



# Energy and Water Management Plan

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## Section 1: Instructions

[Texas Government Code §447.009](#) requires each state agency and institution of higher education to set and report percentage goals for reducing its usage of water, electricity, transportation fuel and natural gas. According to [34 Tex. Admin. Code §19.14 \(2016\)](#), these goals must be included in a comprehensive energy and water management plan (EWMP) submitted by **Oct. 31** of every fiscal year to the State Energy Conservation Office (SECO). This requirement is intended to streamline and standardize the energy reporting requirements of state agencies and institutions of higher education.

Please complete Section 2: Agency Information and Section 3: Providing Agency or Section 4: Tenant Agency, as applicable, for **the previous fiscal year**. Save this form as “EWMP-Agency Number-Agency Acronym-FY20##.docx” (e.g., EWMP-104-LBB-FY2021.docx), and return this form by email to [seco.reporting@cpa.texas.gov](mailto:seco.reporting@cpa.texas.gov) no later than **Oct. 31**.

Please do not embed images, charts or graphics in your responses; however, you may provide hyperlinks to them.

Please visit [SECO’s Energy and Reporting website](#) for more information. For questions about reporting, please contact [seco.reporting@cpa.texas.gov](mailto:seco.reporting@cpa.texas.gov) or call 844-519-5676.

## Section 2: Agency Information

*Please provide the name and number (if applicable) of the agency that is submitting an Energy and Water Management Plan.*

Agency Name: Texas Tech University Health Sciences Center – El Paso

Agency Number: 774

Other agencies included in this summary: [click to enter](#)

*Please provide the contact information for the person(s) responsible for implementation of the recommendations in the plan and the contact information for the person(s) responsible for reporting and submitting the plan, if different.*

### Implementation Contact

Name: Al Flores, Jr.

Title: Managing Director

Email: al.flores@ttuhsc.edu

Phone: 915-215-4500

### Reporting/Submission Contact

Name: Calvin Shanks

Title: Sr. Director- Safety Services

Email: calvin.shanks@ttuhsc.edu

Phone: 915-215-4500

### Section 3: Providing Agency

Does your agency occupy or manage a state-owned building and pay the utilities? Yes - Providing Agency

If NO, please skip to [Section 4: Tenant Agency](#).

If YES, please complete the following:

Have you submitted, or will you be submitting by Oct. 31, 2021, energy and water usage data for your agency and properties using the [ENERGY STAR Portfolio Manager](#) tool? Yes - EnergyStar data submitted

#### Progress Report

*The Progress Report Section must outline the progress of activities related to the implementation of projects from the previous Energy and Water Management Plan (if applicable), including continuation of or new preliminary energy audits, a summary of the results, utility efficiency and cost savings. Agencies should periodically conduct preliminary energy audits to identify new utility savings opportunities.*

TTUHSC – El Paso has grown in Gross Square Footage in FY 2021 with the addition of the Medical Sciences Building II, which increased the total square footage by 44% within this time frame. We experienced additional usage and costs throughout campus based on the extra square footage. The new Medical Sciences Building II was partially occupied through the first two years of usage, and we continue to add occupancy through the end of this fiscal year. We have yet to experience the total usage of the building; therefore, the baseline will need to be established for the next fiscal year. The Northeast Clinic will go online Fiscal Year 2024, so we must also re-establish the baseline after the fiscal year.

We analyzed the Electrical Consumption from FY2020 through FY2023; based on the total square footage of the campus, we see the effect of the additional square footage on the campus consumption data. But from FY 2022 to FY 2023, the total consumption rose just 2% as we continued establishing building usage.

Utility Usage/Quantity Electric	FY2020 kWh	FY21 kWh	% Change	FY2022 kWh	% Change	FY2023 kWh	% Change	Electric - Grid Total kWh
3000- AEC	1,647,399	1,703,025	3%	2,061,938	21%	2,164,076	5%	7,576,438
3001- CSB/ 3008- CSB Central Plant	3,728,757	3,968,975	6%	4,201,557	6%	4,033,888	-4%	15,933,177
3003- ASB/ 3004- ASB Annex	382,221	379,580	-1%	394,283	4%	390,058	-1%	1,546,142
3005- MSB1	5,612,891	5,711,207	2%	5,667,874	-1%	5,514,408	-3%	22,506,380
3006- MEB	3,308,161	3,202,637	-3%	3,421,233	7%	3,251,619	-5%	13,183,650
3009- ASBII	144,630	372,510	158%	744,499	100%	831,918	12%	2,093,557
3010- SON	645,200	730,900	13%	680,800	-7%	718,300	6%	2,775,200
3011- Miles Warehouse	76,922	51,152	-34%	71,970	41%	81,160	13%	281,204
3012 Medical Science BuildingII	N/A	2,523,000	100%	3,599,400	43%	4,451,000	24%	10,573,400
3013 & 3014 Clinical Building Support A & B (CBS)	161,800	304,600	88%	403,700	33%	340,300	-16%	1,210,400
3015 Facilities Services Building (FSB)	71,785	102,380	43%	110,637	8%	98,164	-11%	382,966

