

Operations Administration Working Group Preliminary Report

Working Group	Campus Master Planning, Physical Resources and Transportation
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Subject Area(s) of the Working Group

Executive Summary and Introduction

The creation of UT-RGV will provide better opportunities for access to higher education in the Rio Grande Valley. The new University will stretch from Starr County to Cameron County while making its presence at several valley locations in between, all of which will provide experiential learning opportunities in academia, medicine, and research. As a true regional university, community services in smaller towns and rural areas will also grow. Plans for the new University go beyond the conventional higher education structure where innovative ideas at all levels will drive the institution to excel as the premier University in the Rio Grande Valley, and the State of Texas. It will also strive for both national and global recognition.

UT-RGV will have a great impact in the life of the residents in the region. It brings not only an opportunity for a premier education, but added value with employment, economic development, and many services to a region that is classified as economically disadvantaged and with many social needs. A campus master plan, strategic use of physical resources, and transportation linkages are some of the key elements that would help assure the new University is an effective and efficient institution. Through its **Campus Master Plan**, the University takes a comprehensive view at current resources and begins to plan for the future development of the UT-RGV as it relates to facilities, critical infrastructure, programs, and community services. The **Physical Resources** provide a foundation that will be used to achieve the mission-critical functions of the university in education, research, and other support services. This area considers current use of buildings and searches for opportunities to maximize its “assignable space usage and real estate”. Additionally it views physical facilities as a capital asset that must be preserved through a comprehensive building maintenance program. As the university continues to grow, opportunities in support of the local economy through new construction, remodel/renovations and other special projects become available with potential support for minority and small businesses to flourish. Finally, it looks at **Transportation Linkages** in order to connect the new University at a multi-county level through public transportation that makes UT-RGV totally accessible to communities along the Rio Grande Valley.

UT- RGV offers an opportunity to improve the quality of life of the communities in a variety of ways, particularly in the investments made toward the regional economy by various initiatives, and in greatly improving transportation to serve a regional university. With the aid of a new Campus Master Plan, UT-RGV has the opportunity to implement a strategic plan that draws from best practices and lessons learned not only from the Brownsville and Edinburg campuses but also from National models of innovation and sustainability.

MASTER PLAN

Both the UTPA and UTB campuses engaged master planners to plan for their respective campuses in 2012. Even with the announcement of the new University the plans moved forward towards completion as the thought was that the need would remain as growth is expected in student population, programs, research, space usage, housing and dining needs, athletic and recreational sports fields, etc. – and, therefore, the critical need for forward thinking and planning. UT System is in the process of selecting a firm to create a regional master plan to serve the UT-RGV. The selected firm will have a great opportunity to take advantage of the thoughtful planning that Brownsville and Edinburg have recently completed. We recommend that each of the plans be considered by the firm as a foundation for the regional master plan as it develops. In addition, each plan was developed taking into consideration the climate and site constraints and those lessons should be taken into account by the new master plan.

Having recently gone through the planning process, each campus learned about what is valued by the students, faculty and staff. One resounding request is that the campuses play a more important role in sustainability initiatives. For example, the Brownsville plan has a goal of becoming a net zero campus by 2025. In addition, the UTPA plan recommends more outdoor learning environments and gathering spaces supporting a concept of the campus as an environmental laboratory.

Both plans call out for better use of existing resources and consider the environment in all aspects of its physical growth. While the net zero target is a long-term goal that might not be appropriate for a regional campus, it certainly launches a broader discussion on sustainability efforts that should be considered by UT-RGV.

In order to become a truly regional university, the new University master plan should identify various locations to serve the students throughout the region outside of current “formal” campuses in Brownsville, Edinburg and Harlingen. We recommend creating “learning centers” in specific target areas to reach students throughout the Region. These “learning centers” should be connected using alternate means of public transportation that make the programs and services easily accessible to the communities.

Overall, the master plan for UT-RGV should be anchored in the guiding principles established by the Board of Regents and the Chancellor; to do so the plan should incorporate geographical assets and the cultural values of the region. In sum the recommendations are as follows:

- Utilize existing master plans as the foundation for the development of the regional master plan for UT-RGV.
- Consider sustainability impacts in the regional master plan and explore implementing a net zero target at a campus level. Current master plans call for better use of existing resources and consider the environment in all aspects of its physical growth. While the net zero target is a long term goal that might not be appropriate for a regional campus, it certainly launches a broader discussion on sustainability efforts that should be considered by UT-RGV.
- In order to become a truly regional university, the new University master plan should identify various locations to serve the students throughout the region outside of current “formal” campuses in Brownsville, Edinburg, and Harlingen. To that end we should consider leasing spaces throughout the community to reach out to the community but also to satisfy space needs while new construction is underway.

PHYSICAL RESOURCES

The Brownsville and Edinburg campuses provide for approximately three million gross sq. ft. of buildings combined that would serve UT-RGV. Physical resources are a major asset to take into consideration as the academic plans are developed and implemented in the new University. Taking into account the new teaching methodologies and changes in pedagogical delivery, spaces for student learning should be flexible, fun and engaging. Learning should take place in an environment that allows for collaboration, research, and small group discussion whenever possible. The new university has the opportunity to provide classroom configurations that lends itself to flexible learning styles, such as project-based learning, and active learning.

