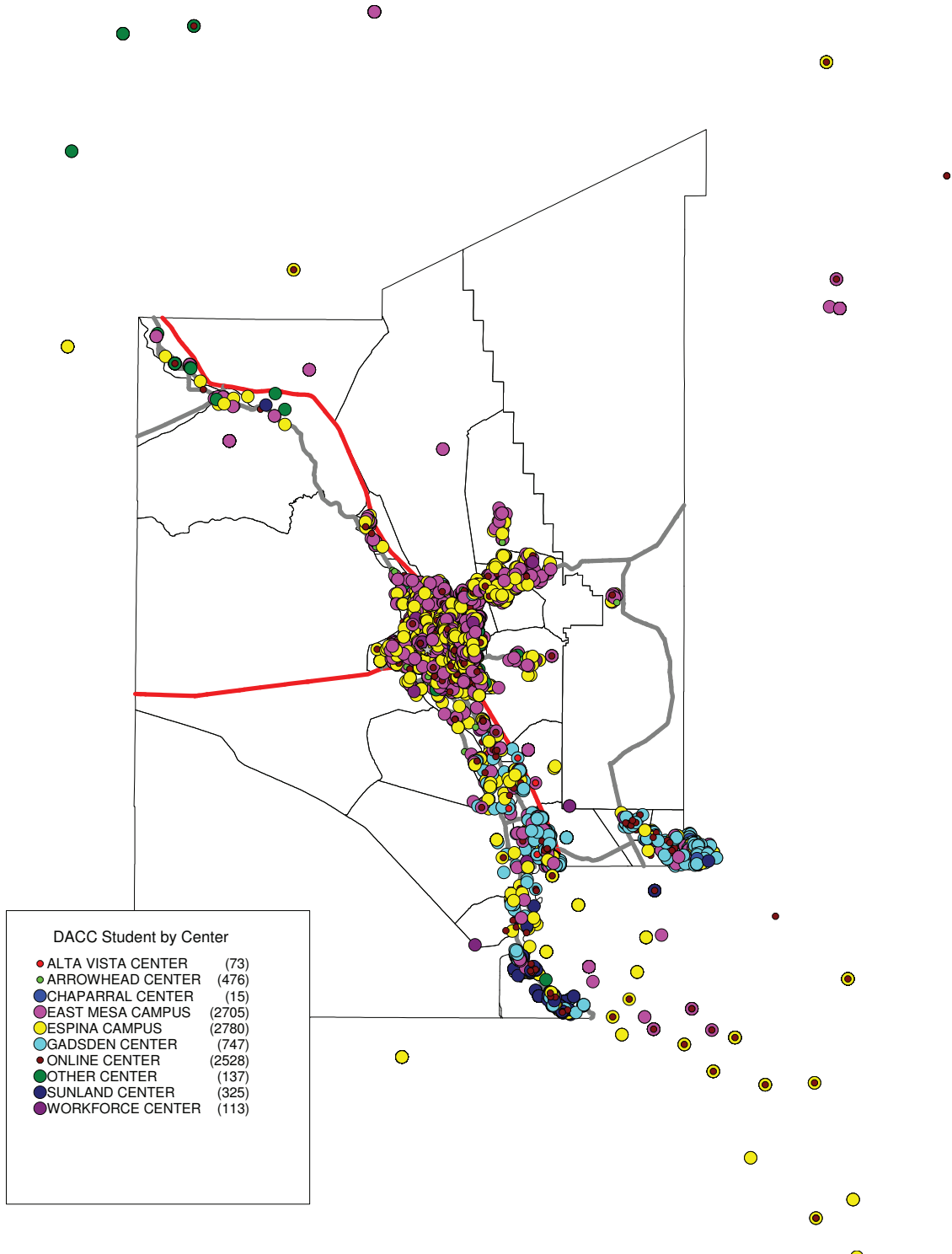


Exhibit A-28
Where Students Live and Attend - Central Area

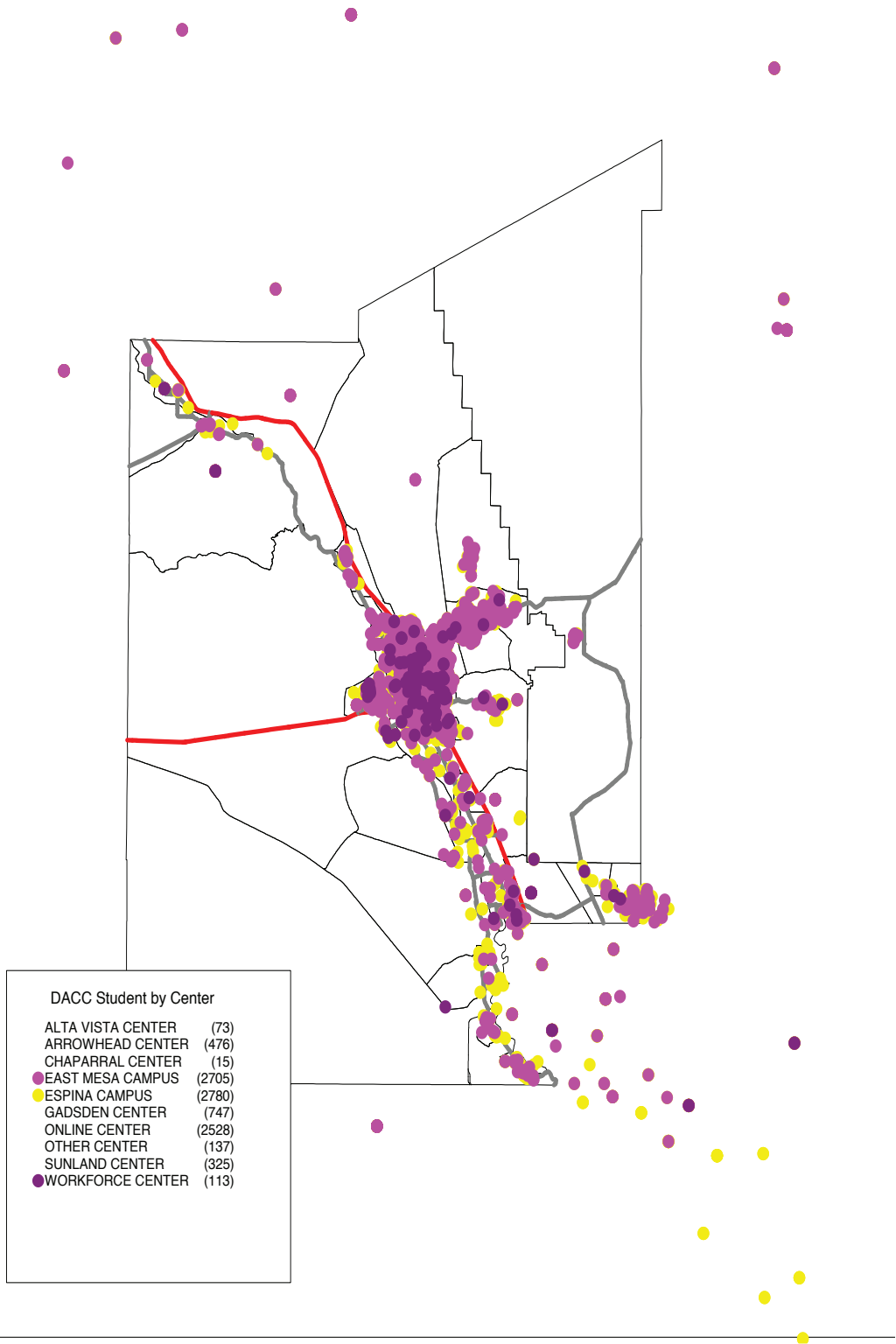


Exhibit A-29
Where Students Live and Attend - Sunland Park

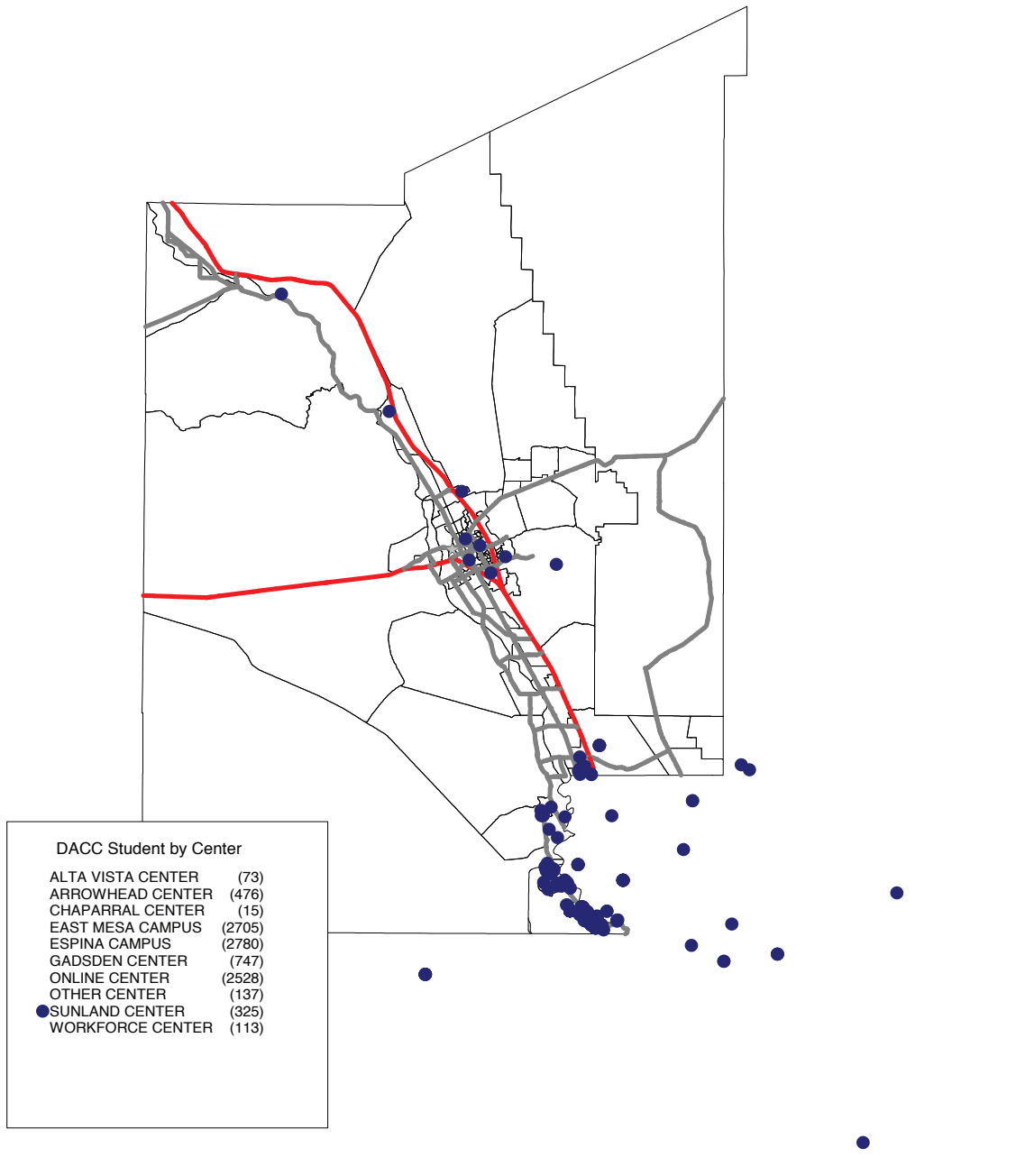
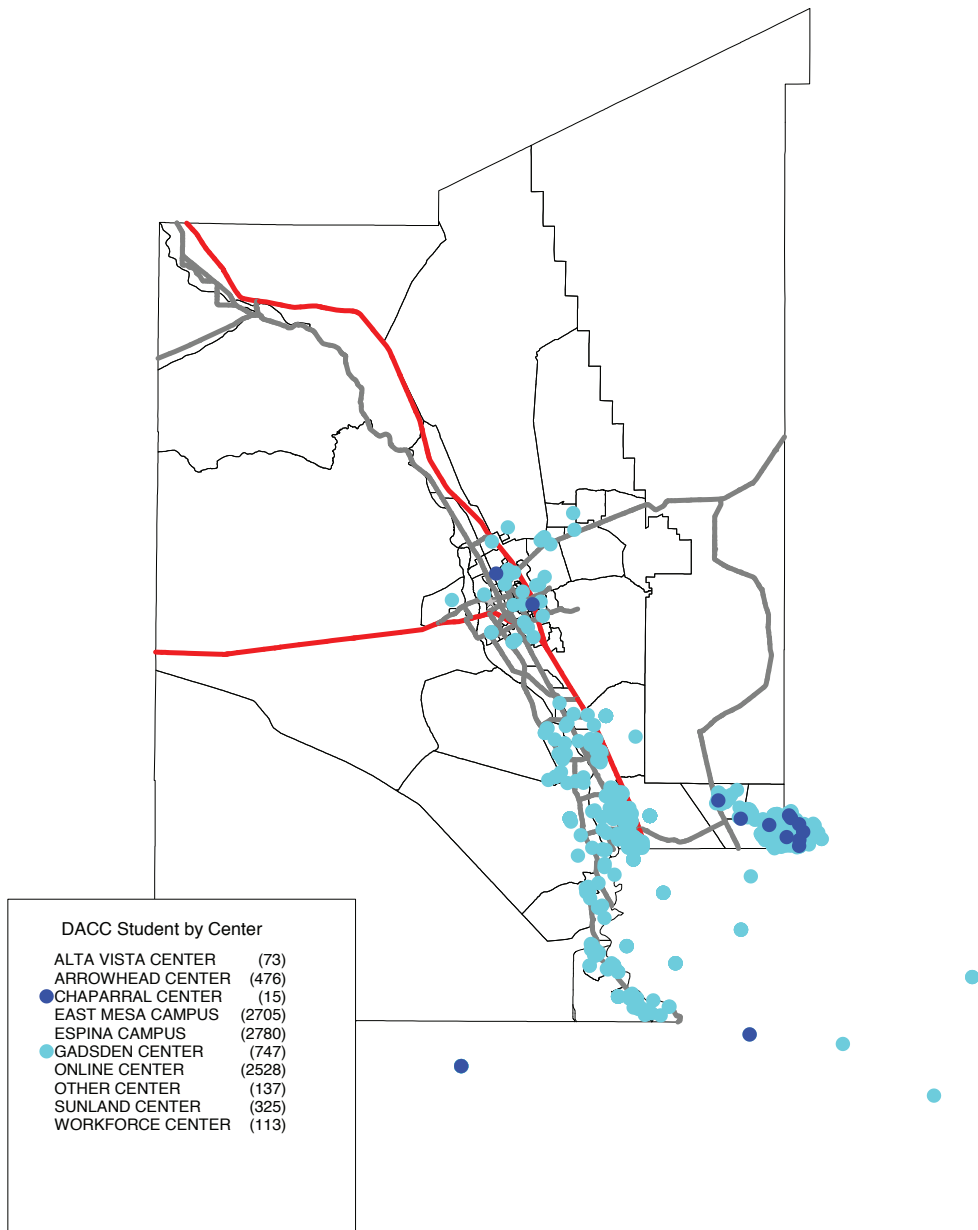


Exhibit A-30
 Where Students Live and Attend - Gadsden and Chaparral



3.1.7 Instructional Room Utilization

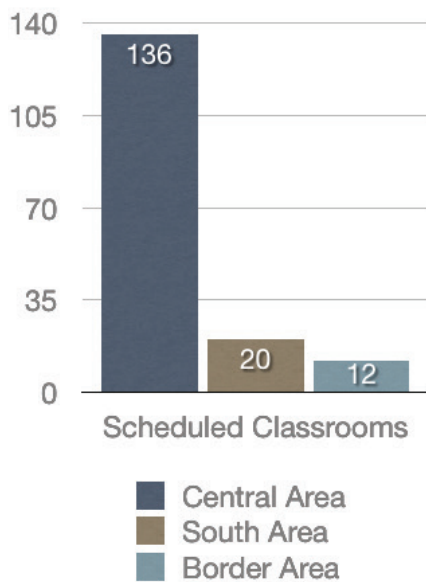
Exhibits A-31 and A-32 show existing instructional room counts.

Exhibit A-33 illustrates instructional room use by day and time (fall 2017) as measured by when instructional rooms are scheduled (based on the master class schedule).

Exhibits A-34 illustrates the average station occupancy in fall 2017 (as measured by number of seats occupied divided by total seats available based on the master class schedule C. This analysis suggests that there is station capacity to accommodate additional students.

Utilization of 80% is generally considered a full utilization target. Filling in times below 80% utilization provides opportunities for accommodating additional enrollment without adding more instructional spaces.