3016- TTRAC	99,921	98,003	-2%	78,440	-20%	74,736	-5%	351,100
3104 9830 Gateway Blvd	N/A	28,400	100%	33,680	19%	18,680	-45%	80,760
3527- Mesa Psychiatric Ctr	78,123	95,109	22%	126,035	33%	103,821	-18%	403,088
3531- Valverde	93,009	84,727	-9%	103,343	22%	96,114	-7%	377,193
Grand Total	16,050,819	19,356,205	21%	21,699,389	12%	22,168,242	2%	79,274,655

If we remove the outliers from the equation, we can determine that the long-term energy consumption reduction plan is showing positive results. The overall reduction in consumption is about 2%, which, given the extreme heat conditions of this summer, required us to cycle the chillers for more days than usual.

Utility Usage/Quantity Electric	FY2020 kWh	FY2021 kWh	% Change	FY2022 kWh	% Change	FY2023 kWh	% Change	Electric - Grid Total kWh
3000- AEC	1,647,399	1,703,025	3%	2,061,938	21%	2,164,076	5%	7,576,438
3001- CSB/ 3008- CSB Central Plant	3,728,757	3,968,975	6%	4,201,557	6%	4,033,888	-4%	15,933,177
3003- ASB/ 3004- ASB Annex	382,221	379,580	-1%	394,283	4%	390,058	-1%	1,546,142
3005- MSB1	5,612,891	5,711,207	2%	5,667,874	-1%	5,514,408	-3%	22,506,380
3006- MEB	3,308,161	3,202,637	-3%	3,421,233	7%	3,251,619	-5%	13,183,650
3009- ASBII	144,630	372,510	88%	744,499	100%	831,918	12%	2,093,557
3010- SON	645,200	730,900	12%	680,800	-7%	718,300	6%	2,775,200
3011- Miles Warehouse	76,922	51,152	-40%	71,970	41%	81,160	13%	281,204
3013 & 3014 Clinical Building Support A & B (CBS)	161,800	304,600	61%	403,700	33%	340,300	-16%	1,210,400
3015 Facilities Services Building (FSB)	71,785	102,380	35%	110,637	8%	98,164	-11%	382,966
3016- TTRAC	99,921	98,003	-2%	78,440	-20%	74,736	-5%	351,100
3527- Mesa Psychiatric Ctr	78,123	95,109	20%	126,035	33%	103,821	-18%	403,088
3531- Valverde	93,009	84,727	-9%	103,343	22%	96,114	-7%	377,193
Grand Total	16,050,819	16,804,805	5%	18,066,309	8%	17,698,562	-2%	68,620,495

Our cooling systems drive the demand on our electrical grid, as established in the following table. This is our high demand building, as this facility runs 24 hours, seven days a week. Typically we need to run chillers 12 months out of the year, but with creative HVAC controls programming, we were able to reduce the chiller starts in the winter to run the critical equipment that requires the chilled water loop.

	Total Consumption kWh	Total Demand kW
3005- MSB1		
9/15/2022	626,021	1,157

10/14/2022	509,862	1,022
11/15/2022	392,201	734
12/15/2022	318,923	681
1/16/2023	356,832	723
2/15/2023	320,620	732
3/17/2023	346,496	747
4/18/2023	403,988	774
5/18/2023	458,417	945
6/19/2023	618,224	1,126
7/19/2023	692,073	1,261
8/17/2023	470,751	1,076
Grand Total	5,514,408	10,978

Temperature changes can have a significant impact on the use of gas in buildings. With the two biggest facilities on campus that run 24 hours and 7 days a week, temperature fluctuations will drive the gas demand on the building. Our HVAC systems will economize based on the outside ambient temperatures to reduce energy consumption.