This recommendation is based on research from the SCALE-UP method, originally created by Robert J. Beichner, PhD., physics professor at North Carolina State University, created SCALE-UP, which originally stood for “Student Centered Activities for Large Enrollment – University Physics”. This was aimed at teaching STEM education. It now stands for Student Centered Active Learning Environment for Undergraduate Programs, and is being used throughout the country in higher education and secondary school settings.

Furniture, for example, would include movable tables, chairs with casters, white boards or writable surface on walls, computer connectivity at each table, projection screens at various locations throughout the room, and good light distribution throughout the room. The furniture can take the form of various styles and configurations within one classroom and provide for flexible adaptive classrooms that would serve different programs throughout the day.

This flexible classroom set up allows students to work in groups conducting research, bouncing ideas off of each other, and then share information learned and work together to solve problems. The professor has the flexibility to move around the room and reach all the students in a more interactive way than the traditional lecture style auditorium. It creates a learning environment where students work in a team, and they understand that information sharing can be positive for the benefit of the larger group.

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- Create “learning centers” in specific target areas to reach students throughout the Region. In order to become a truly regional university, the new University master plan should identify various locations to serve the students throughout the region outside of current “formal” campuses in Brownsville, Edinburg, and Harlingen.
- Incorporate the geographical and cultural values of the region into the master planning guidelines for UT-RGV.
- Implement learning environments that allows for collaboration, research and small group discussion –see research on SCALE UP model.
- Implement space utilization targets that would yield in better utilization of existing physical resources.
- Consider leasing spaces throughout the community to reach out to the community but also to satisfy space needs while new construction is underway.
- Use technology and computerized management systems to maximize efficiency in the deployment of maintenance crews and to provide an effective management tool for services.
- Maximize the use of smart mobile devices in the classroom and support services.

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- Implement a regional approach to transportation utilizing the region's service providers.
 - Promote economic development through the use of local goods and services.
 - Advocate for a truly dynamic transit system that includes technological amenities and encourages the use of various forms of transportation.

TRANSPORTATION

As the new University becomes the regional academic and medical higher education institution for the Rio Grande Valley, it is important that access to higher education be readily available to the people in the area. This not only means that the physical facilities are accessible, but also that public transportation is made available to move across the Rio Grande Valley. As a regional institution, the University will be serving a population that is largely classified as disadvantaged. As such, it is imperative to provide transportation that is affordable or free to all faculty, staff and students. Because of the special needs to the region, it is critical that the new University lead the way for facilitating the process to establish a better means of public transportation to create the opportunities to higher education and ultimately resulting in a better quality of life in the Rio Grande Valley.

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Discussion

CAMPUS MASTER PLAN

Both the UTPA and UTB campuses engaged a planning firm to create a new campus master plan for their respective campuses in 2012. UTPA's process began several months before the announcement came for the new university. At that time, UTPA paused the project for about 6 weeks before deciding to continue. The thought was that there will be continued growth – in student population, programs, research, space usage, housing & dining needs, athletic and recreational sports fields, etc. – and, therefore, the critical need for forward thinking and planning.

As a result of the separation from Texas Southmost College, UT Brownsville was faced with the challenge to select a site for a campus to serve the student population. Late in 2012 the UT Board of Regents and Chancellor Cigueroa tasked UTB President Garcia to engage a master planning firm to assist in selecting a site and plan the development of a new campus in Brownsville. The UT System office of Real Estate issued a request for proposals for land to site the Brownsville campus. In May 2013, the Board of Regent's announced that UTB's site would be located in downtown Brownsville citing the need to create a compact urban campus. UTB's master plan process began immediately after site selection and was completed in December 2013. The master plan will be "rolled out" to the campus during the spring of 2014.

The UTB master plan was anchored in the mission of the core values developed by UT Brownsville as a university that would strive to be regionally focused, interdisciplinary, service based and solutions producing. UTB's master plan was guided by three themes that arose from visioning activities held in the planning process. The themes are as follows:

- Regionally focused, globally significant: UT Brownsville is to develop a campus in service of local challenges, translating knowledge and innovation into global impact with the goal of serving 20,000 by 2025.
- Owning our Geography: UT Brownsville is to develop a compact, urban campus deeply rooted in the social and cultural fabric of South Texas and the Border region. The plan outlines the development of 320 acres and potential build out of approximately 5.8 million gross sq. ft. of buildings.
- The campus as an environmental laboratory: UT Brownsville is to develop a regenerative campus, interweaving learning, research and technologies with the goal of being a net zero campus by 2025. The master plan outlines specific targets in energy, water and waste that should be met to achieve the goal of producing as much as it consumes. The net zero goal is a direct response to the request made by students who challenged administration and the planning group to incorporate high environmental goals in the plans for the new Brownsville campus.

The master plan outlines the development of 320 acres with a potential build out of approximately 5.8 million gross square feet of buildings laid in a compact urban grid. The land was identified as result of the evaluation of the proposals submitted to the UT System Office of Real Estate. The campus is essentially bisected into the east and west campus. The majority of the academic core can be located within the west campus while the east campus is slated for sports, and unique programs. The central organizing element of the campus is its main street or Avenida, accommodating pedestrian, bicycle and campus shuttle. The plan is laid out so the entire campus can be traversed in 25 minutes along the

Avenida. The organization of the campus can be conceived as groupings of distinct neighborhoods defined by natural and urban edges, such as resacas and major streets.