Exhibit A-31
NMSU DACC Facilities, 2018 -Instructional Space Count by Area



	Academic Scheduled			Other Scheduled			Not Scheduled		
	Classrooms	Class-Labs	Total	ABE	Comm. Ed	Total	Total Supply	Open Lab	Multi-purpose
Central Area	56	70	126	4	6	10	136	4	1
South Area	6	6	12	8	0	8	20	1	0
Border Area	5	4	9	3	0	3	12	1	0
Total	67	80	147	15	6	21	168	6	1
	147			21			168		

Exhibit A-32
 NMSU DACC Facilities, 2018 - Instructional Space Count

Area	Campus / Building	Academic Scheduled			Other Scheduled			Not Scheduled		
		Classrooms	Class-Labs	Total	ABE	Comm. Ed	Total	Total Supply	Open Lab	Multi-purpose
Central Area										
East Mesa Campus										
	Main Building	2	9	11	0	1	1	12	1	
	Academic Resources Building	6	6	12	0	2	2	14	1	
	Digital Media Building	2	2	4	0	0	0	4		
	Auditorium	1	0	1	0	1	1	2		
	Student Resources	8	9	17	0	0	0	17		
	Subtotal	19	26	45	0	4	4	49	2	0
Espina Campus at NMSU										
	Main Building	11	14	25	4	1	5	30	1	1
	General Classroom Building	8	3	11	0	0	0	11		
	Health Services Building	8	10	18	0	0	0	18		
	Learning Resources Building	0	0	0	0	0	0	0	1	
	Technical Studies Building	4	8	12	0	0	0	12		
	Subtotal	31	35	66	4	1	5	71	2	1
Workforce Center										
	Workforce Development Center	6	9	15	0	1	1	16	0	0
	Subtotal	6	9	15	0	1	1	16	0	0
South Area										
Gadsden Learning Center										
	Gadsden Center	4	6	10	2	0	2	12	1	0
	Portables	2	0	2	1	0	1	3	0	0
	Subtotal	6	6	12	3	0	3	15	1	0
Chaparral Learning Center										
	Chaparral Center	0	0	0	2	0	2	2		
	Portables	0	0	0	3	0	3	3	0	0
	Subtotal	0	0	0	5	0	5	5	0	0
Border Area										
Sunland Park Learning Center										
	Sunland Park Center	3	4	7	1	0	1	8	1	0
	Portables	2	0	2	2	0	2	4	0	0
	Subtotal	5	4	9	3	0	3	12	1	0
Grand Total		67	80	147	15	6	21	168	6	1
		147			21					
		168								

Exhibit A-33a
 NMSU DACC Weekly Room Utilization - Room Hours Instruction -
 Fall 2018, All Campuses

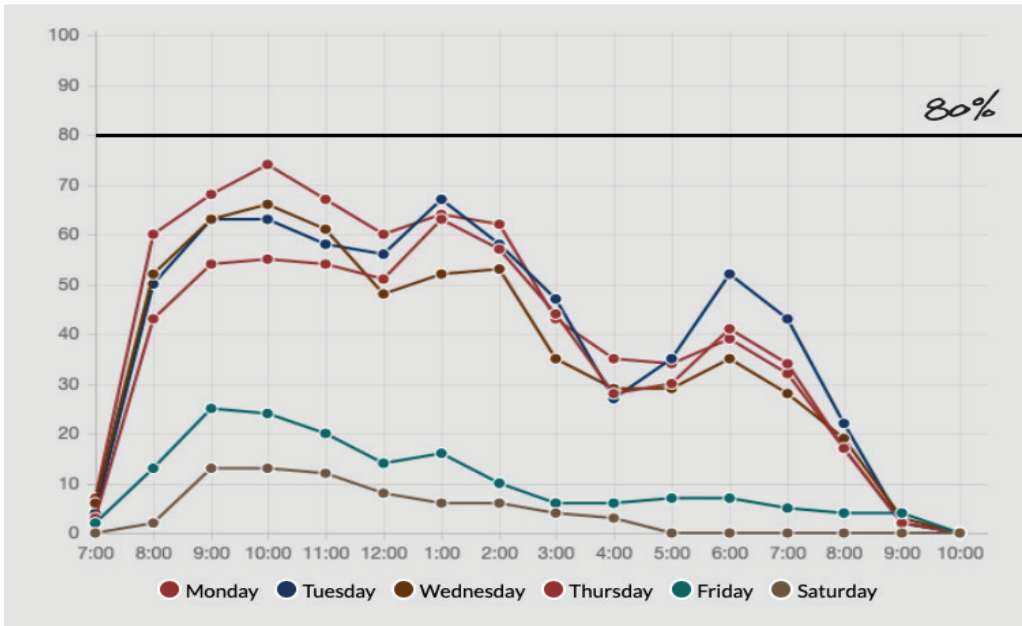


Exhibit A-33b
 NMSU DACC Weekly Room Utilization - Room Hours Instruction -
 Fall 2018, East Mesa Campus

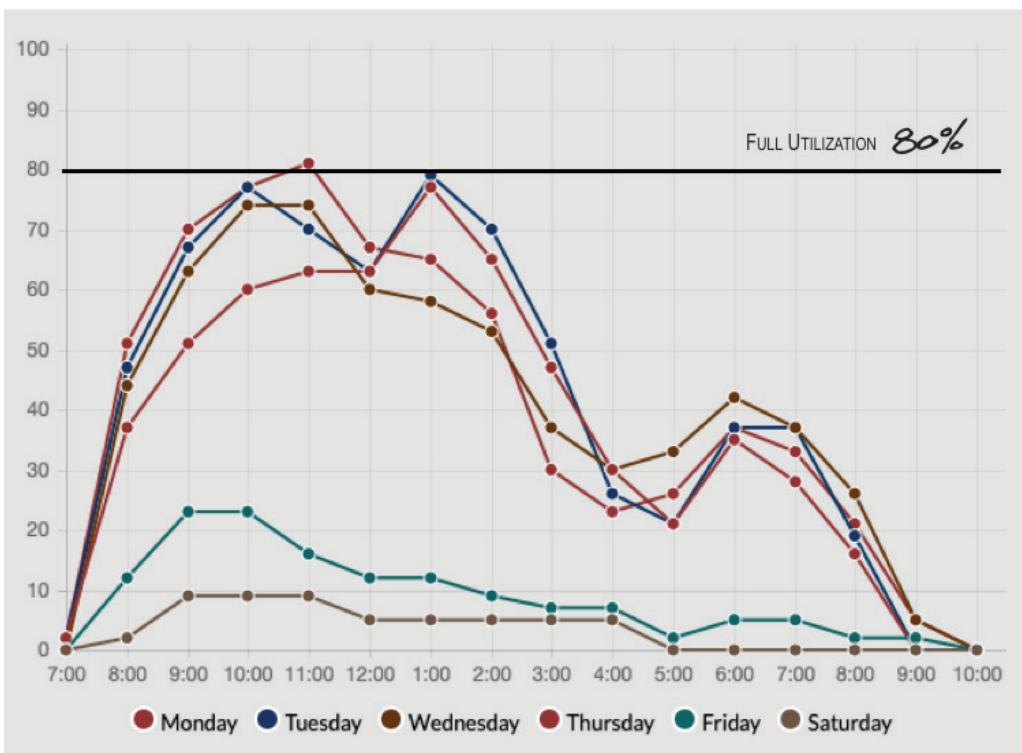


Exhibit A-33c
 NMSU DACC Weekly Room Utilization - Room Hours Instruction -
 Fall 2018, Espina Campus at NMSU

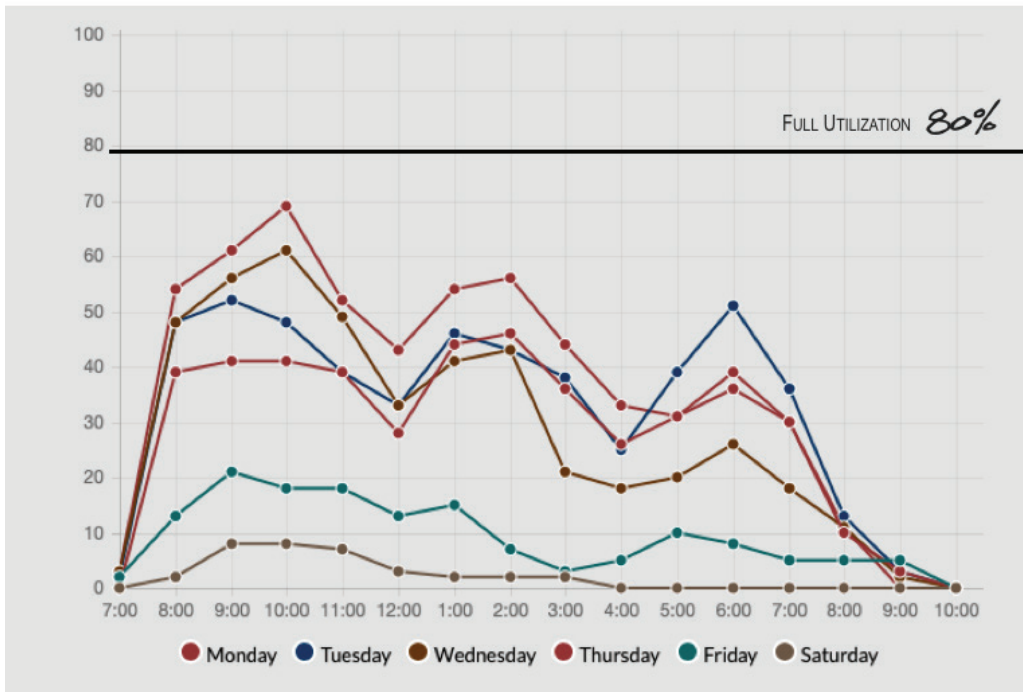


Exhibit A-33d
 NMSU DACC Weekly Room Utilization - Room Hours Instruction -
 Fall 2018, Workforce Center

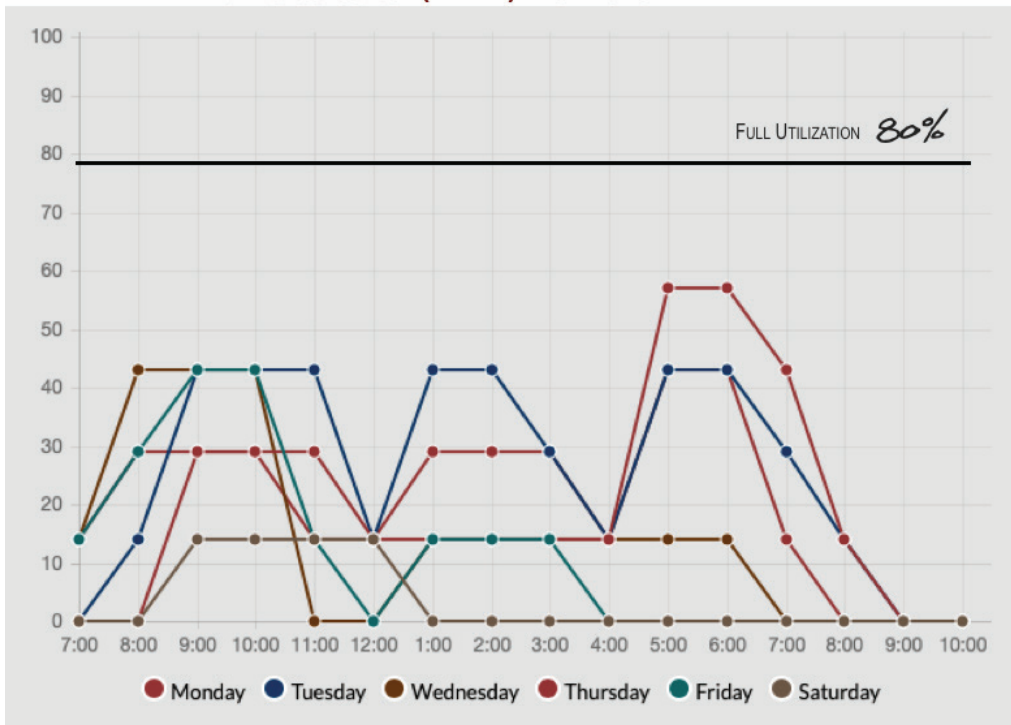


Exhibit A-33e
 NMSU DACC Weekly Room Utilization - Room Hours Instruction -
 Fall 2018, Gadsden Center

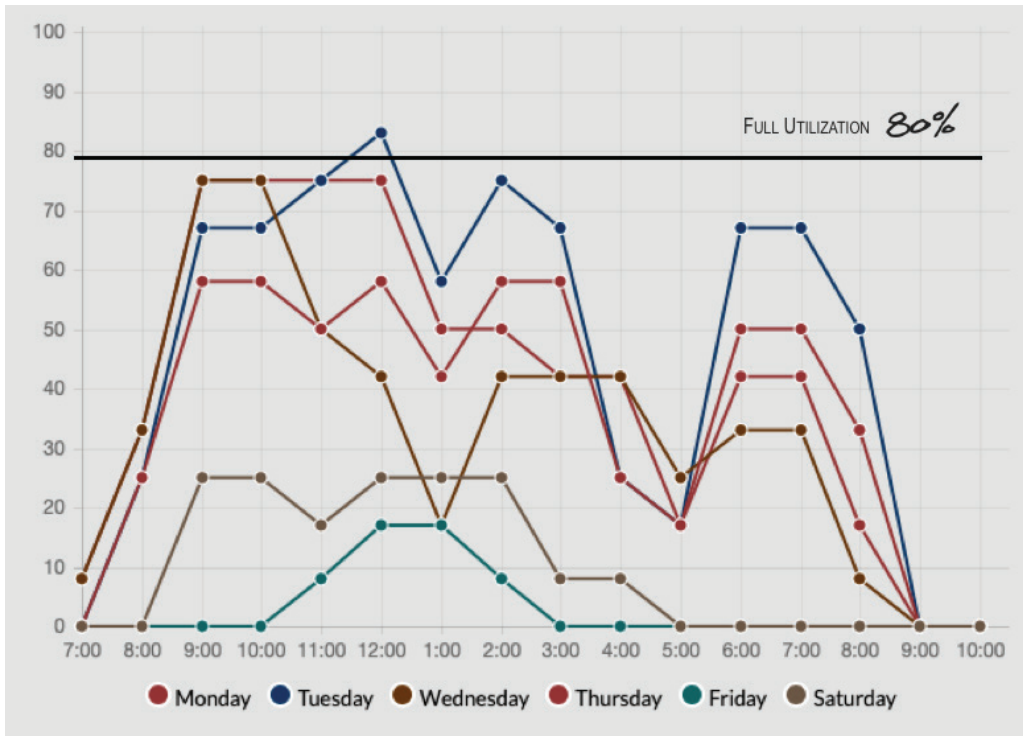


Exhibit A-33f
 NMSU DACC Weekly Room Utilization - Room Hours Instruction -
 Fall 2018, Sunland Park Center

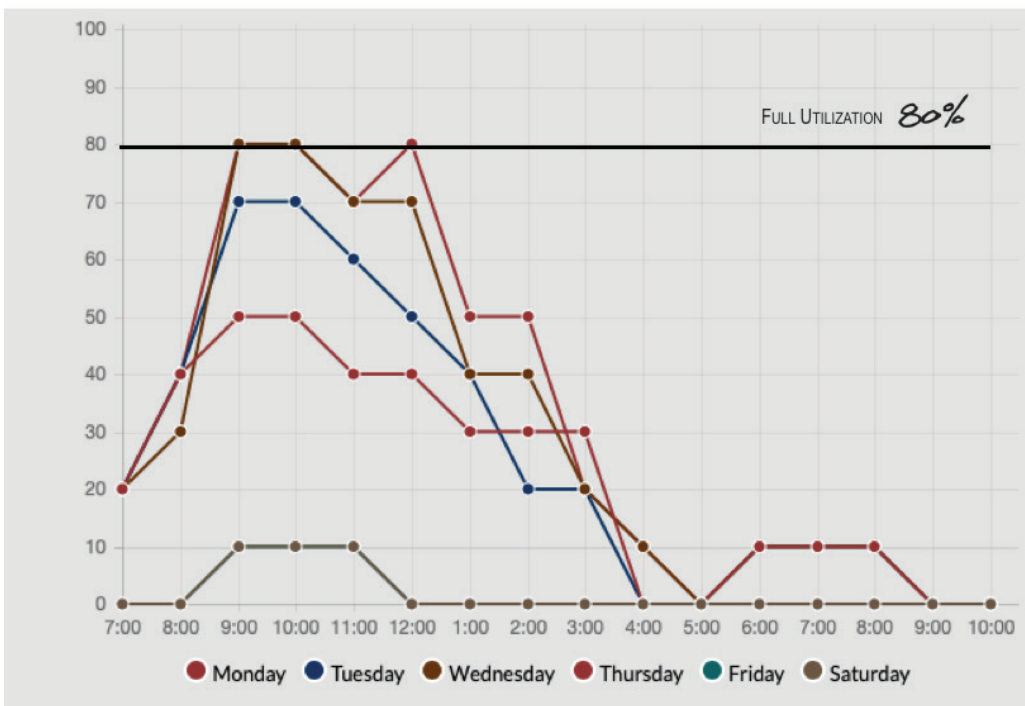


Exhibit A-339
 NMSU DACC Weekly Room Utilization - Room Hours Instruction -
 Fall 2018, Chaparral Center

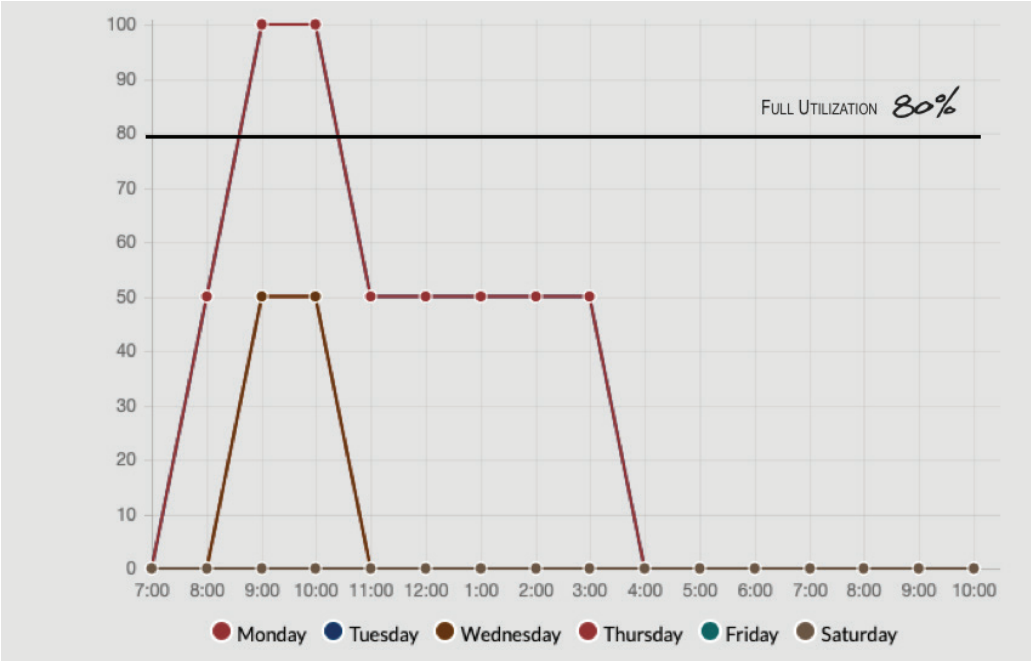


Exhibit A-34a
 NMSU DACC Weekly Room Utilization - Average Station Occupancy
 - Fall 2018, All Campuses