Utility Usage/Quantity Gas	FY2020 ccf	FY2021 ccf	% Change	FY2022 ccf	% Change	FY2023 ccf	% Change	Natural Gas Total ccf
3000- AEC	23,676	24,253	2%	31,945	32%	31,882	0%	111,757
3001- CSB/ 3008- CSB Central Plant	43,690	46,040	5%	47,210	3%	47,470	1%	184,410
3003- ASB/ 3004- ASB Annex	1,763	2,090	19%	1,623	-22%	2,168	34%	7,644
3005- MSB1	183,790	244,940	33%	282,311	15%	395,764	40%	1,106,805
3006- MEB	103,380	87,970	-15%	73,155	-17%	127,851	75%	392,356
3009- ASBII	1,300	3,413	162%	6,895	102%	8,781	27%	20,389
3010- SON	5,089	6,991	37%	3,846	-45%	6,570	71%	22,496
3011- Miles Warehouse	10,302	11,258	9%	13,598	21%	15,335	13%	50,493
3012 Medical Science BuildingII	N/A	778,796	100%	70,134	-91%	156,950	124%	1,005,880
3013 & 3014 Clinical Building Support A & B (CBS)	802	2,729	240%	3,227	18%	4,688	45%	11,446
3015 Facilities Services Building (FSB)	1,293	1,252	-3%	1,000	-20%	897	-10%	4,442
3016- TTRAC	160	188	18%	333	77%	347	4%	1,028
3104 9830 Gateway Blvd	N/A	79	100%	269	241%	-	-100%	348
3531- Valverde	875	1,395	59%	964	-31%	1,049	9%	4,283

Grand Total	376,120	1,211,394	222%	536,510	-56%	799,753	49%	2,923,778
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Domestic water use has been reduced on campus by replacing fixtures with low-flow fixtures. The water consumption at the Medical Sciences Building I was attributed to a new RO/DI water filtration and sanitization system to prevent water waste.

Utility Usage/Quantity Domestic Water	FY2020 kGal	FY2021 kGal	% Change	FY2022 kGal	% Change	FY2023 kGal	% Change	Potable Indoor Total kGal
3000- AEC	709	422	-41%	596	41%	492	-17%	2,219
3001- CSB/ 3008- CSB Central Plant	1,659	1,659	0%	2,063	24%	1,641	-20%	7,022
3003- ASB/ 3004- ASB Annex	105	91	-13%	117	28%	106	-9%	419
3005- MSB1	3,640	3,682	1%	3,874	5%	2,245	-42%	13,440
3006- MEB	640	393	-39%	1,085	176%	560	-48%	2,679
3009- ASBII	82	192	135%	535	179%	703	31%	1,511
3010- SON	203	105	-48%	155	48%	226	46%	688
3011- Miles Warehouse	53	39	-27%	45	15%	39	-13%	176
3012 Medical Science BuildingII	N/A	640	100%	380	-41%	469	23%	1,489
3013 & 3014 Clinical Building Support A & B (CBS)	275	156	-43%	215	38%	161	-25%	807
3015 Facilities Services Building (FSB)	72	51	-29%	55	7%	34	-38%	211
3016- TTRAC	45	38	-15%	28	-27%	27	-2%	138
3104 9830 Gateway Blvd	N/A	-	100%	1	100%	2	167%	3
3531- Valverde	875	1,395	59%	964	-31%	1,049	9%	4,283
Grand Total	8,358	8,862	6%	10,112	14%	7,754	-23%	35,086

We continue to expand our use of recycled water on campus. We are establishing new landscaping areas that will benefit from using recycled water. We expect the percentage to increase by 10% in the next two fiscal years.

Utility Usage/Quantity Domestic Water	FY2020 kGal	FY2021 kGal	% Change	FY2022 kGal	% Change	FY2023 kGal	% Change	Potable Outdoor Total kGal
3005- MSB1 (Recycled water)	7,788	9,325	20%	9,256	-1%	10,243	11%	36,612
3010- SON	37	34	-8%	30	-11%	30	0%	130
3531- Valverde	N/A	239	100%	451	89%	306	-32%	996
Grand Total	7,825	9,598	23%	9,737	1%	10,579	9%	37,738

**Goals**

*The Goals Section must summarize the future goals for utility conservation. In accordance with [Texas Government Code §447.009](#), each state agency and institution of higher education shall set percentage goals for reducing the agency's or institution's usage of water, electricity, transportation fuels and natural gas. The percentage goal should state a target year and reference the target goal relative to a benchmark year.*

Establishing the two new facilities requires us to determine new ways to meet our energy goals. We have upgraded the majority of lighting not only to T-8 fluorescent but to LED when applicable. All new projects must install LED lighting that works with our lighting control systems.