The master plan also outlines various strategies to grow the campus over time including strategies for infrastructure, parking and transportation, among others. The overall plan takes into account the need to plan flexible in-door and out-door spaces equipped with technology to respond quickly to the programmatic changes that might occur in higher education.

At UT-Pan American, the planning team together with the campus, developed nine primary goals for the campus. These goals form the basis for a series of principles and recommendations that underlie the design of the Campus Master Plan:

1. Develop a long-term strategy to accommodate growth.
2. Develop buildings that support civic space and community.
3. Expand on-campus housing and amenities.
4. Develop a legible open-space structure. Provide more outdoor spaces.
5. Develop a long-term parking strategy.
6. Develop clarity between bicycles, pedestrians, and cars.
7. Enhance security, particularly at night.
8. Work with the city to provide a “college town.”
9. Develop an on-campus planning component and process.

The Master Plan accommodates the campus growth with foresight between current and 2035 and at the same time intends to improve the quality of the campus environment. It identified the best qualities of the campus and advocated conservation and extension by creating a more coherent pattern of buildings, landscape, and open space. The Plan strengthened the pedestrian quality of the campus by minimizing the amount of vehicular traffic on campus and by establishing guidelines to maintain and improve the campus’s plantings, hardscape, and architecture.

Since UTPA has a well-established campus, the focus for this plan is on expanding its facilities and civic spaces, creating academic, medical, and housing districts, interfacing cohesively with the city, managing space utilization efficiently, improving mobility throughout the campus and its surrounding area – for pedestrian, bicycles, and vehicular traffic - and creating a process for implementing the master plan. Mechanical, electrical, and plumbing assessments were conducted on all of UTPA’s facilities, including its off-campus buildings as well as the Starr County campus. Landscaping was studied at a broad level to create outdoor spaces and vistas at strategic locations based on building connectivity, potential outdoor classrooms, courtyards, and informal gathering spaces. The plan also took into account architectural history of the campus in an effort to preserve design intent. Other concepts included pedestrian walkways and promenades, which were studied to enhance existing paths, expand already strong ones such as Bronc Trail (covered walkway), and create new ones where new development would be moving. The plan addressed a need to separate pedestrian traffic from bicycle and utility cart traffic on the internal core of the campus in order to create safer paths of travel for the campus community.

The Long-Range Plan

- accommodated projected growth in academic, housing, student life, athletic, administrative, and support spaces
- extended the campus’s civic structure, enhancing and defining existing paths and outdoor spaces with new buildings and landscape improvements

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- increases the campus capacity by repurposing existing surface lots as building sites
 - improves the quality of the pedestrian environment by minimizing pedestrian–vehicular conflicts

Five major areas/proposals emerged from the plan:

1. **CORE CAMPUS** – The Plan emphasizes the relationship between buildings and outdoor spaces, increases the density of the Core Campus, and provides the capacity needed to achieve the University’s long-term strategic goals. The Plan accommodates a significant amount of new construction within the Core in a way that will enhance its spatial structure and strengthen its relationship to the surrounding city.
2. **THE QUAD** – As its largest outdoor space, the Quad is a hugely important piece of the UTPA campus. For many people in the community, it is where they first experience the University, an outdoor living room hosting thousands of people at events such as Hispanic Engineering, Science & Technology Week (HESTEC) and the Festival of International Books & Arts (FESTIBA).
3. **CHAPEL PARK & LIBRARY PAVILION** – One of the campus’s most beautiful places is the tree covered area near Chapel Lawn and the neighboring Wildscape Garden. The eventual removal of the old Physical Science Building will present an opportunity to reconceive these separate areas as a campus park, less formal than the Quad that will extend up toward the Library with meandering paths shaded by live oaks.
4. **WEST CAMPUS** - As the University expands and academic facilities take priority in the Core Campus, the West Campus parcels will be an important resource for recreational, athletic, and residential space. With the existing Wellness & Recreational Sports Complex nearby, these outdoor activities and proposed housing will complement each other quite well, and together with the existing and proposed housing facilities on the east side of Sugar Road, it enhances this area as the center of student life. New recreational facilities, including an addition to the Wellness & Recreational Sports Complex and multiple playfields, will be sited closest to the Core Campus, while new athletic facilities, including a soccer stadium and track & field complex, are sited further west, accessed off of Jackson Road.
5. **NORTH CAMPUS** – The proximity of the University’s North Campus to the academic Core makes it an ideal location for the expansion of academic facilities. In particular, its adjacency to the College of Health Sciences & Human Services and the Regional Academic Health Center suggests this as a preferred site for a new medical research campus. The North Campus will also serve for the eventual expansion of the University’s athletic facilities.

UTPA’s plan proposes a process for space management that involves creating a committee of individuals who are responsible for overseeing all proposals for the campus improvements, including new facilities, remodel/renovations, roadways, and even flatwork, landscaping, or other outdoor structures. This process guarantees that spaces maintain consistency in the facilities inventory and that changes are approved and documented immediately after they occur. Details of the makeup of the committee and the entire process are outlined in the master plan book. The success of any master plan is only realized when it becomes implemented and the processes are adhered to.

UT System is in the process of selecting a firm to create a regional master plan to serve the new UT-RGV. The selected firm will have the opportunity to take advantage of the thoughtful planning that Brownsville and Edinburg have recently done. We recommend that each of the plans should be considered by the selected firm as a foundation for the regional master plan as it develops. In addition, each plan was developed taking into consideration the climate and site constraints and those lessons should be taken into account by the new master plan. Overall, the new plan should reflect the architectural values that currently exist on each campus as they were developed within the unique context of the area where they were established. The plan should also recommend a unifying element that would serve as the identifier of the new University.