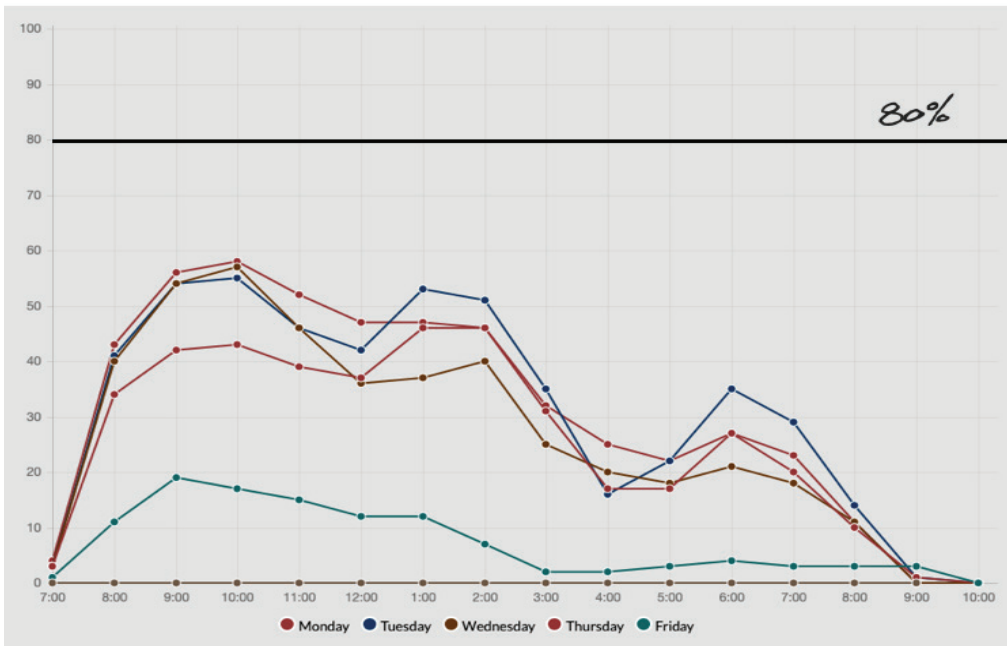


Exhibit A-34b
 NMSU DACC Weekly Room Utilization - Average Station Occupancy
 - Fall 2018, East Mesa Campus

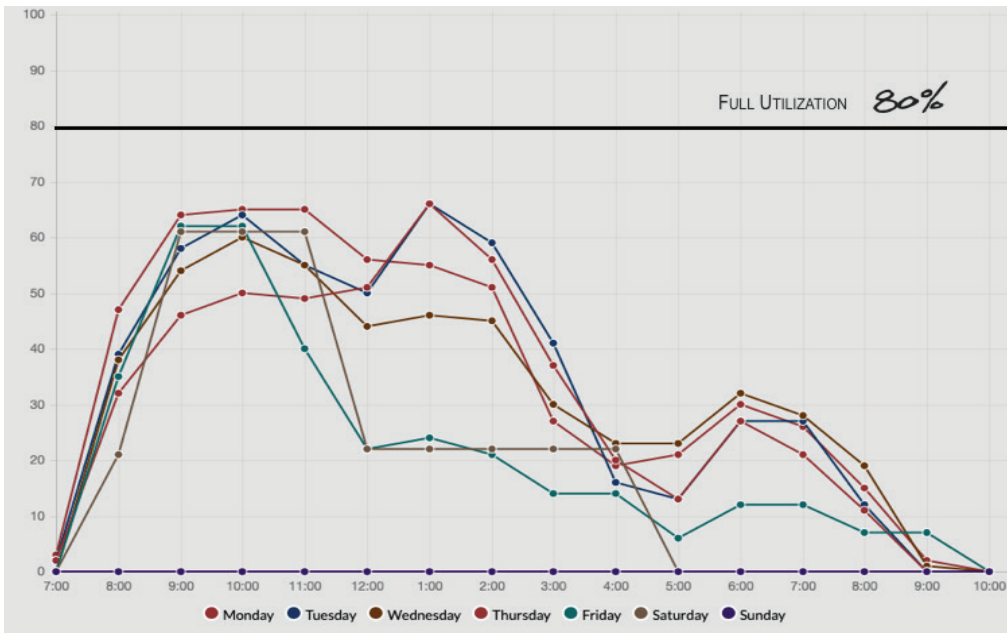


Exhibit A-34c
 NMSU DACC Weekly Room Utilization - Average Station Occupancy
 - Fall 2018, Espina Campus at NMSU

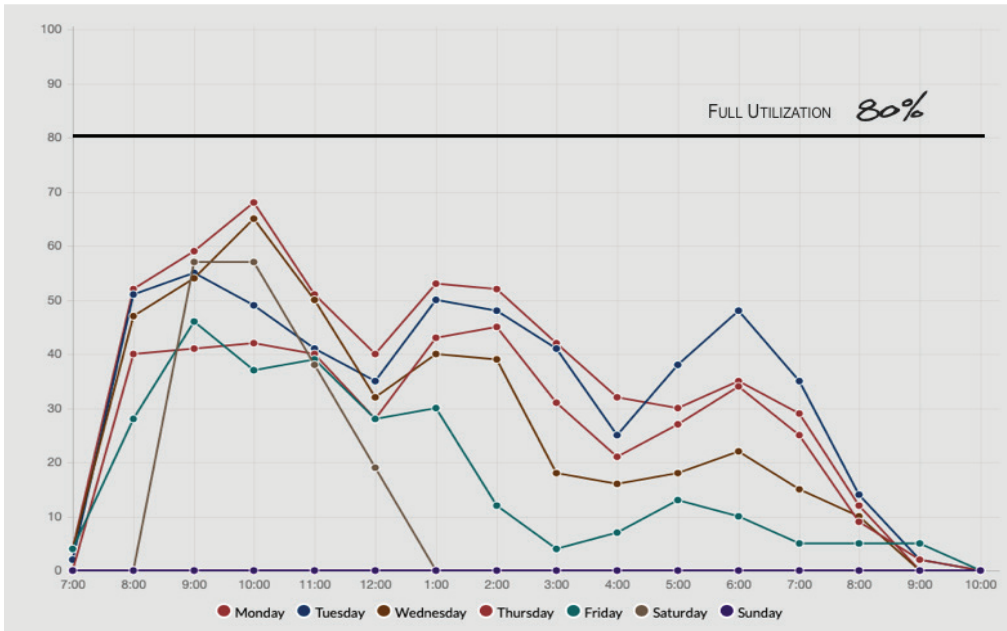


Exhibit A-34d
 NMSU DACC Weekly Room Utilization - Average Station Occupancy
 - Fall 2018, Workforce Center

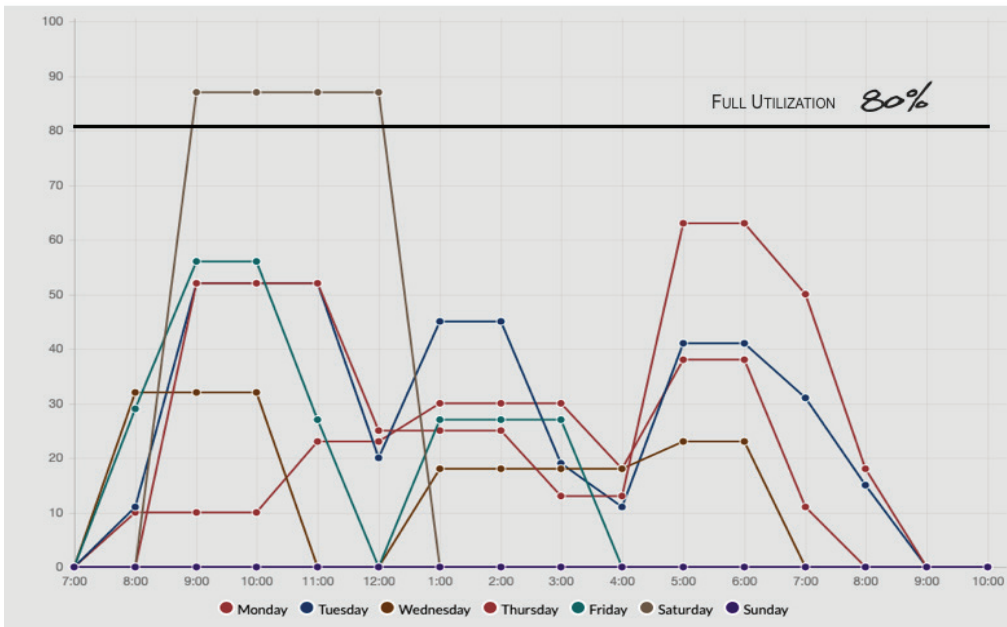


Exhibit A-34e
 NMSU DACC Weekly Room Utilization - Average Station Occupancy
 - Fall 2018, Gadsden Center

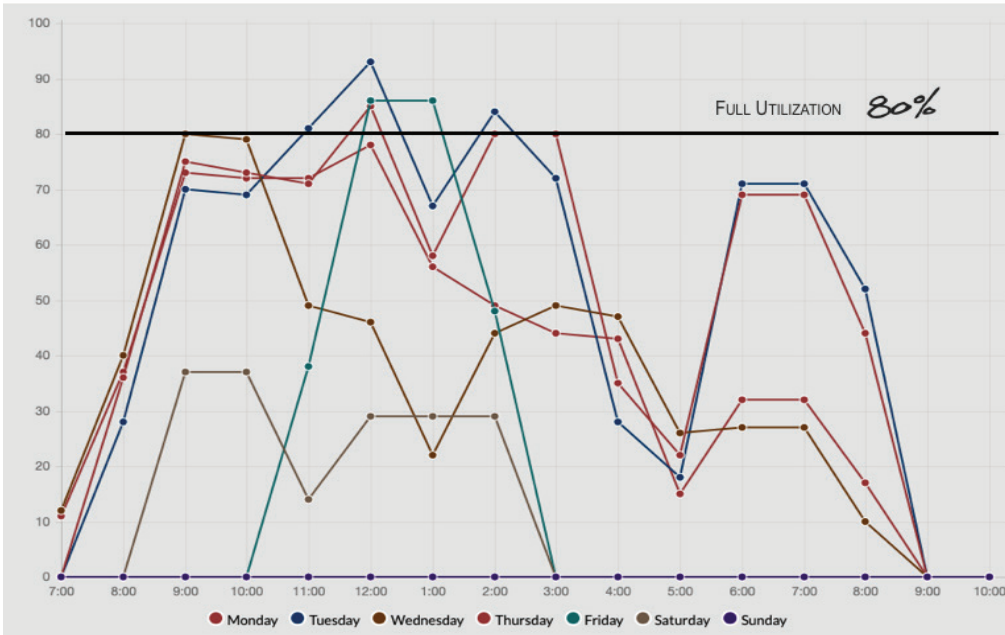


Exhibit A-34f
 NMSU DACC Weekly Room Utilization - Average Station Occupancy
 - Fall 2018, Sunland Park Center

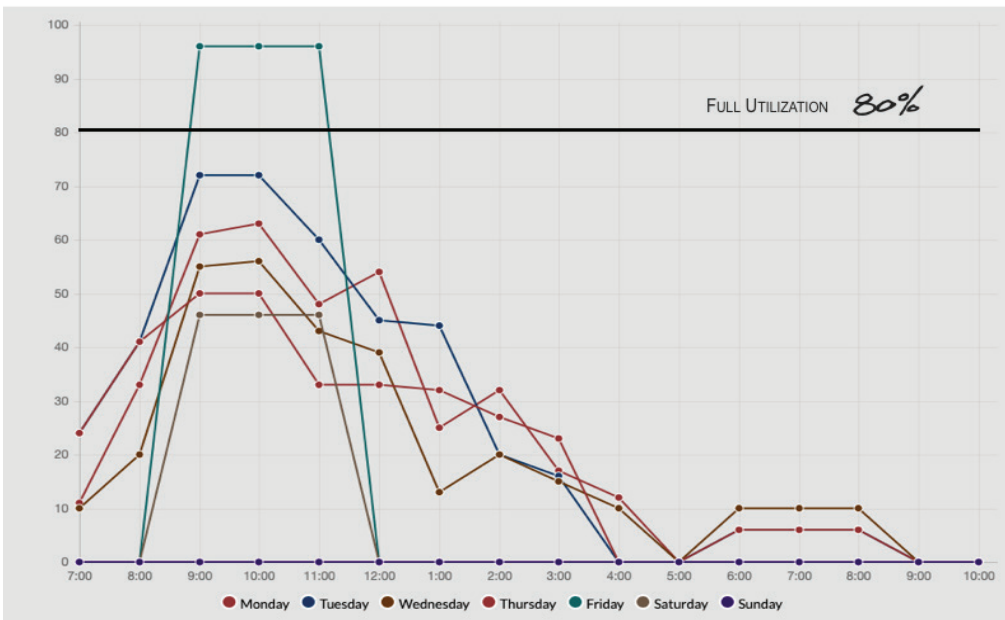
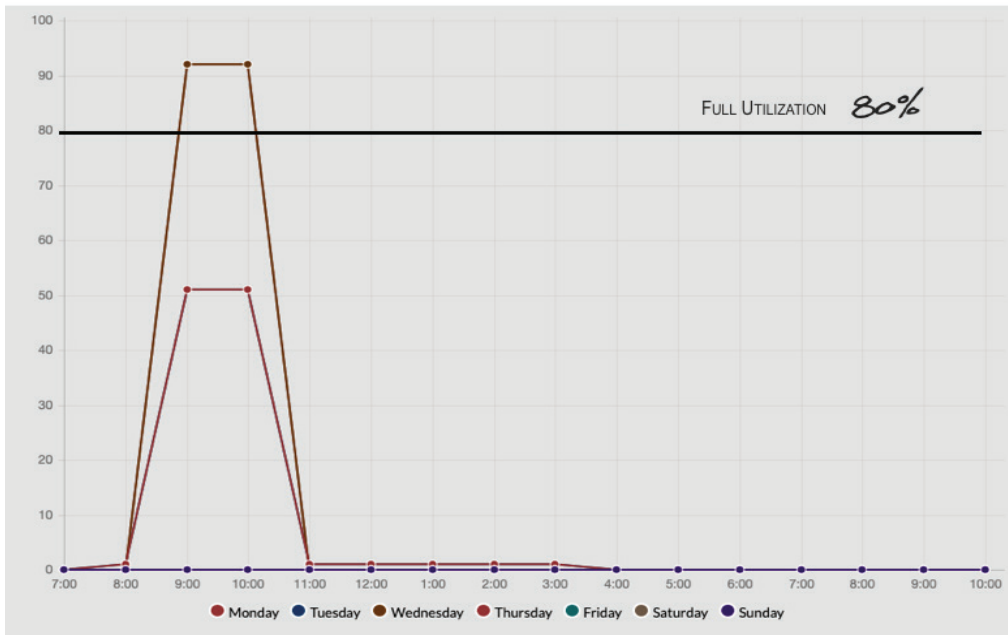


Exhibit A-34g
NMSU DACC Weekly Room Utilization - Average Station Occupancy
- Fall 2018, Chaparral Center



3.1.8 Peer College Comparisons

NMSU DACC is very efficient in the use of its facility resources, evidenced by gross square footage (instruction and general) / student FTE compared to other New Mexico community colleges (see Exhibit A-35). DACC's FTE/student is even a bit lower, based on 2017 square footage and FTE data. The southern area centers have the lowest space-per-FTE student (Exhibit A-36).

Exhibit A-35
Selected Peer Comparison (2015)

Institution	Fall 2015 HC ¹	Fall 2015 FTE ¹	Estimated Service Area Pop. ²	2015 Formula GSF ³	Formula GSF/Student (FTE)	Outstanding 2016 Mill Rate (Debt)
NMSU - DACC	8,252	4,482	216,577	545,984	121.82	0.750
Central New Mexico (CNM)	25,888	12,794	679,810	1,756,703	137.31	1.000
San Juan College	7,062	4,119	123,979	880,086	213.66	0.600
Santa Fe Community College	6,218	2,386	148,238	657,825	275.70	1.000
UNM - Gallup	2,473	1,419	75,397	299,101	210.78	NA
UNM - Valencia	2,282	1,024	76,312	178,876	174.68	0.850
Average (mean)					202.43	0.86
Median					210.78	0.93

NMSU DACC has the lowest Gross Square Foot / Full Time Equivalent (GSF/FTE) student of any New Mexico higher education institution

1. NM HED data
2. Service area is defined by underlying counties. Population is derived from Census Estimates
3. I&G Gross Square Feet (GSF) from 2017 LFC Report # 17-02

Exhibit A-36
Gross Square Feet (GSF) / Full Time Equivalent (FTE) Student by Area

	GSF**	2017-18		2025-26	
		FTE enrollment	GSF / FTE	FTE enrollment	GSF / FTE
Central Area	463,782	4,012	116	4,278	108
South Area	43,261	551	78	639	68
Border Area	32,410	258	125	299	108
Total All Campuses	539,453	4,822	112	5,217	103

The Southern Centers (Gadsden and Sunland Park) have the lowest current and projected GSF/FTE within DACC

NOTE: GSF / FTE = GROSS SQUARE FOOTAGE
FTE ENROLLMENT ASSUMED ON-LINE ENROLLMENT PROPORTIONATELY DISTRIBUTED

3.1.9 Capital Resources

Sources of Capital Funds

Higher educational institutions use capital funds to:

- Construct new facilities
 - Renovate existing facilities
 - Purchase and improve lands for educational use
 - Purchase instructional equipment
1. Local General Obligation (GO) Bonds - DACC may “borrow” up to 3% of assessed valuation of the district. GO bonds are debt financing that is repaid through a tax levy on the property owners of the service area. GO bonds require approval of the electorate in a general election.

Based on a presentation provided by RBC Capital Markets, DACC’s financial advisor, DACC can bond \$16 million in 2019 and 2023 and maintain the current tax rate of .75 mills. The State may “match” funds up to 75%, thus effectively raising the revenue available.

2. Revenue Bonds - DACC may “borrow” funds based on a stable revenue stream (e.g., student fees).

This bond requires approval by NMSU, NMHED and the New Mexico State Board of Finance, but does not require a general election.

3. State - DACC may request capital funds through the New Mexico HED process. NMHED prioritizes projects for inclusion as part of the governor’s requested budget to the legislature. Projects may be funded if they are:
 - Part of the governor’s budget
 - Approved by the legislature
 - Approved by the voters (if funded as part of the statewide GO bond)
 - Matched locally (at least a 25% local match)

Historically, about 60% of DACC’s capital funding is from local general obligation revenue and the rest is from the State and other sources.

DACC Finance Strategy

DACC uses a “cycling” approach to capital financing. With this approach, a capital program is based on bond issues on a regular cycle (DACC uses four years). The debt structure keeps taxes at a relatively constant level.

This approach allows the institution to develop a capital program based on realistic and steady revenue expectations. The advantage to the local taxpayer is that expenditures are based on a long-range plan open to scrutiny and that taxes are not raised (except perhaps in the first cycle).

DACC anticipates asking voters to approve a \$16 million bond in 2019 (funding Cycle 6) and in 2023 (funding Cycle 7).

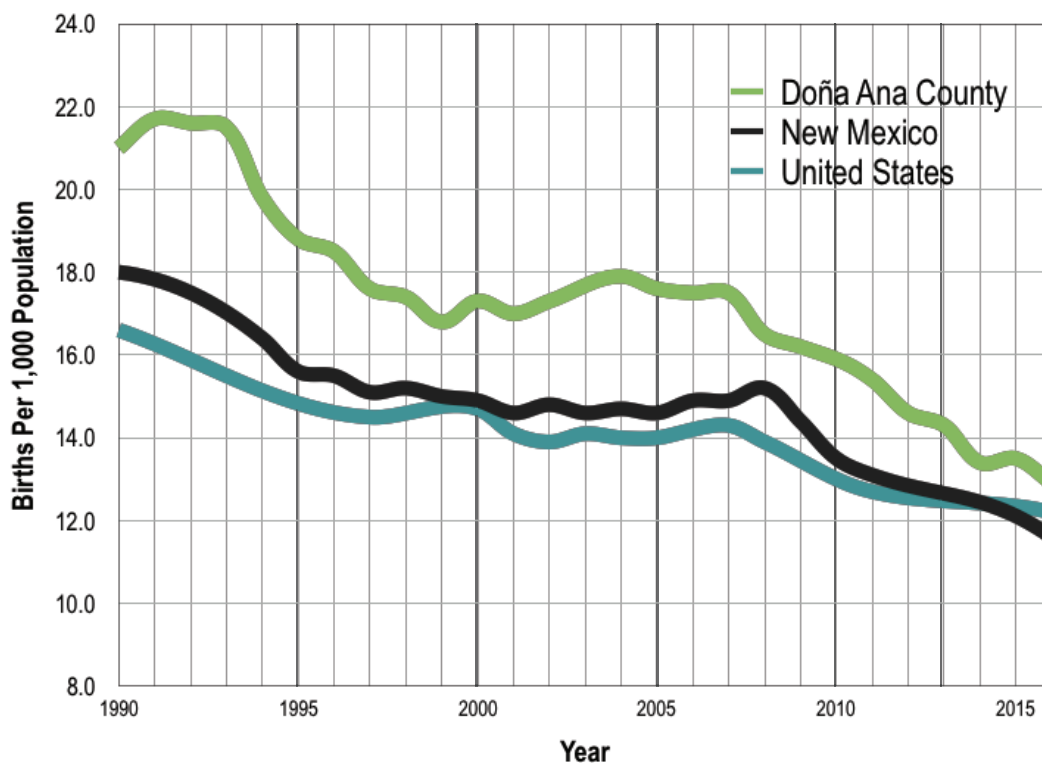
3.1.10 Service Area Demographics

This section supplements the overview projected in Section 2.3.2.

Population Trends

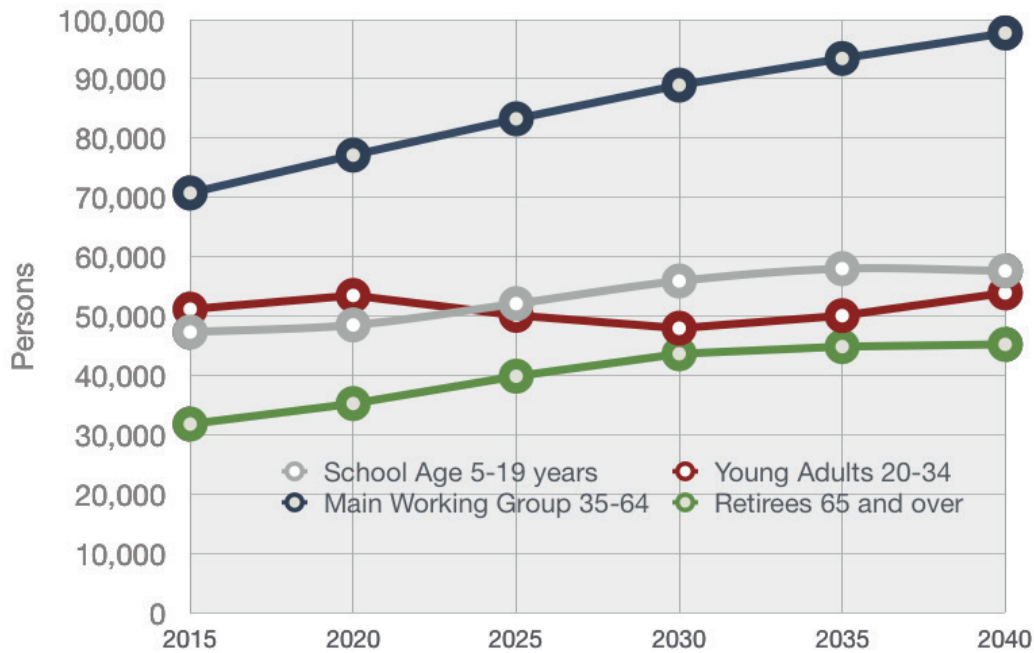
- Birth rates have declined
- Population projections show that the county will continue to grow, but at a slower rate
- UNM GPS projects the college-age population will decline then rise
- Working-age and retiree populations will continue to grow
- ARC projects that growth will be distributed geographically, similar to historic growth patterns

Exhibit A-37
Birth Rates in Doña Ana County, New Mexico, and the United States: 1990
- 2016



Source: New Mexico Department of Health, Vital Statistics

Exhibit A-38
Doña Ana County, Projected Population by Age: 2015 - 2040



Source: University of New Mexico- Bureau of Business and Economic Research, 2008 and Geospatial and Population Studies 2012 and 2017

Exhibit A-39
Doña Ana County, Historic and Projected Sub-Area Growth: 2010 - 2030

	1990	2000	2010	2015	2020	2025	2030
Doña Ana County	135,510	174,682	209,233	216,577	232,946	244,455	255,070

	ARC estimated percentage distribution						
North	3.0%	3.2%	2.7%	2.2%	2.1%	2.0%	1.8%
Central	75.1%	68.2%	70.4%	70.6%	70.5%	70.1%	70.0%
South	13.7%	18.0%	16.5%	15.9%	16.1%	16.5%	16.7%
Border	8.2%	10.6%	10.3%	11.3%	11.3%	11.4%	11.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	1990	2000	2010	2015	2020	2025	2030	Increase 2015 - 2030
North	4,020	5,587	5,719	4,795	4,892	4,889	4,591	-204
Central	101,830	119,154	147,362	150,961	164,227	171,363	178,549	27,588
South	18,585	31,377	34,548	34,068	37,504	40,335	42,597	8,529
Border	11,075	18,564	21,604	24,139	26,323	27,868	29,333	5,194
Total	135,510	174,682	209,233	213,963	232,946	244,455	255,070	41,107

ARC projects growth to follow a similar pattern experienced in the past in the future, adding over 40,000 people to the central, border, and southern areas by 2030

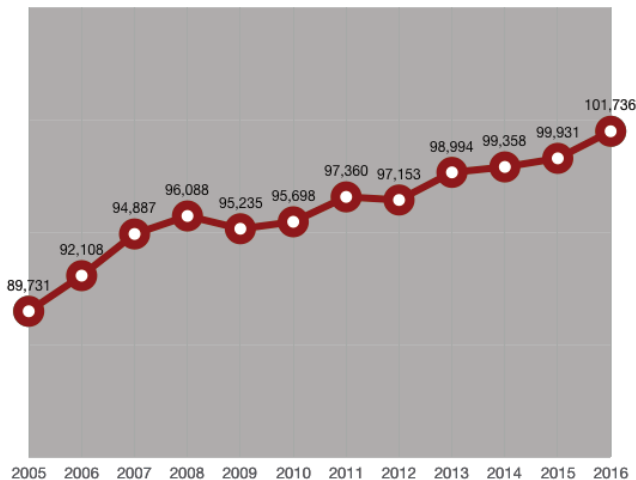
Sources:

US Decennial Census (1980-2010); American Communities Survey (ACS) 5-Year Estimate, 2011-2015
Population Projections Source (2020 - 2030): University of New Mexico Geospatial and Population Studies Group (formerly; Bureau of Business and Economic Research)
ARC assumed percentage distribution by area

Economy

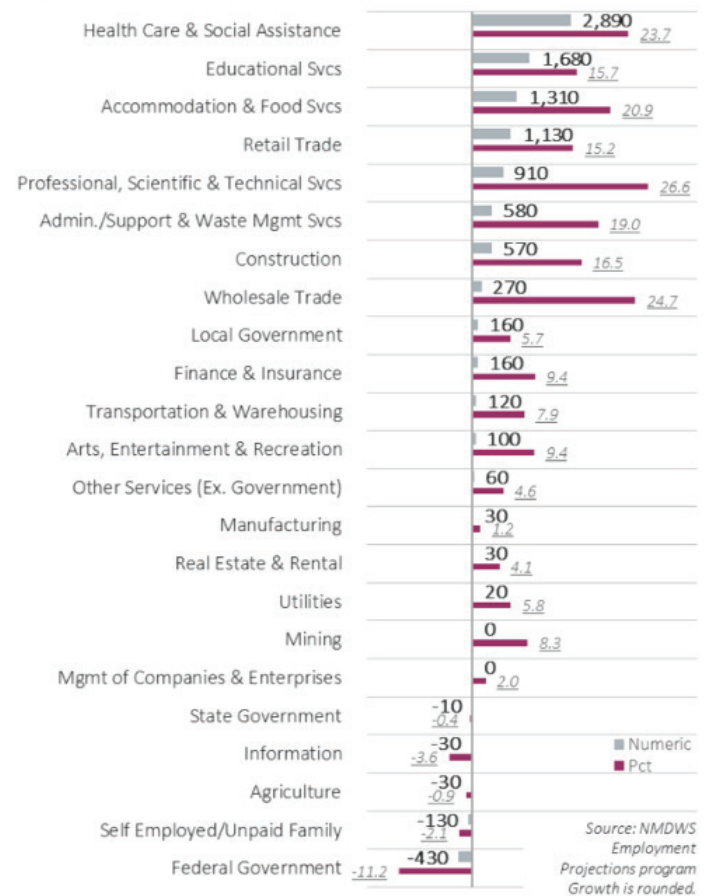
- Doña Ana County's economy remains strong
 - Employment has trended up
 - Steady to mild growth in most industries with growth projected to continue

Exhibit A-4
Doña Ana County, Total
Employment: 2005 - 2016



Source: Bureau of Economic Analysis, CA4 Personal Income and Employment by Major Component, 2018

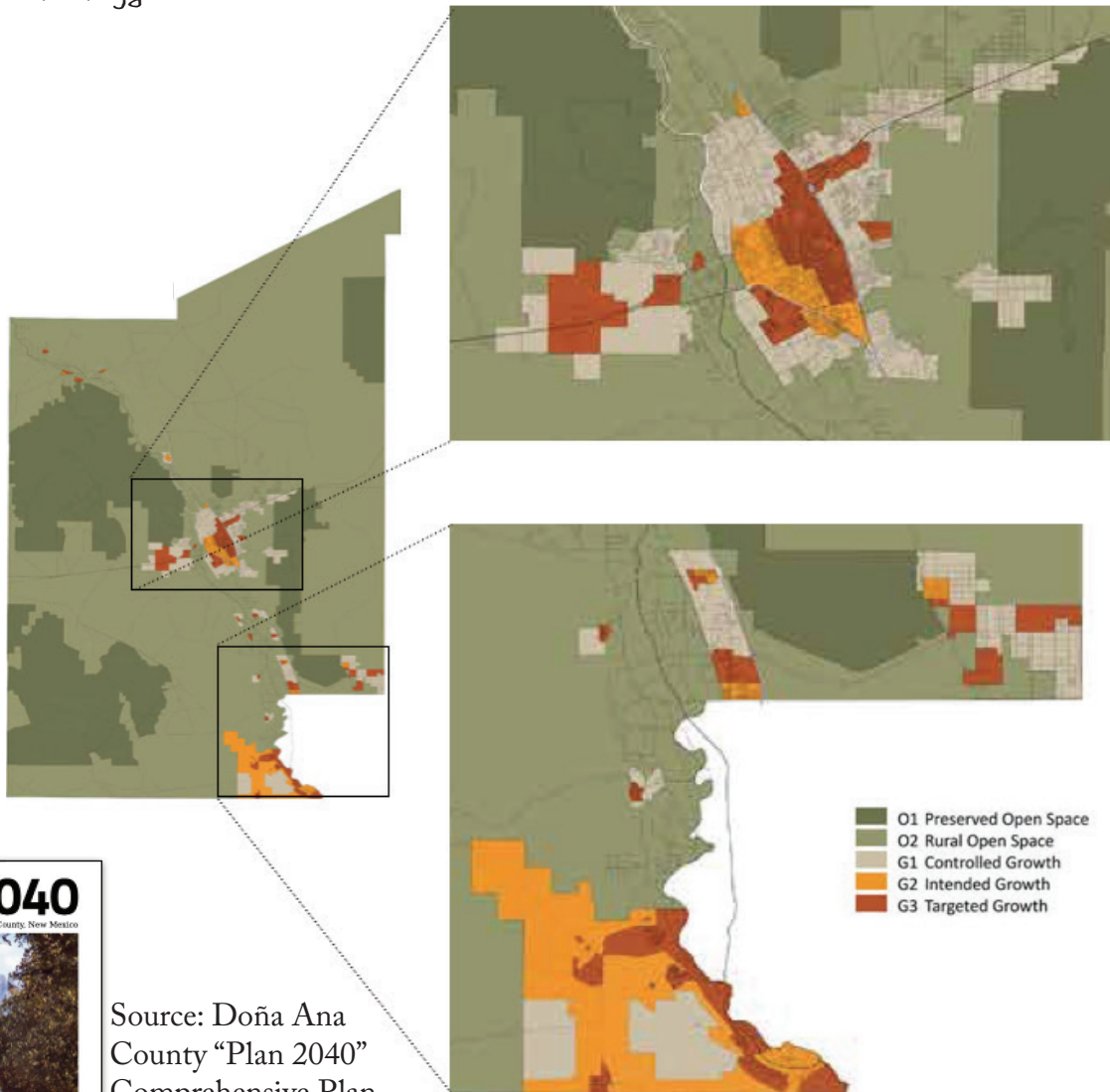
Exhibit A-4
Doña Ana County, Projected
Employment Growth - Las Cruces
Metropolitan Statistical Area (MSA):
2012 - 2022



Growth and Future Development

- The Doña Ana County 2040 plan outlines an aggressive growth scenario that focuses growth on infill development
- Growth in Las Cruces and El Paso drives development
- Doña Ana County is encouraging infill development within Las Cruces
- The Las Cruces 2040 Plan identifies concepts for future Las Cruces growth

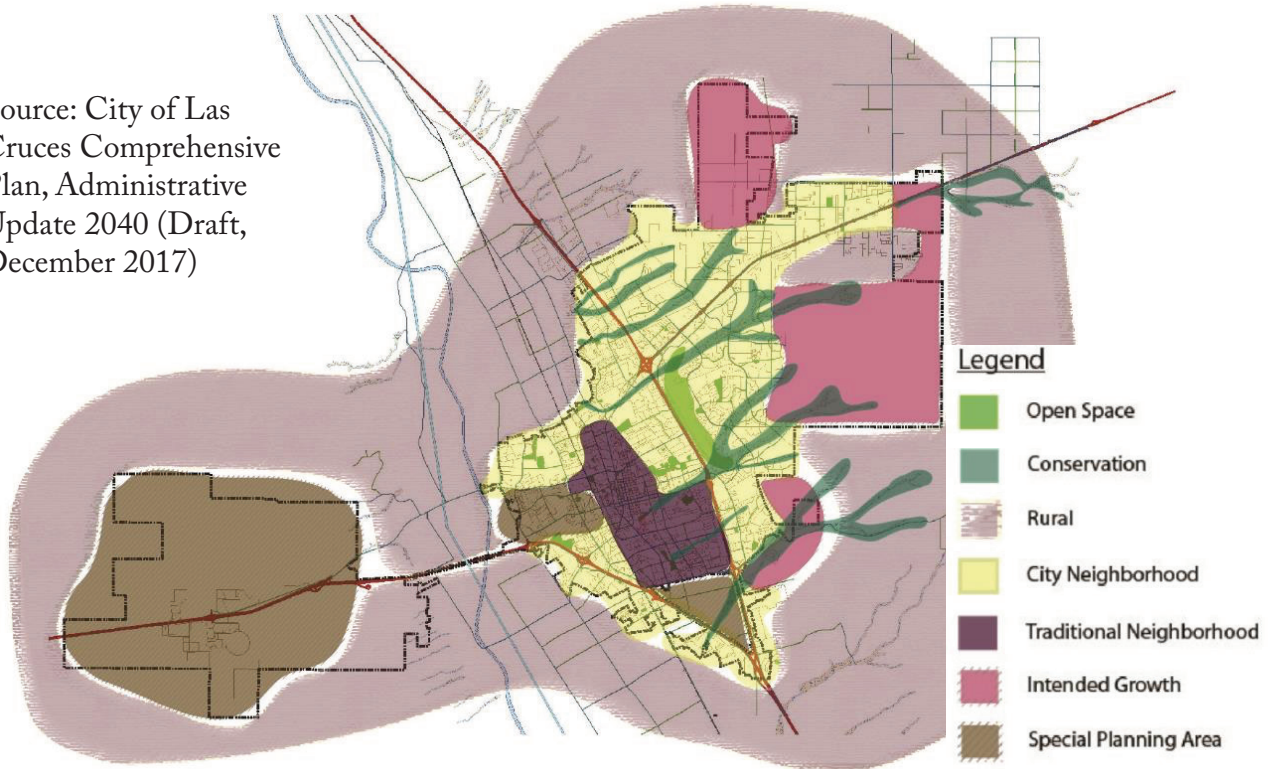
Exhibit A-42
Doña Ana County, 2040 Sector Plan
Growth Strategy



Source: Doña Ana County "Plan 2040" Comprehensive Plan, August 2015

Exhibit A-43
City of Las Cruces Comprehensive Plan, 2040 Future Concept Map

Source: City of Las Cruces Comprehensive Plan, Administrative Update 2040 (Draft, December 2017)



3.2 Future Conditions

3.2.1 Enrollment Projections

The National Center for Educational Statistics projects that total enrollment in postsecondary degree-granting institutions will increase nationally 5% from 2012-13 to 2025-26. However, New Mexico is one of six states that they project to be less than 5% (3.2%).