Furthermore, we recommend that the regional master plan be anchored in the core values and guiding principles as well as the stated purpose that “UT-RGV will serves the social, economic, research and, most importantly, the educational needs of the rapidly growing transnational, culturally diverse population of South Texas. UT-RGV would be a university that creates, preserves, and transmits knowledge that advances the region, state, and nation and that builds prosperity through entrepreneurship and commercialization. In a supportive environment dedicated to student learning, the University would provide quality instruction in rigorous academic and medical programs that leads to bachelors, masters and doctoral degrees as well as professional certification. Through teaching, research, creative activity, and public services, the UT-RGV prepares students to be socially conscious citizens and transformative leaders in the Rio Grande Valley”.

PHYSICAL RESOURCES

Some of the greatest assets for the new University as a result of the merger of institutions are the physical facilities. The physical facilities will be used to achieve the mission critical functions of the university such as education and research as well as support services such as sports and recreation, housing and other auxiliary services. A key goal for the new University will be to maximize the use of existing facilities by conducting audits for all assignable spaces with the aid of specialized software. Some of the strategies in achieving this process entail maintaining space inventory, proper identification codes, trending the use of spaces and finally rating its efficiency uses. It is an important task for the new University to create a strategic plan in order to maximize the use of assignable space and effectively manage operations of all facilities. Through the diligent care of Facilities Planning and Operations, the new university shall create an educational environment that is conducive to the mission of the University.

UT-RGV will offer an opportunity for UT higher education institutions to join together in an effort to improve the quality of life in the Rio Grande Valley. This will require administrators to partner in all aspects of facilities management in order to achieve one unified operation. While there are many similarities such as common computerized maintenance software, facilities maintenance requirements and building automation control systems, it also presents significant differences such as distance between campuses, utility providers, architectural design standards and staffing demands. The Edinburg campus maintains and operates approximately 60 structures with over 2.5 million gross square feet and over 20,200 in student population. The Brownsville campus maintains and operates approximately 17 facilities, with over 500,000 gross square feet and a student population of approximately 8,600 students. Additionally the UT-Health Science Center San Antonio has two facilities, respectively located in Edinburg and Harlingen Texas, which are to be considered as part of the merger. The Edinburg Research Academic Health Center operates a facility with approximately 49,437 gross square feet consisting of classrooms and BSL III restricted laboratories. The Harlingen Research Academic Health Center also operates a facility with approximately 94,817 gross square feet, consisting of classrooms and restricted research laboratories. It is through a unified operational effort

that these institutions will successfully offer academic and medical education programs that will transform the Rio Grande Valley with greater career and service opportunities. An overview of the facilities inventory can be found at Texas Higher Education Coordinating Board - Facilities Inventory website as shown below: <http://www.theccb.state.tx.us/index.cfm?objectid=505B0629-0677-C9BE-38BE1B6930CFCC4A> .

Space Deficiencies and Future Growth for the Region

Based on the current University's "use of space ratings", institutional administrators are encouraged to create a growth plan that will support functions of the academic and medical demands of the new University. The space usage efficiencies along with the Campus Master Plan should work in unison to manage space deficiencies by creating strategies that take future growth of the region, the mission of UT- RGV, and the guiding principles of the Board of Regents into account.

The shortage of assignable space will continue to be a significant obstacle in the foreseeable future, especially with the integration of campuses. The four-county area known as The Rio Grande Valley experienced a population increase of almost 80.1% in a 20 year period, growing to 1,264,091 as reflected on the 2010 US Census. The five-year projection for the population in the area is expected to grow to 1,400,596 representing a change of 1.52% annually from 2012 to 2017. The population changes make it critical for the new University to make wise use of its facilities. It is important that the institutional administrators consider implementing a variety of strategies for maximizing the use of existing space, expanding its online course offerings, and adapting current facilities to create more flexible teaching environments for example, as potential strategies in order to mitigate the immediate need for additional facilities.

Both UTPA and UTB have spent several years attempting to stay ahead of space demands. Recent changes at UT-Brownsville resulting from the separation of a longtime partner institution have resulted in the reduction of critical teaching and operational space. One of the areas that continue to require immediate attention for both Brownsville and Edinburg campus locations is related to on-campus housing. The recent campus master plans have confirmed that housing needs continue to be amongst some of the greater institutional priorities. Furthermore, the medical school working closely with local hospitals may, in fact, demand a new level of housing that will cater to these educational programs.

Managing Assignable Space

The new University will be faced with the challenge of maximizing the use of its facilities in order to effectively serve the academic and medical programs. The merger of institutions is likely to result in the immediate increase of the student population to over 30,000 across the Rio Grande Valley. The potential demand for space due to enrollment requires stringent space utilization policies that include strategies and measurable objectives requiring minimum "*fill rates*" for classrooms, labs and other assignable spaces. A policy should be created and enforced by high level administration in order to insure that facilities are maximized at all locations within the new University.