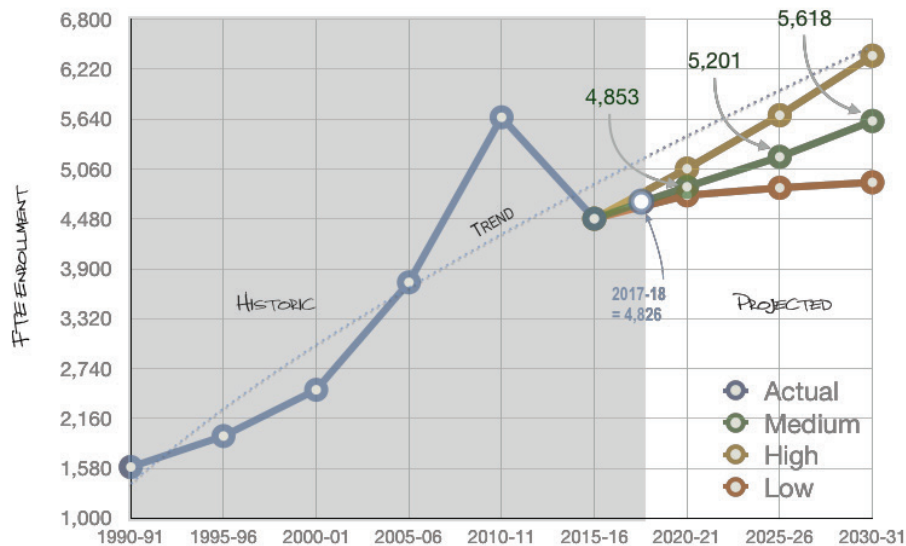
DACC's enrollment has declined about 17% since 2011. This enrollment drop reflects a general trend of decreases in higher education enrollment at the state and national levels. There are many suggested reasons for the enrollment decline in addition to general demographic variables, including:

- Concerns about cost and access
- Questions about value
- A focus on careers and job placement
- Declining state support

ARC projects DACC total enrollment to have modest growth to 2025. The recent general higher education downward trend is caused in part by a declining supply of high school graduates and concerns about higher education value offset by a rising population and a positive economic climate. ARC's mid-range projection assumes that DACC retains similar market penetration to the 15 year historic averages. The low-range projection assumes a 10- to 15-year low penetration, and the high-range assumes a 10-year average penetration. All projection scenarios are conservative with respect to peer college statistics. Further analysis assumes the mid-range projection series as the most likely.

Online participation has increased from 12.5% of the FTE enrollment in 2007 to 22.2% in 2017. Based on this enrollment trend and general higher education trends, ARC assumes that online participation will continue to increase to almost 30% by 2025, enrolling 1,456 FTE.

Exhibit A-44
DACC FTE Student Projection Series to 2030 (Source: ARC, Inc.)



Year	Doña Ana County Population	Service Pop. / FTE Ratio*
Five Year		
Average	217,660	43.79
Median	216,577	43.82
minimum	213,639	39.29
maximum	223,125	48.32
10 Year		
Average	213,127	41.48
Median	212,905	41.17
minimum	204,166	36.05
maximum	223,125	48.32
15 Year		
Average	207,260	45.44
Median	209,233	43.82
minimum	188,319	36.05
maximum	223,125	60.77

Service Population / FTE ratio is a measure of market penetration

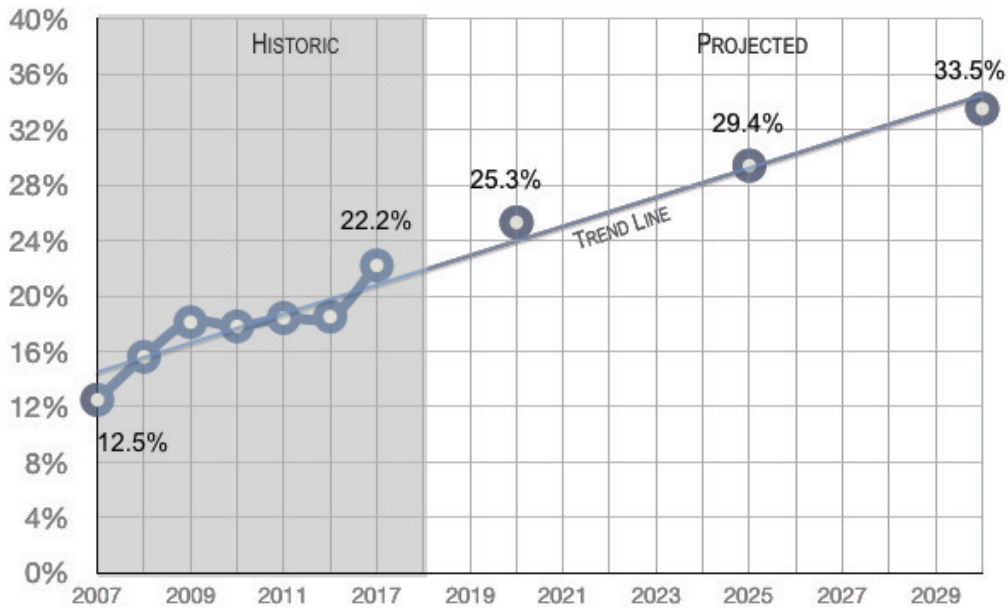
Year	Doña Ana County Population	Service Pop. / FTE Ratio*	Fall DABCC FTE
Low Projection			
2017-18	223,125	46.23	4,826
2020-21	232,946	49.00	4,754
2025-26	244,455	50.50	4,841
2030-31	255,070	52.00	4,905
Mid Projection			
2017-18	223,125	46.23	4,826
2020-21	232,946	48.00	4,853
2025-26	244,455	47.00	5,201
2030-31	255,070	45.40	5,618
High Projection			
2017-18	223,125	46.23	4,826
2020-21	232,946	46.00	5,064
2025-26	244,455	43.00	5,685
2030-31	255,070	40.00	6,377

Low assumes between a 10-15 year low (max) penetration

Mid assumes a 15 year average penetration

Mid assumes a ~10 year average penetration

Exhibit A-45
DACC Online Course Enrollment Trend



Online Courses as a Percent of all Courses,
Academic Year 2015-16

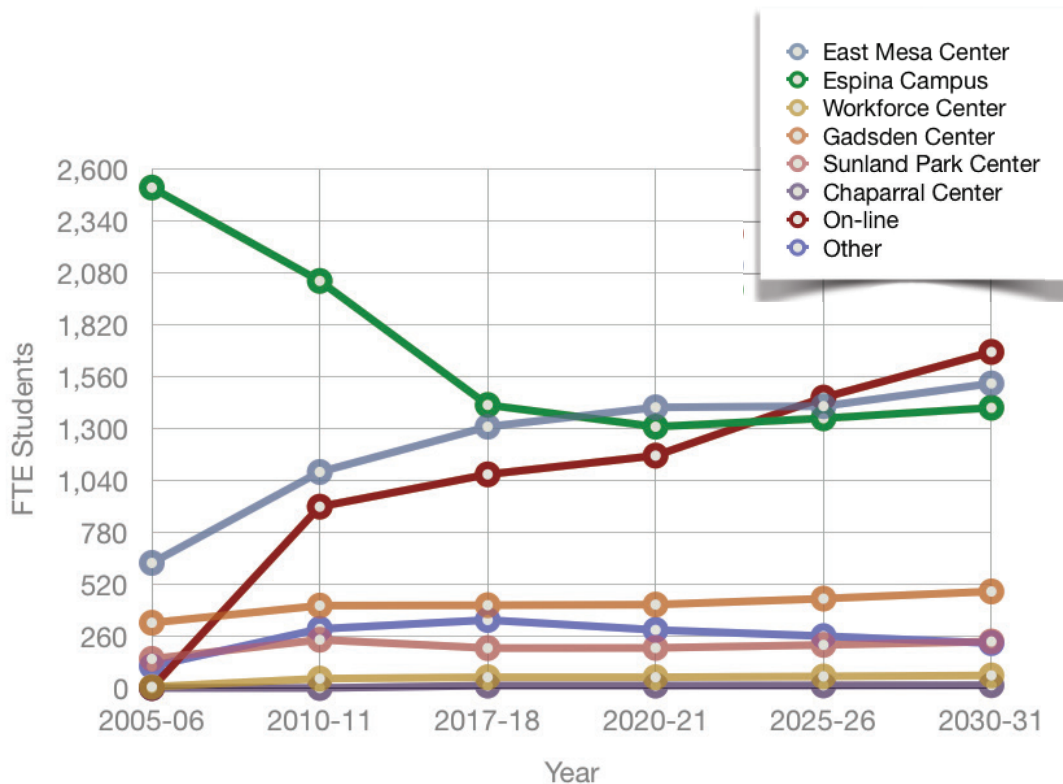
Institution	Courses Online	Credit Hours Online
NMSU Alamogordo	41%	56%
NMSU Grants	49%	53%
ENMU	40%	49%
WNMU	38%	46%
UNM	12%	44%
CCC	34%	42%
NMSU-Carlsbad	29%	35%
ENMU-Ruidoso	42%	35%
UNM-Valencia	27%	34%
NMJC	35%	34%
SJC	20%	30%
CNM	29%	28%
NMSU-Doña Ana	25%	24%
NMHU	17%	23%
NMSU	19%	21%
MCC	15%	18%
LCC	13%	17%
SFCC	14%	16%
UNM-Gallup	5%	15%
UNM-Taos	6%	10%
ENMU-Roswell	5%	4%
UNM-Los Alamos	28%	4%
NMT	8%	2%
NNMC	0%	0%

Source: NM HED

Exhibit A-46
 DACC Projected Enrollment by Campus (Source ARC Inc.)

	2005-06	2010-11	2017-18	Projected		
				2020-21	2025-26	2030-31
East Mesa Center	627	1,083	1,310	1,407	1,413	1,527
Espina Campus	2,509	2,041	1,419	1,310	1,352	1,405
Workforce Center	6	47	54	54	58	63
Gadsden Center	327	413	415	418	448	484
Sunland Park Center	146	242	200	201	216	233
Chaparral Center	0	0	12	12	13	14
On-line	0	909	1,071	1,165	1,456	1,685
Other	109	296	341	291	260	225
Total	3,724	5,032	4,822	4,859	5,217	5,635

	2005-06	2010-11	2017-18	Projected		
				2020-21	2025-26	2030-31
East Mesa Center	16.8%	21.5%	27.2%	29.0%	27.1%	27.1%
Espina Campus	67.4%	40.6%	29.4%	27.0%	25.9%	24.9%
Workforce Center	0.2%	0.9%	1.1%	1.1%	1.1%	1.1%
Gadsden Center	8.8%	8.2%	8.6%	8.6%	8.6%	8.6%
Sunland Park Center	3.9%	4.8%	4.1%	4.1%	4.1%	4.1%
Chaparral Center	0.0%	0.0%	0.2%	0.2%	0.2%	0.2%
On-line	0.0%	18.1%	22.2%	24.0%	27.9%	29.9%
Other	2.9%	5.9%	7.1%	6.0%	5.0%	4.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%



3.3 Itemized Capital Projects

Exhibit A-47
DACC Itemized Capital Projects,
2019-2026

Planned Funding Cycle	Area	Campus / Location	Project No.	Project No. / Title	Project Category	Years to Be Requested	Gross Square Feet (GSF)	Estimated Cost*	Proposed Funding	Percent Funding		Local GO Bond	State Appropriation	Project Narrative
										GO Bond	State			
6.	Central	Creative Media Facility	1.0	New Facility at Arrowhead Park	New Construction	2019	15,300	\$5,400,000	Local GO Bond	72.2%	27.8%	\$3,900,000	\$1,500,000	Construct a new facility at NMSU Arrowhead Research Park to support the DACC creative media programs in proximity to the Las Cruces Film Studio project.
6.	Central	All Central Campuses	2.0	Area Security / Safety Upgrades	Infrastructure / Security / Safety	2019		\$1,800,000	Local GO Bond	66.6%	33.3%	\$1,200,000	\$600,000	Makes improvements to Security and Surveillance access / control and camera Systems, exterior locks, and site lighting guided by the 2018 Technologies Systems Master Plan.
6.	Central	All Central Campuses	3.0	Infrastructure Improvements	Infrastructure	2019		\$2,100,000	Local GO Bond	66.6%	33.3%	\$1,400,000	\$700,000	Funds for maintenance and repair and site development
6.	Central	All Central Campuses	4.0	Classroom Upgrades / Facility Renewal / Renovations	Facility Renewal / Renovation	2019		\$2,250,000	Local GO Bond	66.6%	33.3%	\$1,500,000	\$750,000	Renovation to selected instructional areas including room configuration, furniture, room finishes, and instructional equipment guided by a Classroom Renovation Master Plan
6.	Central	All Central Campuses	5.0	Information Technology /Upgrades / Equipment Acquisition	Facility Renewal / Renovation	2019		\$4,500,000	Local GO Bond	66.6%	33.3%	\$3,000,000	\$1,500,000	Makes improvements to IT infrastructure, IT service rooms, and Audio Visual Spaces based on a 2018 Technologies Systems Master Plan.
6.	South	Gadsden Center	6.0	Advanced Technology Addition	New Construction	2019	15,800	\$5,500,000	Local GO Bond	54.5%	45.5%	\$3,000,000	\$2,500,000	Provides flexible class / labs to support DACC advanced technology programs (15,452 gross square feet, \$4.0 m, request 25% state match, \$1.0 m)
6.	South	All South Campuses	7.0	Area Security / Safety Upgrades	Infrastructure / Security / Safety	2019		\$300,000	Local GO Bond	66.6%	33.3%	\$200,000	\$100,000	Makes improvements to Security and Surveillance access / control and camera Systems, exterior locks, and site lighting guided by the 2018 Technologies Systems Master Plan.
6.	South	All South Campuses	8.0	Infrastructure Improvements	Infrastructure	2019		\$450,000	Local GO Bond	66.6%	33.3%	\$300,000	\$150,000	Funds for maintenance and repair and site development
6.	South	All South Campuses	9.0	Classroom Upgrades / Facility Renewal / Renovations	Facility Renewal / Renovation	2019		\$750,000	Local GO Bond	66.6%	33.3%	\$500,000	\$250,000	Renovation to selected instructional areas including room configuration, furniture, room finishes, and instructional equipment guided by a Classroom Renovation Master Plan
6.	South	All South Campuses	10.0	Information Technology /Upgrades / Equipment Acquisition	Facility Renewal / Renovation	2019		\$1,500,000	Local GO Bond	66.6%	33.3%	\$1,000,000	\$500,000	Makes improvements to IT infrastructure, IT service rooms, and Audio Visual Spaces based on a 2018 Technologies Systems Master Plan.
7.	Central	East Mesa	11.0	College/Industry Partnership in Student Learning Project	New construction	2023	10,000	\$2,900,000	Local GO Bond	100.0%	0.0%	\$2,900,000	\$0	New construction to provide opportunities for community engagement and student internships
7.	Central	East Mesa	12.0	Future Program Enhancements (New and Expanded)	New construction	2023	13,900	\$5,000,000	Local GO Bond	76.0%	24.0%	\$3,800,000	\$1,200,000	New construction to provide instructional classrooms and laboratories to support new programmatic initiatives and enhancements
7.	Central	East Mesa	13.0	Physical Plant Facility	New construction	2023	6,900	\$1,800,000	Local GO Bond	75.0%	25.0%	\$1,350,000	\$450,000	New construction to provide warehouse, shop, and office facilities to support site and facility maintenance
7.	Central	All Central Campuses	14.0	Infrastructure Improvements	Facility Renewal / Renovation	2023		\$1,125,000	Local GO Bond	66.6%	33.3%	\$750,000	\$375,000	Funds for maintenance and repair and site development
7.	Central	All Central Campuses	15.0	Classroom Upgrades / Facility Renewal / Renovations	Facility Renewal / Renovation	2023		\$2,625,000	Local GO Bond	66.6%	33.3%	\$1,750,000	\$875,000	Renovation to selected instructional areas including room configuration, furniture, room finishes, and instructional equipment guided by a Classroom Renovation Master Plan
7.	Central	All Central Campuses	16.0	Information Technology /Upgrades / Equipment Acquisition	Facility Renewal / Renovation	2023		\$2,625,000	Local GO Bond	66.7%	33.3%	\$1,750,000	\$875,000	Makes improvements to IT infrastructure, IT service rooms, and Audio Visual Spaces based on a 2018 Technologies Systems Master Plan.
7.	South	Sunland Park Center	17.0	Replace Portables with Permanent / Student Center	New Construction	2023	8,400	\$2,400,000	Local GO Bond	75.0%	25.0%	\$1,800,000	\$600,000	New construction to replace portable classrooms with permanent facilities and provide a student gathering area
7.	South	All South Campuses	18.0	Infrastructure Improvements	Infrastructure / Security / Safety	2023		\$600,000	Local GO Bond	66.6%	33.3%	\$400,000	\$200,000	Makes improvements to Security and Surveillance access / control and camera Systems, exterior locks, and site lighting guided by the 2018 Technologies Systems Master Plan.
7.	South	All South Campuses	19.0	Classroom Upgrades / Facility Renewal / Renovations	Infrastructure	2023		\$1,125,000	Local GO Bond	66.6%	33.3%	\$750,000	\$375,000	Renovation to selected instructional areas including room configuration, furniture, room finishes, and instructional equipment guided by a Classroom Renovation Master Plan
7.	South	All South Campuses	20.0	Information Technology /Upgrades / Equipment Acquisition	Facility Renewal / Renovation	2023		\$1,125,000	Local GO Bond	66.6%	33.3%	\$750,000	\$375,000	Makes improvements to IT infrastructure, IT service rooms, and Audio Visual Spaces based on a 2018 Technologies Systems Master Plan.

Totals	\$45,875,000	\$32,000,000	\$13,875,000
---------------	---------------------	---------------------	---------------------

Timing	Local GO Bond	Potential State Appropriation
Cycle 1 (1995-1998) - Completed	\$7,500,000	\$4,700,000
Cycle 2 (1999-2002) - Completed	\$9,000,000	\$6,450,000
Cycle 3 (2005-2008) - Completed	\$18,650,000	\$6,450,000
Cycle 4 (2009-2012) - Completed	\$20,000,000	\$13,000,000
Cycle 5 (2015-2018) - Completed / In Progress	\$15,000,000	\$4,000,000
Total	\$70,150,000	\$34,600,000
	67%	33%

Timing	Local GO Bond	Potential State Appropriation
Cycle 6 (2019-2022) - Planned	\$16,000,000	\$8,550,000
Cycle 7 (2023-2026) - Planned	\$16,000,000	\$5,325,000
Total	\$32,000,000	\$13,875,000
	70%	30%

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3.4 Information Technology Master Plan

Prepared by Bridgers and Paxton Consulting Engineers

DACC Facilities Master Plan 2018 – Technology Systems

Prepared for

Doña Ana Community College

Prepared by



September 14, 2018
Project No. 7876

EXECUTIVE SUMMARY

The following document outlines the observations and recommendations that B&P proposes for technology and AV systems (herein collectively referred to as “Technology”) for the Doña Anna County Community College Campuses.

After visiting each campus within the district, several observations were made concerning IT Systems, Security Systems, A/V systems, ITS cabling infrastructure and IT rooms.

Although the Doña Anna Community College is to follow NMSU’s Technology standards, there are certain scenarios that require adaptation of those standards.