Examples of these strategies include: the Provost to be responsible for spearheading the creation of new space use policy; use of software to analyze classroom trends; maximize course enrollments to match the room capacity based on establish minimum fill rate; periodic generation of "Space Utilization Performance Report" that demonstrates space usage efficiencies; require that departments offer at least minimum percent of course offerings outside prime time (Monday through Thursday, 9 a.m. to 3 p.m.) in order to spread out the schedule of course offerings and maximize use of available facilities;

etc. Although these policies are intended to maximize the use of building space, it also results in other benefits such as better utilization of parking lots throughout the business day and week.

Classrooms of the Future and Experiential Learning

Student learning should be flexible, fun and engaging. Learning should take place in an environment that allows for collaboration, research, and small group discussion whenever possible. The new university should provide a classroom configuration that lends itself to flexible learning styles, such as project-based learning, and active learning.

The SCALE-UP method, originally created by Robert J. Beichner, PhD., physics professor at North Carolina State University, created SCALE-UP, which originally stood for “Student Centered Activities for Large Enrollment – University Physics”. This was aimed at teaching STEM education. It now stands for Student Centered Active Learning Environment for Undergraduate Programs, and is being used throughout the country in higher education and secondary school settings.

Furniture, for example, would include movable tables, chairs with casters, white boards or writable surface on walls, computer connectivity at each table, projection screens at various locations throughout the room, and good light distribution throughout the room.

The furniture can take the form of various styles and configurations within one classroom. Examples are standard lap desks with casters that can be grouped, lounging chairs, sofas, bistro tables and chairs, and long tables and chairs that can seat 3-6 students at each. This allows for the professor to reconfigure the furniture as they wish for their particular class and can move it quickly and effortlessly.

Students work in groups conducting research, bouncing ideas off of each other, and then share information learned and work together to solve problems. The professor has the flexibility to move around the room and reach all the students in a more interactive way than the traditional lecture style auditorium.

It creates a learning environment where students work in a team, and they understand that information sharing can be positive for the benefit of the larger group.

Providing flexible classrooms in each of the colleges throughout the new university that allow for collaborative learning. Building patios, courtyards, and open grounds are another resource for learning that professors can tap into, with the use of outdoor furniture and/or landscaping as other forms of learning environments. The attempt is to facilitate the process for faculty and allow students to engage outside of the traditional classroom environments.

Smart Mobile Devices and Support Services

A large number of students at any university campus today carry ‘smart’ mobile devices, whether it is a phone, electronic tablet or lap top computer. These electronic devices have become essential tools in a student’s college life. As these devices become more available, it is necessary that services and infrastructure support these tools. This refers to having large gathering indoors and outdoor spaces with a variety of furniture arrangements, both hardwired and wireless connections, charging stations, and technical support availability to all students as part of the standard services provided by the university. Additionally, the concept of a “one-stop shop” retail store on campus where software and accessories could be purchased and installed would be essential support for these services.

Wireless Network and Smart Mobile Devices in the Classroom

With the concept of collaborative learning classroom environments, another new technology that has begun to find its way into universities is one known as “Bonjour Gateway”. This technology allows for multiple smart mobile devices to work together under one wireless network to become a learning tool that faculty can utilize to engage students. Although “Bonjour Gateway” is an Apple based technology, other device and software manufacturers such as Windows, Android, and Linux, have created similar technology such as connecting to wireless printers, media projectors, and other wireless network-based services by means of interfacing auxiliary hardware devices. (Aerohive Networks , Bonjour Gateway Technology) (2013 Meru Networks, Inc – Meru Bonjour White Paper).

Leasing of Space to meet the growing demands of the new University

Leasing of classroom, office and other general spaces should be a consideration as new programs and services begin to take shape for the new University. With the new University intended to be a regional institution, opportunities to lease space will not only buy the necessary time to develop and implement a master plan, but also allow for easier access of programs and services to the students and local communities along the Rio Grande Valley. One of the great benefits of space leasing is that it allows the institution to make its presence throughout the region, and supports local communities across the Valley while supporting economic development.

Facilities Maintenance

A very important function for Facilities Management is the preservation of all facilities that support the mission of the University. This task is achieved through a comprehensive maintenance program that is managed with the assistance of a computerized maintenance management system (CMMS). Currently both UTPA and UTB operate a CMMS known as “The Maintenance Authority (TMA)”. This system utilizes several modules to manage activities that offer reliability in the operation of the building systems. TMA not only generates specific descriptions related to routine preventative maintenance activities, but it also maintains employee information such as timecards and other employee profiles.

With the use of a CMMS system, critical equipment is identified throughout the campuses for each trade, then schedules are established to perform Preventative Maintenance (PM) services, and finally, it identifies staffing levels required to complete the tasks. The PM work orders are issued to the trades monthly, quarterly, semi-annually, and annually depending on the schedules that have been established. Upon completion of the work, the PM cards are entered into the CMMS to log the activity and schedule the next cycle of services.

The use of the CMMS also allows Facilities Management the ability to generate work orders not only for routine but also for non-routine activities such as service calls and scheduled events. Facilities Management should also expect to implement a LEAN Process in which a comprehensive review is implemented in order to determine that staffing levels are maximized while reducing any duplication of processes and/or functions. This process not only offers new staff the ability to better understand work flows, but it also gives management the ability to align support services more efficiently and effectively for the new University across the Rio Grande Valley.

As the new university operations extend across the Rio Grande Valley, it is important to keep a centralized database for work order distribution. Consolidating the information on a management system allows for Facilities Management to run statistics on all aspects of the work which would include equipment maintenance and renewals, maintenance activities, special events, time entries, warehouse inventory, etc. Utilizing the latest technology the work can be distributed via wireless mobile devices

and tablets as to support a paperless business operation. Upon completion of the tasks, work orders are closed, and work related details are captured in real time.

Another important element related to Facilities Management is the qualifications of the staff. The new institution and building systems will require more sophisticated technicians to operate and maintain the facilities. As staff is being considered, it is extremely important that the proper knowledge and skills are in place to support the Physical Facilities. Whether its plumbers, electricians, janitorial, and grounds services, etc., it is important that management continue to support the staff with continuing education and certification opportunities in order to improve the quality of services and expertise offered within the new University.

Sustainable Initiatives for Utility/Energy Management

The Facilities Management (FM) is strongly committed to the practice of responsible stewardship in the management of utilities/energy. Through the new University's administration, we emphasize a practical, bottom-line approach in the implementation of sustainable initiatives while utilizing proven technologies.

Due to water shortages in the Rio Grande Valley, it is imperative that we continue to develop and implement prudent water management solutions through Facilities Management.

The Edinburg campus, for example, uses 1.5 million gallons of water (chill water loops) to air condition its facilities year-round. In this case, the objective is to optimize the use of water treatment chemicals in order to minimize the use of make-up water necessary for building air conditioning in both open and closed loop systems.

Over the years, Facilities Management staff has developed an infrastructure of programmable irrigation controllers and special designated meters to manage the use of irrigation water as well as cost. The use of these devices continues to be a significant factor in the university's ability to effectively use water to keep the campus grounds green and beautiful throughout the year.

Water conservation has been built into the design and remodel of facilities. It is standard practice, for example, to specify bathroom fixtures such as toilets and urinals with low-flow features. Other strategies for conserving water should also be considered whenever possible; proven technologies include HVAC condensate drains and rainwater harvesting to reclaim water for new projects.

As a new University, we must be open to the possibility of incorporating unconventional sources of water such as resacas, well water, and municipal effluent water for cooling plant and landscape irrigation uses.

The University is committed to the purchase of reliable sources of energy for all facilities at the lowest possible rates. One successful energy procurement strategy has been the aggregation of electricity with other UT campuses. Other strategies include the use of consultants that monitor utility market trends and offers advice on the purchase of energy and natural gas. Master planning the design of power and gas distribution infrastructure of new and remodeled facilities is yet another strategy that allows the new university to proactively pursue in order to minimize the price of utilities.

The integration of automation controls, technology, and maintenance in smart building design and remodeling have offered significant improvements in reducing utility usage and costs. It should be a standard practice, for example, to specify high efficiency HVAC equipment and lighting fixtures (such as LED) on all major construction, remodel and renovation projects. Additionally, the use of special

projects such as retro-commissioning of older facilities offers the ability to maintain building operating systems at the highest possible performing levels.

For many years now, FM teams have been using building automation software to monitor, control, and schedule facility HVAC in order to provide appropriate building ambient conditions and conserve energy. With the use of building electrical meters and utility management software to measure and analyze utility consumption for reporting, management becomes a good steward of the utility resources in the Rio Grande Valley. Other new technologies that could continue to be of interest are applications of alternative energy sources such as solar, wind, geothermal, and fuel cells where applicable.

Construction Projects in Support of Local Economic Development

The Rio Grande Valley is recognized for being an economically disadvantaged region not only in the State of Texas but also in the Nation. The creation of the University of Texas – Rio Grande Valley introduces an opportunity for economic development to a different classification of labor force outside of the normal higher education environment. Through the continuous growth of the new University, remodel/renovations and new construction projects become a critical support system to the local economy. Trades men and women such as carpenters, electricians, masons, painters, welders, and many other crafts would also have an opportunity for growth and entrepreneurship as a result of the new University. It is imperative that state dollars allocated for construction projects at UT-RGV remain in the Valley to the highest percentage possible in support of local and HUB registered businesses. The initiative must be supported by the UT-System, UT System Office of Facilities Planning and Construction, and UT-RGV Administration and Facilities Management in order to make an impact on the local economy. Another way to impact the Rio Grande Valley economy is to use local businesses only in outsourcing contracts and services for UT-RGV.

TRANSPORTATION

Access to the new University will require public transportation that serves a regional area. The region is defined as the span stretching from Cameron, Hidalgo and Starr Counties in the east-west direction and from the border crossings at cities such as Brownsville, Progreso, Hidalgo, Donna, Mission, and Pharr to the new University at different campus destinations.

Existing Public Transportation Service in the Region:

Brownsville Metro: The City of Brownsville receives urban public transit funding and operates 16 fixed routes and ADA para-transit services within the Brownsville city limits. Most Brownsville Metro routes operate Monday through Saturday beginning 6:00 a.m. and ending 6:00 p.m. to 8:00 p.m. Most routes operate on hourly headways, timed for transfers at La Plaza at Brownsville terminal located at 755 International Blvd. General public cash fares are \$1.00/ea., with reduced fares for seniors, people with disabilities, and students. Children under 6 ride free. Daily and weekly passes are available, as well as discounted multi-ride tickets. Transfers between routes are 25 cents.