A common theme when discussing standards and technology in general with the DACC staff is the need for them to be more involved in the following areas:

- Decision making processes
- Contractor selections
- System type(s)
- Cabling and Connectivity solution selection

The practice of keeping the DACC staff in the “loop” will help with contractor productivity and will lead to installations that are truly complete turn-key systems. It is noted, in areas within the body of this assessment, that newly installed cabling had been “painted” by other trades after the data cabling installation. This is unacceptable in that paint on the cable degrades the cable, changes the flame spread characteristics of the cable and voids the manufacturer’s warranty. With proper oversight and coordination, instances like these can be avoided.

In numerous cases, as noted in the report, Category 5 cable is still being used and in some cases mixed in with Category 6 cabling. Besides the obvious bandwidth advantages, Category 6 and 6A cabling minimizes crosstalk. Electronic equipment (including category cabling) emit electromagnetic signals. When lots of cables are near one another, these cables can interfere with one another. This interference is referred to as “crosstalk”. Crosstalk increases errors and lost packets (among other issues). Newer versions of category cables (i.e. Category 6 and 6A cables) reduce the impact of crosstalk through a variety of methods, including improved shielding and twisted cable design. The phasing out of Category 5 and 5e cables and migrating to Category 6 cabling will be beneficial to the overall performance of the network as well as minimizing trouble reports to the IT staff.

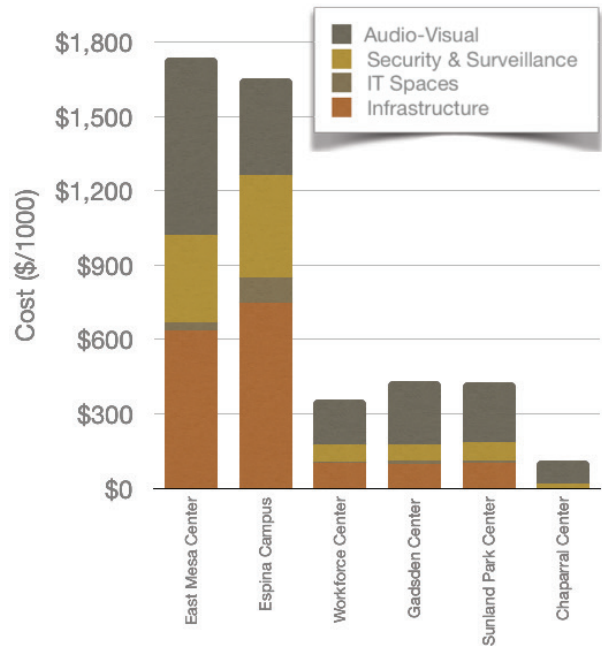
Typically Educational Technology (specifically Audio-Visual systems) master planning is developed as a direct complement to the Educational Master Plan (i.e. curricula planning) in order to ensure that the technology is tailored to specific instructional needs. However, DACC has a somewhat unique issue in that the classroom A/V systems are expected to generally follow NMSU’s standards rather than be developed specially for DACC. In light of those restrictions, this report generally provides the recommended approach to improving the current classroom A/V systems while maintaining as much compliance with NMSU’s standards as possible.

Exhibit A-48 DACC Informational Technology Summary

Status	Key
Excellent	■
Good	■
Fair	■
Poor	■

	Infrastructure (Note 1) Upgrades				IT Spaces (Note 2)		Security & Surveillance Systems (Note 3)			Audio-Visual Systems (Note 4)			
	Cabling Upgrades	WiFi Upgrades	VoIP	UPS	Capital Need	Status	Capital Need	Cameras	Video Storage	Access Control	Capital Need	Status	Capital Need
East Mesa Center	■	■	■	■	\$634,784	■	\$34,000	■	■	■	\$353,327	■	\$714,227
DAEM-East Mesa Campus	■	■	■	■		■		■	■	■		■	
DADM-Digital Media	■	■	■	■		■		■	■	■		■	
DAAR-Academic Resources	■	■	■	■		■		■	■	■		■	
DAAU-Auditorium	■	■	■	■		■		■	■	■		■	
DASR-Student Resources	■	■	■	■		■		■	■	■		■	
Espina Campus	■	■	■	■	\$746,496	■	\$104,444	■	■	■	\$413,579	■	\$387,929
DASH-Main Building	■	■	■	■		■		■	■	■		■	
DATS-Technical Studies	■	■	■	■		■		■	■	■		■	
DALR-Learning Resources Center	■	■	■	■		■		■	■	■		■	
DACL-Classroom Building	■	■	■	■		■		■	■	■		■	
DAHL-Health and Public Services	■	■	■	■		■		■	■	■		■	
Workforce Center (DAWD)	■	■	■	■	\$102,822	■	\$5,200	■	■	■	\$70,696	■	\$179,277
Gadsden Center (DAGC)	■	■	■	■	\$96,496	■	\$15,150	■	■	■	\$67,454	■	\$255,798
Sunland Park Center (DASP)	■	■	■	■	\$103,712	■	\$8,700	■	■	■	\$70,912	■	\$245,606
Chaparral Center (DACH)	■	■	■	■	\$0	■	\$0	■	■	■	\$17,735	■	\$92,383
					\$1,684,310		\$167,494				\$993,703		\$1,875,220
\$4,720,728													

	Infrastructure	IT Spaces	Security & Surveillance Systems	Audio-Visual Systems
East Mesa Center	\$635,000	\$34,000	\$353,000	\$714,000
Espina Campus	\$746,000	\$104,000	\$414,000	\$388,000
Workforce Center	\$103,000	\$5,000	\$71,000	\$179,000
Gadsden Center	\$96,000	\$15,000	\$67,000	\$256,000
Sunland Park Center	\$104,000	\$9,000	\$71,000	\$246,000
Chaparral Center	\$0	\$0	\$18,000	\$92,000
Total	\$1,684,000	\$167,000	\$994,000	\$1,875,000
Grand Total	\$4,720,000			



See Exhibit A-49 for a detailed description and cost breakdown

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	Infrastructure			IT Spaces			Security & Surveillance Systems (Note 3)									Audio-Visual Systems (Note 4)																
	Cabling Basis Unit (GSF)	Cost Basis	Note 1	Note 2		Note 3									Note 4																	
			Capital Need	IT Spaces	Cost Basis	Capital Need	Cameras Basis Unit (GSF)	Cost Basis	Cameras Cost	Video Server Storage	Cost Basis	Video Storage Cost	Access Control Basis Unit	Cost Basis	Access Control Cost	Capital Need	Refresh Spaces	Cost Basis	Refresh Cost	Lecture Capture Spaces	Cost Basis	Lecture Capture Cost	Collaboration Spaces	Cost Basis	Collab. Cost	Open Labs To Upgrade	Cost Basis	Open Labs Upgrade Cost	Conference Rooms	Cost Basis	Conference Rooms Cost	Capital Need
East Mesa Center			\$634,784			\$34,000			\$148,778			\$28,000			\$176,549	\$353,327			\$429,891			\$30,000			\$94,600			\$50,550			\$109,186	\$714,227
DAEM-East Mesa Campus	50,666	\$3.20	\$162,131	4	\$4,175	\$16,700	50,666	\$0.75	\$38,000	1	\$28,000	\$28,000	50,666	\$0.89	\$45,093	\$111,092	12	\$13,027	\$156,324							0	\$25,275	\$0	4	\$9,926	\$39,704	\$220,948
DADM-Digital Media	16,738	\$3.20	\$53,562	1	\$1,500	\$1,500	16,738	\$0.75	\$12,554	0	\$0	\$0	16,738	\$0.89	\$14,897	\$27,450	3	\$13,027	\$39,081							1	\$25,275	\$25,275	1	\$9,926	\$9,926	\$99,202
DAAR-Academic Resources	52,864	\$3.20	\$169,165	1	\$4,300	\$4,300	52,864	\$0.75	\$39,648	0	\$0	\$0	52,864	\$0.89	\$47,049	\$86,697	0	\$13,027	\$0	2	\$15,000	\$30,000	2	\$47,300	\$94,600	1	\$25,275	\$25,275	2	\$9,926	\$19,852	\$70,047
DAAU-Auditorium	11,593	\$3.20	\$37,098	1	\$2,500	\$2,500	11,593	\$0.75	\$8,695	0	\$0	\$0	11,593	\$0.89	\$10,318	\$19,013	1	\$13,027	\$13,027							0	\$25,275	\$0	0	\$9,926	\$0	\$37,947
DASR-Student Resources	66,509	\$3.20	\$212,829	3	\$3,000	\$9,000	66,509	\$0.75	\$49,882	0	\$0	\$0	66,509	\$0.89	\$59,193	\$109,075	17	\$13,027	\$221,459							0	\$25,275	\$0	4	\$9,926	\$39,704	\$286,083
Espina Campus			\$746,496			\$104,444			\$174,960			\$31,000			\$207,619	\$413,579			\$143,297			\$30,000			\$94,600			\$50,550			\$69,482	\$387,929
DASH-Main Building	107,644	\$3.20	\$344,461	8	\$7,818	\$62,544	107,644	\$0.75	\$80,733	1	\$31,000	\$31,000	107,644	\$0.89	\$95,803	\$207,536	0	\$13,027	\$0							1	\$25,275	\$25,275	4	\$9,926	\$39,704	\$89,899
DATS-Technical Studies	39,485	\$3.20	\$126,352	1	\$5,250	\$5,250	39,485	\$0.75	\$29,614	0	\$0	\$0	39,485	\$0.89	\$35,142	\$64,755	0	\$13,027	\$0							0	\$25,275	\$0	0	\$9,926	\$0	\$24,920
DALR-Learning Resources Center	23,836	\$3.20	\$76,275	1	\$12,000	\$12,000	23,836	\$0.75	\$17,877	0	\$0	\$0	23,836	\$0.89	\$21,214	\$39,091	0	\$13,027	\$0	2	\$15,000	\$30,000	2	\$47,300	\$94,600	1	\$25,275	\$25,275	2	\$9,926	\$19,852	\$70,047
DACL-Classroom Building	20,578	\$3.20	\$65,850	1	\$12,000	\$12,000	20,578	\$0.75	\$15,434	0	\$0	\$0	20,578	\$0.89	\$18,314	\$33,748	11	\$13,027	\$143,297							0	\$25,275	\$0	0	\$9,926	\$0	\$168,217
DAHL-Health and Public Services	41,737	\$3.20	\$133,558	1	\$12,650	\$12,650	41,737	\$0.75	\$31,303	0	\$0	\$0	41,737	\$0.89	\$37,146	\$68,449	0	\$13,027	\$0							0	\$25,275	\$0	1	\$9,926	\$9,926	\$34,846
Workforce Center	32,132	\$3.20	\$102,822	1	\$5,200	\$5,200	32,132	\$0.75	\$24,099	1	\$18,000	\$18,000	32,132	\$0.89	\$28,597	\$70,696	13	\$13,027	\$169,351	0	\$15,000	\$0	0	\$47,300	\$0	0	\$25,275	\$0	1	\$9,926	\$9,926	\$179,277
Gadsden Center	30,155	\$3.20	\$96,496	2	\$7,575	\$15,150	30,155	\$0.75	\$22,616	1	\$18,000	\$18,000	30,155	\$0.89	\$26,838	\$67,454	11	\$13,027	\$143,297	2	\$15,000	\$30,000	1	\$47,300	\$47,300	1	\$25,275	\$25,275	1	\$9,926	\$9,926	\$255,798
Sunland Park Center	32,410	\$3.20	\$103,712	2	\$4,350	\$8,700	32,410	\$0.75	\$24,308	1	\$18,000	\$18,000	32,410	\$0.89	\$28,605	\$70,912	15	\$13,027	\$195,405	1	\$15,000	\$15,000	0	\$47,300	\$0	1	\$25,275	\$25,275	1	\$9,926	\$9,926	\$245,606
Chaparral Center	10,814	\$0.00	\$0	1	\$0	\$0	10,814	\$0.75	\$8,110	0	\$0	\$0	10,814	\$0.89	\$9,624	\$17,735	4	\$13,027	\$52,108	1	\$15,000	\$15,000	0	\$47,300	\$0	1	\$25,275	\$25,275	0	\$9,926	\$0	\$92,383
Total	537,161		\$1,684,310	28		\$167,494	537,161		\$402,870	5	\$113,000	\$536,891		\$477,833	\$993,703	87		\$1,133,349	8	\$120,000	5	\$236,500	7	\$176,925	21	\$208,446			\$208,446	\$1,875,220		
Grand Total															\$4,720,728																	
			\$1,684,400			\$167,500									\$993,800																\$1,875,300	
															\$4,721,000																	
															\$5,158,764.17																	
															\$5,200,000																	

Notes

1. Infrastructure

Complete Wi-Fi upgrades at all campuses/all buildings.

- Replace all Category 3, Category 5, and eventually Category 5e cabling with new Category 6 standard (This includes jacks, patch panels and patch cords).
- Remove all old abandoned cabling from all pathways (conduit, cable trays, etc.). This will allow existing pathways to be utilized for new category cabling installations/upgrades.
- Add UPS/4-hour battery backup to IT rooms that house security headend equipment, access control, and security cameras.
- Add emergency/generator power to the data center.
- Critical component replacement stock should be expanded upon to include switches and routers in case of a failure. This will minimize "down" time.

2. IT Spaces

- Remove all old abandoned cabling from all pathways (conduit, cable trays, etc.). This will allow existing pathways to be utilized for new category cabling installations/upgrades.
- Move all external IT spaces indoors (e.g. DASH #M114, DASH #M116, DAGC #E110).
- IT spaces should not be used as storage closets and all materials not related to IT shall be removed to observe proper working clearances in each IT space.
- Proper cable management should be observed, both horizontal and vertical for all data racks and cabinets.

- Add proper cooling to IT rooms that exceed 78 degrees F., due to electrical/heat loads.
 - Add UPS/4-hour battery backup to IT rooms that house security headend equipment, access control, and security cameras.
 - Add emergency/generator power to the data center.
 - HVAC unit for the data center needs to be on backup/generator power.
3. Security & Surveillance Systems
- Access Control/Lockdown functionality (Also, see "Access Control" Section above).
 - Migrate from analog to IP security cameras and shall reside on the network (Also, see "Surveillance Camera" section above).
4. Audio-Visual Systems
- Add Apple TV
 - Upgrades Old Projectors
 - Upgrade remaining projectors
 - Upgrade Remaining Baluns/Transmitters to HDBaseT Transmitters
 - Replace Projection Screens
 - Upgrade Projector Ceiling Mounts
 - Upgrade Ceiling Speakers

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IT INFRASTRUCTURE

Introduction

It was observed, throughout the district that there is a need to standardize on the IT category cabling infrastructure. A majority of the campuses have a mixture of Category 5, 5E and Category 6 cabling in place. In a few cases, it was observed that Category 3 cabling was still in use. It is recommended that all campuses standardize on Category 6 cabling in the future. All Category 3 and 5 cabling should be replaced as soon as possible to mitigate any network problems, as well as latency within the network functionality. It was observed that optical fiber and copper feed cable were utilized between IT closets as well as inter-building connectivity. It is recommended that future connectivity between buildings and IT rooms be designed and installed utilizing OM4 and OS2 optical fiber cable. Please see the individual campus cabling observations below.

Cable Plant

Central Campus

Observations:

There is a mixture of Category 5, 5e and Category 6 Voice and Data cabling used throughout the building. Connectivity between IT spaces and inter-building connectivity is accomplished via Optical Fiber and copper cable.

Recommended:

It is recommended that the existing Category 5 and 5e cabling, jacks, patch cords and patch panels be upgraded to Category 6 at minimum. Installation of fused carbon protectors at both ends of any copper feed cables that enter a building, is recommended.

East Mesa Campus

Observations:

There is a mixture of Category 5e and Category 6 Voice and Data cabling used throughout the building. It was observed that the IT cabling in IDF-T208 was painted. Connectivity between IT spaces and inter-building connectivity is accomplished via Optical Fiber and copper cable. Fused carbon protectors were utilized on the inter-building copper feed cables.

Recommended:

It is recommended that the existing Category 5e cabling, jacks, patch cords and patch panels be upgraded to Category 6 at minimum. Extra care must be taken when renovations occur, so that IT cabling does not get damaged/painted from the other trades performing their work.

Gadsden Campus

Observations:

There is a mixture of Category 5, 5e and Category 6 Voice and Data cabling used throughout the building. Connectivity between IT spaces and inter-building connectivity is accomplished via Optical Fiber and copper cable.

Recommended:

It is recommended that the existing Category 5, 5e cabling, jacks, patch cords and patch panels be upgraded to Category 6 at minimum.

Chaparral Campus**Observations:**

The Voice and Data cabling, used throughout the building, is Category 6.

Recommended:

Consider upgrading to Category 6A for wireless access points (WAPs).

Sunland Park Campus**Observations:**

There is a mixture of Category 5, 5e and Category 6 Voice and Data cabling used throughout the building. It was observed that in IDF #T-110 the voice and data cabling to the work stations are Categories 3-5e terminated on 100 blocks installed on a wall field. This cabling is extended to the network switches via Category 5e cabling. It was observed that connectivity between IT spaces is accomplished via Optical Fiber and copper cable.

Recommended:

It is recommended that the existing Category 3-5, 5e cabling, jacks, patch cords and patch panels be upgraded to Category 6 at minimum and be terminated on Category 6 rated patch panels and jacks.

Workforce Center**Observations:**

There is a mixture of Category 5, 5e and Category 6 Voice and Data cabling and connectivity used throughout the building.

Recommended:

It is recommended that the existing Category 5 and 5e cabling, jacks, patch cords and patch panels be upgraded to the standard Category 6 at minimum.

Cable Pathways & Distribution**Observations:**

At all campuses, inter- and intra-building Optical Fiber backbone cabling is being utilized between buildings and IT rooms. This is in addition to inter and intra building copper backbone cabling.

Throughout DACC, different types of cable trays are being utilized/installed.

Recommendations:

For new and future installations/renovations we recommend standardizing on the type of cable tray being used for ITS cable distribution. Although optical Fiber cable is currently being utilized

for inter/intra-building connectivity, we would recommend upgrading to a “Hybrid” optical fiber cable that combines OM4 and OS2 within the same cable jacket.

Wi-Fi

Overview

Observations:

Wi-Fi configurations are currently being deployed at each campus to align with the classroom Apple iPad initiative.

Recommendations:

Although new Category 6 cable is currently being installed to each wireless access point, we recommend the use of a Category 6A cabling solution in order to take advantage of its added bandwidth as well as better heat dissipation properties (when utilizing POE).