Currently, through an agreement between Texas Southmost College (TSC) and the City of Brownsville, Brownsville Metro operates two fixed routes that were specifically planned for the TSC and UTB community. The service is known as Scorpion Metro. One route circulates around the existing Fort Brown campus and the other route travels between the Fort Brown and ITEC campus. As part of the

agreement both TSC and UTB students, faculty and staff have unlimited access on all Brownsville Metro fixed route buses.

Valley Metro: The Lower Rio Grande Valley Development Council provides urban and rural public transportation in the Valley through its transit department, Valley Metro. Valley Metro currently operates 16 flexible fixed-routes and a demand-response service. Most of its service is operated Monday through Saturday beginning at 6:00 a.m. and ending at 8:00 p.m. It serves the following communities in Cameron County: Brownsville, Harlingen, La Feria, La Paloma, Olmito, Port Isabel, Primera, San Benito, Santa Rosa. It serves these communities in Hidalgo County: Alamo, Alton, Donna, Edcouch, Elsa, Edinburg, Hargill, La Blanca, La Joya, Mercedes, Mission, Palmhurst, Palmview, Pharr, San Carlos, San Juan, Sullivan City, Weslaco. Willacy County is served by demand-response service.

Fares on Valley Metro are \$1.00 for adults (regular fare) and \$0.50 for students, the elderly (60+), the disabled, and veterans. Transfers from one bus to another are free. Children under 7 ride free. Valley Metro also provides free service to UTB, UTPA and Texas State Technical College students, faculty and staff through an agreement with the schools.

Metro McAllen: The City of McAllen provides the Metro McAllen transit system, which operates throughout the city. Presently, it operates seven bus routes. All routes begin and end their trips at Central Station, the downtown terminal facility, where passengers can connect to an array of international, national, regional and intercity destinations. The bus service hours of operation are from Monday through Saturday from 6:00 a.m.- 11:00 p.m. and Sunday 8:00 a.m. - 8:00 p.m. General public cash fares are \$1.00, with reduced fares for seniors, people with disabilities, and students. Children under 6 ride free.

The WAVE: The Town of South Padre Island operates The Wave, a fixed-route public transit system that serves the City of South Padre Island and Port Isabel with a fleet of ten accessible small buses. The two routes of this fare-free system operate daily from 7:00a.m. to 9:00 p.m. on 30-minute headways. There is service for persons with disabilities on a case by case basis.

Metro Connect: Metro Connect is an intercity bus service connecting the upper and lower Valley. It provides service with three bus lines: the green line connects the UTPA campus in Edinburg to McAllen, the red line connects McAllen to Brownsville (with stops in Mercedes and Harlingen), and the blue line connects Brownsville to South Padre Island. Hours of operation are Monday through Sunday from 5:20 a.m. to 9:10 p.m. Fares on Metro Connect are \$5.00 for a day pass valid on all Metro Connect routes, \$10.00 for a day pass valid on all Metro Connect, Brownsville Metro, and Metro McAllen routes, \$90.00 for a 30-day pass valid on all Metro Connect routes and \$100.00 for a 30-day pass on all Metro Connect, Brownsville Metro, and Metro McAllen routes. A discounted 30-day pass for UT and Texas Southmost College students may be purchased for \$25.00.

Suggested Routes

Public transportation to serve the new University shall be a combination of direct routes and multi-connect destinations.

Direct: Direct route transportation means non-stop or limited-stop service between specific university destinations. It is essential to those passengers interested in reaching their university destinations quickly and efficiently. This direct connect route is dedicated mostly to university communities and

those routes that may work in conjunction with other local services to hospitals and community colleges in the area.

Multi-Connect: Multi-connect transportation means service that makes multiple stops along a route with stops located from 1/8 to 1/4 of a mile apart. These services provide transportation to University facilities as well as destinations not related to the university. Multi-connect transportation are essential for passengers that have a need to make multiple stops for doctor/clinical visits, groceries, apparel and other retail/services essential to support the university community. The multi-connect routes may work in conjunction with other public transportation services that are available to the general public outside of the “Direct Route” services.

Public Transportation - Vehicle Equipment and Essential Amenities:

All public transportation that made available to serve the new University shall be equipped with essential amenities that:

- Must be fully accessible to all riders;
- Must be equipped with satellite positioning device for location (GPS);
- Must be equipped with wireless web connections for portable media;
- Must be equipped with charging stations for media equipment;
- Must be equipped with emergency communications;
- Must be equipped with tracking systems for ridership;
- Must be equipped with bike racks;
- Must be equipped with video surveillance
- Must have dynamic display screens to transmit information.

Existing public transportation vehicles currently in operation are equipped with most of the amenities listed above (except for charging stations for media equipment and wireless web connections on some services).

Park and Ride

Park and Ride facilities shall be incorporated as part of a vehicle and transportation management strategy on the new University campuses. They shall provide access to direct route and/or multi-connect transportation services. Riders shall have the ability to purchase boarding tickets or extended ride passes at each Park and Ride facility. These facilities shall be located "at or near" each point of connection in order to allow riders to purchase boarding ticket or extended ride pass at each destination. This process shall work in conjunction with University issued ID cards for identification in order to allow for university business operations and/or student services functions to be incorporated into the ridership process. Real-time route information should be available at each park & ride. This information should be accessible through display screens, on the web, and through a mobile app.