Individual Campus status for Wi-Fi implementation:

Central (Espina) Campus

Observations:

Upgraded cabling for WAPs has begun on the campus. Cabling per building is as follows:

- DASH – New cabling is on-going
- DATS – New cabling is on-going
- DALR – New cabling is on-going
- DACL – New cabling has not been started
- DAHL – New cabling is on-going

Recommended:

Complete upgraded cabling. Consider Category 6A cabling for future WAP cabling.

East Mesa Campus

Observations:

Upgraded cabling for WAPs has begun on the campus. Cabling per building is as follows:

- DAAR – New cabling completed
- DAAU – New cabling is on-going
- DADM – New cabling is nearing completion
- DAEM – New cabling has not been started
- DASR – New cabling has not been started

Recommended:

Complete upgraded cabling. Consider Category 6A cabling for future WAP cabling.

DACC Master Plan 2018 - Technology Systems

Gadsden Campus

Observations:

New upgraded cabling for WAPs has not begun on the campus.

Recommended:

Install new upgraded cabling. Consider Category 6A cabling for future WAP cabling.

Chaparral Campus

Observations:

New upgraded cabling has been installed with the construction of the new building, however additional WAPs are needed in the classrooms.

Recommended:

Install new upgraded cabling for the WAPs in the classrooms. Consider Category 6A cabling for future WAP cabling.

Sunland Park Campus

Observations:

New upgraded cabling for WAPs has not begun on the campus.

Recommended:

Install new upgraded cabling. Consider Category 6A cabling for future WAP cabling.

Workforce Center

Observations:

New upgraded cabling for WAPs has not begun on the campus.

Recommended:

Install new upgraded cabling. Consider Category 6A cabling for future WAP cabling.

VoIP

Observations:

DACC has standardized on VoIP telephony solution at all campuses.

Recommended:

This is in line with current standards.

UPS

Currently UPS's are installed in:

- DASH – Qty. (2) Series 8000 UPS's
- DAM East Mesa – Qty. (1) Series 8000 UPS
- All IT spaces currently have a UPS installed

Upgrade Path by Priority (College-wide)

- Complete Wi-Fi upgrades at all campuses/all buildings.
- Replace all Category 3, Category 5, and eventually Category 5e cabling with new Category 6 standard (This includes jacks, patch panels and patch cords).
- Remove all old abandoned cabling from all pathways (conduit, cable trays, etc.). This will allow existing pathways to be utilized for new category cabling installations/upgrades.
- Add UPS/4-hour battery backup to IT rooms that house security headend equipment, access control, and security cameras.
- Add emergency/generator power to the data center.
- Critical component replacement stock should be expanded upon to include switches and routers in case of a failure. This will minimize “down” time.

IT SPACES

Introduction

IT spaces, in general, should be appropriately cooled, properly sized, and shall have appropriate electrical services/accommodations. It was observed that in general, most IT spaces were cooled with HVAC split systems. Electrical accommodations in most of the IT closets seemed appropriate. It was observed that most of the IT spaces, IDFs/MDFs, were not grounded properly and in some instances not grounded at all. It is recommended that all IT spaces be grounded and bonded as soon as possible to help mitigate network problems and latency within the network. It is recommended that all future renovations and new IT room buildouts include proper sizing, cooling, electrical accommodations, and proper grounding considerations in the new designs.

IT Rooms

Central Campus

DASH Building:

Observations:

IT Room #M116 – Exterior access through mechanical space M116. IT space is too small and does not allow for 3’ of minimal clearance per code. The installed 19” rack is relatively full and does not have room for growth. Also, the rack does not have any vertical or horizontal wire management panels installed and patch cords are hanging in front of the rack which makes the task of troubleshooting challenging and adds a “stress” factor to the cabling/connectors of the patch cords. This room is not cooled.

IT Room #1141 – Exterior access. Analog service distribution wall field. IT space, where the data rack is installed, is too small and does not allow for 3’ of minimal clearance per code. The installed 19” rack is relatively full and does not have room for growth. Also, the rack does not have any vertical or horizontal wire management panels installed and patch cords are hanging in front of the rack which makes the task of troubleshooting challenging and adds a “stress” factor to the cabling/connectors of the patch cords. This room is not cooled.

IT Room #85B – Main Server Room – Card reader installed on entrance door is a “stand alone” unit and not part of any access control “system”. Room is cooled, however the cooling for the space is not on generator or back-up power. It was observed that the data racks and cable tray are not grounded/bonded. Fire devices are located right below the light switch.

IT Room #071A – Located within Computer Classroom #71. Installed data rack has room for growth and has vertical wire management in place. Horizontal wire management is not installed. This room is not cooled. Installed data rack and ladder rack are not grounded.

IT Room #84E – Category cabling is coming out of the ceiling space without and support or cable management through an open ceiling tile. Category cabling is observed to be category 3, 5, 5e and 6. Connectivity in the IT room is category 5 and 5e. Horizontal and vertical wire management is not installed. Proper grounding and bonding is not installed. Optical Fiber LIU is mounted on the wall with jumpers to the switch hanging and not supported.

IT Room #EQ090 – Category cabling is a mixture of Category 5, 5e and 6. Connectivity is category 5 and 6. Cabling is coming out of the ceiling space without any support. Optical fiber LIU is mounted on the wall and optical Fiber jumpers are strung from the wall mounted LIU to the data switch(s) without any support and appears to be supporting the weight of category cabling. Proper grounding and bonding does not exist. Horizontal and vertical wire management is not installed. It appears that a cold water pipe (plumbing) is located directly above the data rack. This space is shared with electrical service panels.

IT Room #108G – Category cabling and connectivity in the IT room is category 6 standard. Although there aren't any horizontal wire management panels installed the category patch cords are installed neatly due to the installed vertical wire management panels. Proper grounding, via the installed grounding bus bar, is in place, however the bonding of various components is not complete. The space does have adequate cooling via a wall mounted dedicated HVAC split system.

IT Room #121A – Category cabling and connectivity are category 6 standard. Proper grounding and bonding installation practices are being observed. Cabling is being properly supported with properly sized basket cable tray. IT room floor is carpeted.

Recommended:

IT Room #M116 – It is recommended that this room be relocated inside the building in a properly sized and cooled room with the appropriate electrical services and all IT cabling and connectivity be Category 6 at minimum.

IT Room #1141 – It is recommended that this room be relocated inside the building in a properly sized and cooled room with the appropriate electrical services and all IT cabling and connectivity be Category 6 at minimum.

IT Room #85B – Consider placing the HVAC unit(s) on generator/back-up power. Consider placing the servers and systems located in the room on generator/back-up power. Remove any items that are not deemed necessary to system maintenance out of the room. IT rooms are not intended for storage. All Category 5 and 5e cabling, patch panels, jacks, and patch cords should be upgraded to Category 6 at minimum.

IT Room #071A – It is recommended to install horizontal wire management panels. Proper grounding and bonding practices need to be observed and installed. The room is not cooled, however with the minimal amount of switch gear that is installed and anticipated in the room, simple door ventilation is all that is recommended for cooling/heat dissipation at this time.

IT Room #084E – Replace all cabling and connectivity with category 6. Consider installing horizontal and vertical wire management panels when replacing the cabling. Consider proper cooling if this room is to remain an IT space. Install proper cable support, ladder rack, etc. Install proper grounding and bonding.

IT Room #EQW90 – Replace all cabling and connectivity with category 6 standard. Install ladder rack to support cabling to the rack. Install horizontal and vertical wire management panels. Change wall mounted Optical Fiber LIU to rack mounted. Consider adding a dedicated HVAC unit – 1 ton. Install proper grounding and bonding of all equipment. Relocate data rack away from cold water pipe when re-cabling the serving zone.

IT Room #108G – Complete bonding installation.

IT Room #121A – Consider the removal of the installed carpet (static electricity) and install VCT or seal and polish concrete floor.

DATS Building:

Observations:

IT Room #M140 – Category cabling and connectivity are category 5, 5e and 6. Proper grounding and bonding is not installed. Category cabling is exiting the ceiling via open ceiling tiles without any installed cable support. Horizontal and vertical wire management panels are installed, however it was observed that towards the lower half of the data rack, patch cables are “hanging” from the switch(s)/patch panel, without the use of wire management. A dedicated HVAC Split system is installed in the space.

Recommended:

IT Room #M140 – Replace all cabling and connectivity. Install proper cable support (cable tray) to the rack location. Properly ground and bond equipment. Verify that the HVAC unit is functioning properly to cool the space. Re-install ceiling tiles to help with the cooling of the space. Install/utilize horizontal wire management panels.

DAHL Building:

Observations:

IT Room #187B – Category cabling is category 5, 5e and 6. Proper grounding and bonding is not installed. Horizontal and vertical wire management is not installed. Patch cords are hanging from the switches and patch panels. This IT room serves both floors.

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Recommended:

IT Room #187B – Replace all cabling and connectivity with category 6 standard. Properly ground and bond all equipment. Install vertical and horizontal wire management panels. Consider installing a dedicated HVAC wall unit – 1 ton. Properly support all cable and patch cords. Recommend adding another IT space on the second floor.

DACL Building:

Observations:

IT Room #R275 – Category cabling is category 3, 5, 5e and 6. Proper grounding and bonding is not installed. Proper cable support is not installed. Horizontal and vertical wire management panels are not installed. IT room has a dedicated HVAC split system installed on the wall, however, it is not functioning properly as the IT room is hot.

Recommendations:

IT Room #R275 – Replace all category cabling and connectivity with category 6 standard. Consider installing a new data rack. Install proper cable support (Ladder rack to the data rack). Install horizontal and vertical wire management panels. Properly ground and bond all equipment.

DALR Building:

Observations:

IT Room #M165 – Category cabling is category 3, 5, 5e and 6. Proper grounding and bonding is not installed. Proper cable support is not installed. Horizontal and vertical wire management panels are not installed. IT room has a dedicated HVAC split system installed on the wall, however, it is not functioning properly as the IT room is hot.

Recommendations:

IT Room #M165 - Replace all category cabling and connectivity with category 6 standard. Consider installing a new data rack. Install proper cable support (Ladder rack to the data rack). Install horizontal and vertical wire management panels. Properly ground and bond all equipment.

East Mesa Campus

DAEM Building:

Observations:

IT Room #T212 – The data racks and ladder rack in the space were properly grounded and bonded. The type of cable tray in the IT room was different than the other IT rooms. It was observed that the use of cable management was minimal within the space.

IT Room #217D – Server Room – Although a grounding buss bar is installed in the space, grounding to the cabinet is not. Proper support for the optical fiber feed is not provided.

IT Room #M112A – It appears that there is overspray (paint) on some of the installed data cabling. Vertical and horizontal wire management are non-existent. Observed optical fiber cable “stapled” to the wall field and not supported properly. Pathway for cable tray and cables entering the room is not fire-stopped.

IT Room #T112 – Proper grounding, which is an issue in most of the IT spaces, is not an issue in IT Room #T112. This space also has its own split system HVAC unit. Cabling within the IT room appears to be all Category 6.

Recommended:

IT Room #T212 – Standardization of cable tray and data racks is needed. Cable management is needed, both vertical and horizontal.

IT Room #217D – Server Room – Properly ground cabinet and support optical fiber cable.

IT Room #M112A – Properly fire-stop according to local fire codes. Consider the installation of horizontal and vertical wire management. Properly support all cable. Tape-off/cover installed data cabling prior to painting near the cable trays and during remodeling.

IT Room #T112 – Confirm category cabling and replace if not Category 6 compliant.

DADM Building:

Observations:

IT Room #T105 – Cable tray grounding (bonding) is not complete. IT Room appears to have its own dedicated HVAC unit that is mounted in the ceiling space. Horizontal wire management is not utilized on “active” data rack. This room also serves the second floor.

Recommended:

IT Room #T105 – Ground/bond cable tray. Install horizontal wire management in “active” rack.

DAAU Building:

Observations:

IT/AV Room #102A – Cabinet is too small for the amount of network/AV equipment and cabling located within the cabinet. Proper airflow to cool the electronic equipment within the cabinet is a concern. Cabling within the wall mounted data cabinet is not supported/dressed-in properly.

Recommended:

IT/AV Room #102A – Consider migrating to a larger cabinet. Properly manage cabling within the cabinet. Utilize wire management panels within the cabinet.

DASR Building:

Observations:

IT Room #T130 – Proper grounding and bonding is not complete. Various cables are not supported properly. Proper cable management, including electrical cords, is not being observed. Horizontal wire management is not installed at “active” rack.

IT Room #T102 – Proper grounding and bonding is not complete. Cabling not complete; noted category cables coiled on floor. Horizontal wire management is not installed at “active” rack. Although vertical and horizontal wire management is in place at the passive rack(s), proper cable management is not being observed. The space does have its own split system HVAC unit, however it was noted that the space seemed excessively warm.

IT Room #T220 – Proper grounding and bonding is not complete. Horizontal wire management is not installed at “active” rack.

Recommended:

IT Room #T130 – Properly complete grounding and bonding of data racks and cable tray. Properly support all cables. The use of wire management is recommended. A/C cords should not be tangled on the floor. These should be properly managed and supported as well.

IT Room #T102 – Properly complete grounding and bonding of data racks and cable tray. Properly support all cables. The use of wire management is recommended. Confirm HVAC unit is functioning properly. Confirm Category 6 cabling is the only cabling solution in place.

IT Room #T220 – Properly complete grounding and bonding of data racks and cable tray. Consider installing horizontal wire management panels on “active” rack.

DAAR Building:

Observations:

IT Room #T208 – Cable tray and data rack grounding and bonding is not complete. Data cables are painted with overspray. Mixture of Category 5, 5e and Category 6 cabling is being utilized. Cable management is in place.

Recommendations:

IT Room #T208 – Properly complete grounding and bonding of data racks and cable tray. Replace all Category 5 and 5e cabling with the DACC standard Category 6 cable.

Gadsden CampusDAGC Building:

Observations:

IT Room #E110 – IDF is located with an exterior access. There is a mixture of Category 5, 5e and Category 6 cabling being utilized. Data racks are not grounded. Cable management is not installed. Observed category cables and A/C cords laying on the floor. Category cables are not supported behind the patch panels. Dust is accumulating in the IDF. The space does have a dedicated HVAC split system unit.

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Workforce Center

DAWD Building:

Observations:

IT Room #T102 – Proper grounding and bonding is not completed. Horizontal wire management panels are not being utilized on the “active” rack. Room is being used for IT storage of equipment. Various cables are not supported. Mixture of Category 5, 5e and Category 6 cabling and connectivity.

Recommended:

IT Room #T102 – Properly ground and bond ladder rack and data cabinets. Consider installing horizontal wire management panels in the “active” rack. Consider removing some of the stored items in the space, to accommodate proper working clearances. Properly support all cables. Verify category cabling and replace all Category 5 and 5e cabling with the DACC standard, Category 6.

Upgrade Path by Priority (College-wide)

- Remove all old abandoned cabling from all pathways (conduit, cable trays, etc.). This will allow existing pathways to be utilized for new category cabling installations/upgrades.
- Move all external IT spaces indoors (e.g. DASH #M114, DASH #M116, DAGC #E110).
- IT spaces should not be used as storage closets and all materials not related to IT shall be removed to observe proper working clearances in each IT space.
- Proper cable management should be observed, both horizontal and vertical for all data racks and cabinets.
- Add proper cooling to IT rooms that exceed 78 degrees F., due to electrical/heat loads.
- Add UPS/4-hour battery backup to IT rooms that house security headend equipment, access control, and security cameras.
- Add emergency/generator power to the data center.
- HVAC unit for the data center needs to be on backup/generator power.

SECURITY & SURVEILLANCE SYSTEMS

Introduction

With schools being targeted for violence, the need for a “secured” campus is increasing. The requirements for Campus Security, both outside and inside the school buildings, are increasing twofold.

Surveillance Cameras

Observations:

The use of surveillance cameras was minimal, including interior and exterior common areas, parking lots, entrances and exits of buildings. It was observed that a number of different camera manufacturers are being used.

Recommendations:

Standardize on surveillance camera manufacturers and VMS software. Standardize on coverage areas:

- a. Entrances/exits to and from the buildings
- b. Common interior common areas
- c. Parking lots
- d. Exterior common areas

Network Video Storage**Observations:**

Proper Network Video Storage is essential to proper surveillance functionality. It is typical for educational institutions to store video data for 30 days, then transfer the data to an external drive for reference at a later date.

Recommendations:

As an example, 30 days of storage with a 30 camera system, typically would require a 20TB video server.

Access Control**Observations:**

- a. The use of card/proximity readers was minimal at entrance and exterior doors to the buildings.
- b. Interior doors that lead to “specialty” spaces including IT rooms/electrical rooms had minimal card reader usage.
- c. Different systems are being used for access control.

Recommendations:

- a. Standardize on an access control plan for all campuses
- b. Consider adding access control to all main entrances of the buildings.
- c. Consider adding access control to all specialty rooms, (IT rooms, computer storage rooms and electrical rooms).
- d. Consider designing access control “rough-ins” for classroom doors to new building designs and renovations.
- e. Standardize on an access control manufacturer for all campuses.

Upgrade Path by Priority (College-wide)

- Access Control/Lockdown functionality (Also, see “Access Control” Section above).
- Migrate from analog to IP security cameras and shall reside on the network (Also, see “Surveillance Camera” section above).
- Add UPS/4 hour battery backup to IT rooms that house security headend equipment, access control and security cameras.

AUDIO-VISUAL SYSTEMS

Introduction

While DACC does have a general classroom A/V system standard, there are too many instructional spaces for it to be economically feasible to ensure all of them are promptly upgraded to comply with changes to the standard design. This has led to many variations of their standard classroom A/V system in use throughout their campuses.

As such, one of the primary goals of the A/V improvements outlined in this master plan is to outline a priority-based upgrade path for classroom A/V equipment. This will enable both Technology Consultants working on the design teams for DACC capital improvements projects and DACC administration to easily evaluate the current state of the classroom A/V systems in applicable areas and target the components in greatest need of upgrades.

In order to make the process of upgrading existing systems to the current standard as efficient as possible, this master plan will also examine some of the different existing classroom A/V system variations and recommend adjustments to the classroom A/V standard.

The current general classroom A/V system standard consists of the following:

- A front projection system displaying an image conforming to the 16:10 aspect ratio:
 - a. There is a mix of rooms using projection screens and rooms projecting onto a whiteboard but, unless the room is too small for a projection screen or interactive whiteboard functionality is required, the preference is to utilize a projection screen. DACC prefers appropriately-sized motorized tab-tensioned projection screens recessed in the finished ceiling with an integrated low-voltage control module and low-voltage control switch so the control switch can be installed in the same device box with the SP Controls Pixie+ A/V control panel.
 - b. Depending on the ceiling height, some rooms may utilize wall mounted ultra-short-throw projectors but this is considered to be a special case. The typical standard is to utilize ceiling mounted standard-throw or short-throw projectors depending on available mounting location options (based on coordination with lighting and HVAC).
 - c. For rooms with lay-in T-grid ceilings and sufficient ceiling height to support a ceiling mounted projector, the DACC preferred mounting system utilizes a projector drop-ceiling mount with integrated equipment enclosure such as the Wiremold ECB Evolution series or the FSR CB-22 series.
- An Apple TV unit installed at the projector location and connected directly to an HDMI input on the projector.
- An HDMI over twisted-pair extender set (i.e. transmitter and receiver) with the transmitter located at the teaching station and the receiver located at the projector. The secondary display output of the presentation PC in the teaching station is connected directly to the HDMI transmitter.
- Two Extron Flat Field ceiling speakers powered by a compact audio amplifier installed at the projector location. The amplifier is fed from the audio output connection of the projector.

- A wall-mounted SP Controls Pixie+ pushbutton control panel configured to control the A/V system. The control panel provides the following control functions:
 - a. A/V system power on/off
 - b. Input source selection between Apple TV and presentation PC
 - c. Audio volume up/down

Historically, there has been little to no A/V functionality within DACC conference rooms but with the age of digital collaboration in full swing the college is seeing an increasing demand for A/V presentation and collaboration capabilities in their conference rooms and meeting spaces. Unfortunately, DACC does not yet have a conference room A/V system standard. The DACC IT Department has completed a few initial conference room A/V system installations and has been examining the user response as well as the service calls for those systems as part of the process of defining an appropriate conference room A/V system standard. A preliminary overview of the potential conference room A/V system standard is presented in this master plan.

Changes to General Classroom Standard

Based on trend changes in the Educational Technology industry and feedback from discussions with DACC faculty, we recommend some adjustments be made to the current DACC general classroom A/V system standard. These changes in trends are due largely to advancements in A/V technology and also changes in requirements for compliance with the Americans with Disabilities Act (ADA).

Additionally, we recommend DACC adopt a multi-tier/multi-type classroom A/V system standard to aid in matching higher performance A/V equipment with the specific programs in the curriculum which would benefit the most from it.

By default, new video projectors should utilize a 16:10 aspect ratio and include an HDBaseT input to support DACC's migration to HDBaseT HDMI transmitters from existing HDMI/VGA baluns. If budget permits, new projectors should also have an image resolution of WUXGA (i.e. 1920x1200 pixels) and utilize a solid-state light engine (e.g. Laser, Laser-Phosphor, LED, etc.) rather than a traditional lamp-based light engine. This will reduce energy usage, eliminate lamp replacement costs, and extend the useable life of the new projectors. DACC's preferred projector manufacturer is Epson but other manufacturers may be considered if necessary.

The current version of the Americans with Disabilities Act (ADA), ratified in 2012, expanded the requirements for providing Assistive Listening Systems (ALS) in public facilities. One of the biggest changes is that the minimum seating capacity requirement has been removed. As a result Assistive Listening Systems are required to be provided in all assembly areas (which includes classrooms and lecture halls) where "audible communication is integral to the use of the space" and audio amplification is in use. Therefore we recommend modifying the DACC classroom A/V system standard to include an ALS utilizing Infrared (IR) transmission technology in each classroom.

Numerous instructors mentioned during a faculty input session that the wall mounted Pixie+ control panels are frequently difficult to use because of the source selection buttons being too small. There was also a general consensus in favor of enabling instructors to control the A/V system from their mobile devices. To address these concerns we recommend adding an SP Controls PixiePro Networked Room Controller module to the classroom A/V standard to

supplement the Pixie+ control panel. This will continue to provide a reliable physical control panel to ensure control of the system is always available while also adding the capability for instructors to control the A/V system via a simple web-based interface on their mobile devices or on the classroom PC if desired.

Another popular issue during the faculty input session was disappointment with the current teaching stations in many classrooms. The main criticisms being a lack of usable work surface area, lack of height adjustability, and awkward keyboard placement. Teaching stations which address these criticisms without a significant cost increase compared to the current stations are available. We recommend changing the requirements for the teaching stations and selecting a new standard make/model for the classrooms which incorporates the following features:

1. Adjustable height work surface for use in either a sitting or standing position with quick and easy transition between positions.
2. Adequate work surface area to comfortably fit the computer monitor, keyboard, mouse, instructor notes/books, and instructor laptop.
3. Routing pathways for cabling.
4. Lockable equipment bay for A/V devices which is large enough to fit current A/V equipment and allow for future expansion.
5. User-accessible storage compartment or shelf for classroom PC.

Existing Conditions

Due to the large number of instructional areas and the extensive geographical area separating the various DACC campuses, the conditions of the existing A/V systems varies greatly. Systems with very dated equipment such as XGA resolution projectors containing no digital video inputs were observed in some areas while other areas had been recently upgraded with brand new equipment.

DACC's current upgrade process utilizes a refresh cycle method in which the systems in greatest need of an upgrade during each cycle are identified and completely upgraded to comply with the current DACC standards. All other systems are left in their current state so they theoretically should comply with the DACC standards that were in effect at the time they were last "refreshed". This is a common practice within the Educational Technology industry because it can simplify annual budgeting for upgrades.

However, when using this approach, it is essential for the institution to keep their system standards up to date to account for advancements in technology and teaching methods. The reason being that the greater the delay between refresh cycles for each individual system the greater the risk of some systems failing to meet the needs of faculty. If the standard used during a refresh cycle is already out of date regarding current industry trends then it increases that risk because it effectively lengthens the refresh cycle for the associated systems by the amount of time that passed since the standard was updated.

Currently DACC has three A/V enabled conference rooms which they are using as a test case to aid in developing a standard for conference room A/V systems. All three conference rooms are located in the DASR building on the East Mesa Campus and consist of two small conference rooms and one larger board room.

Upgrade Path

In order to support changing needs with minimal cost, the recommended upgrade path proposes the approach of upgrading all existing systems past a specific age to comply with the new DACC standards and then upgrading key components in the remaining existing systems over time to eventually bring them into compliance with the new DACC standards. This approach ensures that all classrooms are immediately brought up to a minimum baseline level of usability for less cost than upgrading all classrooms to the new standards. Then the cost of upgrading the remaining classrooms from the minimum baseline level to the new standard level can be distributed over time as needed.

Based on the state of the existing A/V systems at the DACC campuses the recommended upgrade path for the classroom A/V equipment is outlined below. The stages in the upgrade path are listed in descending order by priority. Upgrades of specific classrooms, labs, and open-labs to Lecture Capture Classrooms/Labs, Small Group Collaboration Classrooms/Labs, or Collaboration Open-Labs are recommended to be interspersed with the upgrade path for the general classroom A/V systems after the initial refresh cycle of the oldest classroom systems (i.e. Stage 1 below).

1. **Refresh Oldest Systems** – DACC’s IT Division has identified the existing classroom A/V systems which are in highest priority for a complete system upgrade (due to age) as part of their current refresh cycle program. Therefore, supplementing the refresh cycle for those systems to completely upgrade them to comply with the new standard is an ideal first step in the upgrade path.
2. **Add Apple TV** – Due to a current Apple initiative, all instructional areas are in the process of being outfitted with Apple TV units. Most of the classrooms and labs do not currently have any active Data outlets at the projector location but both the Apple TV unit and the Wireless Access Point (WAP) for the classroom each require a connection to the building LAN. So, DACC has been installing the Apple TV units at the same time that they install a WAP and two Data outlets at the projector in each room.
3. **Upgrade Old Projectors** – Projectors more than 5 years old are generally the most likely to fail un-expectedly and leave the associated classroom unusable while a replacement unit is procured and installed. Additionally, A/V technology is progressing quickly enough that within a period of 5 years many of the functions and features on a piece of A/V equipment are reaching obsolescence. Therefore projectors more than 5 years old are ideal items for upgrade along with their associated HDMI/VGA baluns. New projectors should comply with the new standard.
4. **Replace Old Teaching Stations** – Many classrooms currently have teaching stations installed which are not meeting the needs of the faculty. This has a significant negative impact on the usability of the space as a presentation-capable learning environment. These under-performing teaching stations should be replaced with new teaching stations which meet the requirements in the new classroom A/V standard.
5. **Upgrade Remaining Projectors** – In order to support DACC’s migration to HDBaseT HDMI transmitters from existing HDMI/VGA baluns the next step in the upgrade path is to replace all existing projectors which do not feature an HDBaseT input connection with models which do have an HDBaseT input. At the same time, if budget permits, new projectors should also have an image resolution of WUXGA (i.e. 1920x1200 pixels) and

utilize a solid-state light engine (e.g. Laser, Laser-Phosphor, LED, etc.) rather than a traditional lamp-based light engine. This will reduce energy usage, eliminate lamp replacement costs, and extend the useable life of the new projectors.

6. **Upgrade Remaining Baluns/Transmitters to HDBaseT Transmitters** – Once all the projectors are upgraded to models with HDBaseT inputs, any existing HDMI baluns and twisted-pair extenders which were not already replaced in stage 2 above can be replaced with HDBaseT compliant HDMI transmitters to complete DACC's migration to HDBaseT.
7. **Replace Projection Screens** – Many classrooms currently have projection screens installed which are not appropriately sized for the room and/or not the DACC desired aspect ratio. Both of these issues have a significant negative impact on the usability of the space as a presentation-capable learning environment. These existing screens should be replaced with new motorized screens featuring:
 - a. An image area sized appropriately for the viewing distance, conforming to 16:10 aspect ratio, and surrounded on the sides with black borders for contrast. The image size should be calculated by measuring the distance from the middle of the screen to the farthest viewer in inches and dividing that distance by 6 to find the height of the image then multiplying the image height by 1.6 to find the image width.
 - b. An integrated Low Voltage Control module (LVC). This will provide a low voltage wall switch that can be installed in the same box with the A/V control panel, as preferred by DACC. This also will enable the screen to be controlled by the A/V system via a relay dry-contact if DACC decides to implement such functionality in the future.
8. **Upgrade Projector Ceiling Mounts** – Most classrooms with lay-in T-grid ceilings and a ceiling mounted projector currently utilize a standard drop-ceiling projector mounting plate to suspend the projector from the ceiling. This satisfies the need to support the projector but does not provide any space to mount the various devices installed at the projector location. To address this issue DACC is migrating to a mounting system which utilizes a projector drop-ceiling mount with integrated equipment enclosure such as the Wiremold ECB Evolution series or the FSR CB-22 series.
9. **Upgrade Ceiling Speakers** – Many classrooms utilize either (2) or (4) standard round ceiling speakers provide adequate audio coverage of the seating area. This generally serves the functional needs of a typical classroom but DACC is migrating to a new standard which utilizes just (2) wide-dispersion 2x2 lay-in ceiling style speakers (i.e. Extron Flat Field series) to serve the entire room. This enables fewer speakers to be used for serving a given seating area and improves the aesthetics of the room because the speakers look the same as HVAC return grilles.

Since A/V systems currently installed in conference rooms are very limited, each conference room system should be treated as a new installation rather than an upgrade. The duration of the conference room A/V roll-out would depend on the available budget and we recommend that prioritization of the installations should be primarily based upon the frequency that each space is used.

Changes to Open Computer Lab Standard

While DACC's current standard for open computer labs is comparable to those at other colleges and universities in the area, it does not provide students with an opportunity for group learning or collaboration on group projects. However, not every computer lab may require such capability and it may be disruptive to students working on individual projects within the same lab. So, we recommend treating the facilities for small group collaboration as an extension of a typical open computer lab and deploying them at a select number of labs which are large enough to support the additional furniture, A/V equipment, and student conversations associated with small group collaboration.

One design which should satisfy most student needs for small group collaboration in a computer lab consists of converting the row of workstations along one of the walls into four independent "huddle spaces" which can each be used by up to four students at once.

Each huddle space would consist of:

- An arc or similarly-shaped table positioned against the wall with four computer stations spaced apart evenly and facing the center of the table.
- A flat panel display mounted on the wall above the table for the group to use.
- A simple control device enabling the group members to turn the display on/off and choose which computer station's video output is active on the display.
- A video switcher for routing the video output from the actively selected computer station to the display.

This design would allow each student in each group to have an independent computer workstation but also easily share ideas with other group members by showing content from the student's workstation on the group's flat panel display.

To further the ability of students to collaborate on group projects, each huddle space could be assigned a shared network storage directory which is automatically mounted on each workstation when the student logs on. Then, when the last student in the group logs off, the contents of that directory are deleted to make it available for the next group.

Upgraded & Alternative Classroom Systems

In order to supplement the current DACC standard classrooms it is recommended that a select number of upgraded and alternative classrooms be provided as well. These classrooms would use much of the same A/V equipment as the standard classrooms but would also include additional specialty equipment to allow the classrooms to be used for lecture capture (i.e. lecture recording) or small group collaboration purposes.

Classrooms upgraded to provide lecture capture functionality would enable instructors to record their lectures into distributable file packages containing live video of the lecture, lecture slides, instructor dialog (via microphone), and presentation audio. Adding this functionality to a standard DACC classroom would require:

- A high-definition video camera (preferably a motorized pan-tilt-zoom camera) to capture video of the lecture.
- A wireless microphone to capture the instructor's dialog even if the instructor moves away from the teaching station.

- A small video matrix switch to route the appropriate computer, Apple TV, and camera video signals to the projector and the lecture capture recorder.
- A lecture capture recording appliance (or video encoder and computer software) to record all the video and audio content, combine it into a single multimedia file, and upload it to a storage server.
- A more powerful control panel than the standard Pixie+ in order to automate the lecture capture process.

Classrooms upgraded to provide small group collaboration functionality would allow instructors to easily teach classes in a problem based learning format where students are separated into small groups and presented with example coursework-based problems to solve as a team. Each group would have their own flat panel display to use for collaboration purposes with their own laptops or mobile devices connected to it. Furthermore, the instructor would have the ability to share the content from any group's display with the rest of the class if desired. Adding this functionality to a standard DACC classroom would require:

- Multiple (at least 4) flat panel displays for use by student groups.
- Video over twisted-pair cable extenders (e.g. HDBaseT) for sending video to each flat panel display from the main video switcher.
- A video matrix switcher for routing video signals to the projector and all the flat panel displays from all the instructor and student inputs.
- A wireless microphone for the instructor to allow the instructor to roam around the room and still be heard by the students.
- An audio Digital Signal Processor (DSP) to stop feedback from the microphone and mix the various audio sources into a single output for the speakers.
- A more powerful control panel than the standard Pixie+ in order to enable intuitive and automated control over the entire system.

Conference Room Systems

For the majority of the DACC conference rooms a simple presentation system similar to that of the standard classrooms is expected to meet the needs of most users.

The primary differences between the proposed conference room A/V system and the DACC standard classroom A/V system consist of:

- For conference rooms with seating up to 17' away from the display device a large wall mounted flat panel display (e.g. roughly 70" diagonal) with integrated speakers can be provided instead of a video projector, projection screen, ceiling speakers, and audio amplifier.
- Depending on the layout of the conference room, the presentation PC can be located on a credenza, computer desk, or casework instead of in a teaching station.

CLASSROOM LAYOUTS & TECHNOLOGY COORDINATION

Introduction

The vast majority of instructional spaces observed were laid out well from a functional standpoint but even in those well-organized spaces the coordination with Technology systems was frequently in need of attention.

Design Intent

The information outlined here is intended to serve as an overview of best practices for coordinating the layout and Technology systems of classrooms and other instructional spaces but it is by no means indicative of all important coordination issues for every situation. As such it is absolutely crucial for building design teams to actively include DACC's Technology support staff in the design process from a very early stage. Additionally, requiring that the building's Technology systems (i.e. Network Cabling & Infrastructure, Audio-Visual Systems, and Security & Surveillance Systems) are designed by a Technology Design Consultant rather than the Electrical Engineer or an equipment integrator/installer can greatly improve the coordination between the Technology systems and the overall building design.

Network Infrastructure

Robust network infrastructure is critical for connecting network-enabled devices in each classroom both to each other and to the outside world. Based on discussions during a faculty input session it is clear that reliable Wi-Fi coverage in every classroom is one of the most important resources requested by instructors.

Furnishings and Layout

- Recommend projection screen centered on "teaching wall" with bottom of image at 48" to 52" Above Finished Floor.
- Recommend furniture layout with:
 - Staggered rows (if feasible)
 - All seats located within area bounded by 45 degree lines from edges of projection screen (i.e. acceptable viewing cone)
 - Majority of seats located within area bounded by 45 degree lines from center of projection screen (i.e. good viewing cone)
- Recommend teaching station feature robust integrated wire management (e.g. cable raceways) and be located near right/left corner of "teaching wall" rather than centered on wall.
- DACC preference is for projection screen control switch and A/V control panel to be installed within same wall mounted device box at location near teaching station.
- Recommend tables for computer labs feature robust integrated wire management (e.g. cable raceways).
- For classrooms primarily serving the social sciences department we recommend that movable tables/furniture be provided to enable reconfigurable small group seating per request from faculty in that department.
- Wherever possible ancillary whiteboards (or whiteboard wall treatments) should be provided on each side of the main whiteboard to provide instructors with sufficient writing space if the main whiteboard is covered by the projection screen. If the size and/or layout of the room precludes the installation of ancillary whiteboards then the projection screen should be offset to the side farther from the instructor station in order to prevent the main whiteboard from being completely covered by the screen.

Additional Considerations

- Lighting coordination recommendations
 - General overhead lighting providing a minimum of 50fc on desktop surfaces is recommended.
 - Overhead lighting should be zoned to enable the row of fixtures closest to the projection surface to be controlled independently.
 - A light switch with the ability to toggle “A/V mode” on/off should be provided near the teaching station.

- Power coordination recommendations
 - Provide convenience outlets throughout classroom spaces in addition to the specific recommendations noted below.
 - Provide a quad-plex 120V outlet, on a dedicated circuit, on the wall at each teaching station.
 - Provide a dedicated 120V circuit for the power at each projector location. Do not put the projector and the projection screen on the same circuit. The screen is a motor load and the extra noise it induces on the line is detrimental for A/V equipment.

- Acoustics/acoustic treatments recommendations
 - General lay-in ceiling tiles and carpet similar to a typical office is expected to be sufficient for most classroom spaces with ceilings less than 13 feet.
 - Numerous comments from DACC faculty were received regarding excessive sound transmission between adjacent classroom/lab spaces. To address this issue all classroom/lab walls should be full height partitions (i.e. extending up to the structural decking) and should contain at least minimal insulation. Additionally, all penetrations through classroom/lab walls should be sealed around the penetration.

- Flooring
 - Refer to the acoustics considerations section above for flooring in typical classroom areas.



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