Permanent and Reliable Public Transportation

UT-RGV should work closely with local and state entities to facilitate the process for providing permanent and reliable public transportation for the region. Often local transportation services relying on grant funding which has a limited scope of service and contingent upon periodic approval. The timeliness of scheduled public transportation must meet the needs of the campus community. Current public transit services do not always operate at times that coincide with student class schedules, particularly for late evening classes. The holiday schedules taken by the public transit providers must be in alignment with the campus community or it will cause a significant inconvenience to those students who rely on public transportation to travel between campuses.

Use of Alternative Modes

UT-RGV should implement a truly multimodal solution to its transportation challenges – utilizing not only standard buses for transport, but a mix of buses, vans, cars, and bikes giving the passenger a variety of choices that allow maximum flexibility and still achieve institutional goals like promotion of green values. A bike program and car share program should be key components. Any place with enough waiting area for passengers and busy foot traffic can serve as a hub.

HOV Lanes

UT-RGV should work closely with TXDOT to create an HOV lane that allows for public transportation or carpool vehicles to move across the Rio Grande Valley to the new University facilities, hospitals and other local community colleges with ease. HOV lanes offer the ability for commuters to travel without having to fight traffic congestion resulting from rush hour periods during morning, mid-day and afternoon rush hours. Additionally the HOV lanes offer a greater level of safety to commuters since it is considered a protected lane.

A truly dynamic transit system is composed not only of drivers and vehicles, but other amenities and programs that promote buy-in from members of the community. The new University should embrace transit as a way of life, as a necessity just as it does the campus gym or the library. Key components of a system that is engaged with its community should include campus bus shelters, waiting areas, and transfer stations that can showcase the wealth of knowledge and talent at this new University. –

Surface Parking and Parking Structures are expensive investment of real estate and facilities that often provide very little return on investment to Universities. These types of facilities often tie up valuable real estate that could better serve for educational purposes such as academic, medical or research facilities. Although parking facilities are necessary to any business operation, they could be better managed by encouraging faculty, staff and students the use of public transportation to reach their desired destinations. Collaboration to increase the frequency and usage of public transportation by the campus community can help to reduce the vehicular congestion at the various campus locations as well as delay the need for expansive parking structures.

The new University will be achieve a population of over 30,000 faculty, staff and students upon completing the merger. This institution would be expected to reflect a minimum of 3-5% growth rate per year. With approximately 1,500-2,000 additional vehicles occupying parking facilities, roads, and highways, stakeholders must take measures to manage the increase of traffic. This strategy is not one that can be achieved strictly by efforts of the new University. This will require partnerships with local and state entities.

Conclusion and Recommendations

The unique nature of the new UT-RGV allows an opportunity to establish a new model for teaching delivery and use of the physical resources available. Furthermore, given that the existing physical resources are anchored into each institution's unique history, it provides a challenge to respect each campus' values while weaving in new values and a culture that are translated into the physical resources of UT-RGV. With that in mind the Master Plan, Physical Resources, and Transportation Linkages working group recommends the following:

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- Utilize existing master plans as the foundation for the development of the regional master plan for UT-RGV.
 - Consider sustainability impacts in the regional master plan and explore implementing a net zero target at a campus level. Current master plans call for better use of existing resources and consider the environment in all aspects of its physical growth. While the net zero target is a long term goal that might not be appropriate for a regional campus, it certainly launches a broader discussion on sustainability efforts that should be considered by UT-RGV.
 - Create “learning centers” in specific target areas to reach students throughout the Region. In order to become a truly regional university, the new University master plan should identify various locations to serve the students throughout the region outside of current “formal” campuses in Brownsville, Edinburg, and Harlingen.
 - Incorporate the geographical and cultural values of the region into the master planning guidelines for UT-RGV.
 - Implement learning environments that allows for collaboration, research and small group discussion –see research on SCALE UP model.
 - Implement space utilization targets that would yield in better utilization of existing physical resources.
 - Consider leasing spaces throughout the community to reach out to the community but also to satisfy space needs while new construction is underway.
 - Use technology and computerized management systems to maximize efficiency in the deployment of maintenance crews and to provide an effective management tool for services.
 - Maximize the use of smart mobile devices in the classroom and support services.
 - Implement a regional approach to transportation utilizing the region’s service providers.
 - Promote economic development through the use of local goods and services.
 - Advocate for a truly dynamic transit system that includes technological amenities and encourages the use of various forms of transportation.

References

- UTPA Campus Master Plan by Barnes Gromatzky Kosarek Architects in association with Michael Dennis & Associates 2013, <https://portal.utpa.edu/portal/page/portal/F29996EEE8293155E044000E7F4F739C>
- UTB Campus Master Plan by Cannon Design
- US Census Data 2010
- Texas State Data Center for Data Projections and U.S. Census Bureau; 1990, 2000, and 2010
- Aerohive Networks , Bonjour Gateway Technology
- 2013 Meru Networks, Inc – Meru Bonjour White Paper

- **Appendices**

Appendix 1



Bonjour Services _Gateway.pdf

Appendix 2



Bonjour-support-architecture-overview.pdf

Appendix 3



ESRI Executive Summary - RGV (2).pdf

Appendix 4



ESRI Executive Summary - Texas.pdf

Appendix 5



ESRI Executive Summary - US.pdf

Appendix 6



RGV Demographics and DHR Births.pdf

Appendix 7



Texas Politics - Poverty Rates _ US Texas and RGV.pdf

Appendix 8



Texas Politics - Poverty Rates for US and Texas 1980-2007.pdf

Appendix 9



US Demographics Update.pdf

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