HVAC control systems can play a crucial role in achieving energy conservation goals on campus. According to the Association of Physical Plant Administrators (APPA), building automation systems (BAS) or direct digital control (DDC) systems have been used in all building types throughout the last few decades to control and monitor mechanical and electrical equipment such as heating, ventilation, and air conditioning (HVAC) systems. BAS are essential tools to troubleshoot issues related to HVAC and building systems, ensure that building comfort levels are maintained, and minimize energy consumption.

An energy management and control system (EMCS) can be used to monitor indoor environmental quality, lighting, lab air flow/fume hood ventilation, and utility metering. To fully capture the comprehensive application of the system, we must continue to expand the use of the Metasys Controls system on campus.

In conclusion, HVAC control systems can help in achieving energy conservation goals on campus by reducing HVAC waste while maintaining or even increasing comfort levels for occupants.

Utility	Target Year	Benchmark Year	Percentage Goal
Water	FY 2024	FY 2021	-5%
Electricity	FY 2024	FY 2020*	-2%
Transportation fuels	FY 2024	FY 2022	-2%
Natural gas	FY 2024	FY 2022	-5%

\*[Texas Health and Safety Code Section 388.005\(c\) and \(f\)](#). Entities that began energy conservation tracking prior to Sept. 1, 2007, or in attainment areas, may substitute their own electricity benchmark years.

**Strategy for Achieving Goals**

*The Strategy Section must describe how the agency or institution plans to prioritize and implement cost-effective utility efficiency measures in order to meet the established utility conservation goals.*

The next strategy to reduce consumption is to establish a plan to reduce HVAC consumption on campus. This will require the establishment of comfortable temperature levels on campus. Heating levels will drop from 73-74 degrees to 70 degrees max in working areas, and cooling levels will rise to 73 degrees, moving away from 68-69 degrees that the employees have come to expect.

Reducing comfort levels can contribute to creating energy savings on campus. Continuously monitoring a building's energy systems can lead to reductions of 25% in annual energy bills. Savings primarily come from resetting existing

controls to reduce HVAC waste while maintaining the established temperature levels. As we look at our data, the heavy energy consumption maintains comfort levels across campus.

Over two-thirds of the energy we currently consume in the U.S. is wasted, and college campuses are no different. In campus buildings, which consume more than four-fifths of the energy used by universities, improved energy efficiency can cut overall energy use by up to 60 percent.

However, it is important to note that reducing comfort levels can have negative impacts on occupants' health and productivity. Therefore, it is crucial to strike a balance between energy savings and occupant comfort .

### **Implementation Schedule**

*The Implementation Schedule Section must outline a proposed timeline for implementing utility cost-reduction measures and a strategy for monitoring utility savings of the installed utility measures.*

We will continue to look at our systems and determine a schedule of equipment and costs associated with upgrading our systems.

1: Conduct an energy audit: Before you start implementing any energy-saving measures, it's important to understand how much energy your business is consuming and where it's being used.

2: Identify low-cost measures: Once you have identified areas where energy is being wasted, you can start implementing low-cost measures to reduce your energy consumption. Some examples of low-cost measures include using natural light instead of artificial light, control system installations and programming, and adjusting the thermostat to reduce heating and cooling costs.

3: Invest in the Metasys equipment: While energy-efficient equipment may be more expensive upfront, it can save you money in the long run by reducing your energy bills. Several systems on campus need to be upgraded to the new system.

4: Encourage employee participation: Encourage your employees to participate in your energy conservation efforts by educating them about the importance of saving energy and providing them with tips on how they can help. You can also incentivize employees who come up with innovative ways to save energy.

### **Finance Strategy**

*The Finance Strategy Section must describe how the agency or institution plans to obtain funding for the recommended utility cost-reduction measures. This section should show the estimated cost of all projects and the funding sources to be used.*

As in the past, we continue to fund energy savings projects on campus with realized energy savings. These past two fiscal years have limited the use of said funding due to the increased costs of energy with the two new facilities. The energy savings were used to cover the budget shortfall with the new costs. However, now that the budgets are established, we can recognize energy savings to reinvest in our systems to upgrade the necessary systems. With the upgrades, we expect to identify further savings to reinvest in energy savings measures.

### **Transportation Fuel Consumption**

Does your agency maintain one or more state-owned vehicles? Yes - Has fleet

Does your agency report its fuel usage via the [Texas Fleet System](#)? Yes - Report to fleet system



**Employee Awareness Plan**

*The Employee Awareness Plan Section must outline how the agency will make employees aware of utility cost-reduction measures, both directly (affecting change in behavior) and indirectly (not designed to affect behavior).*

As we move forward to establish the new energy conservation measures on campus, communication will be vital to establishing cooperation with the employees. They must understand how changing the thermostat setpoints contributes to our energy conservation goal. Students, faculty, doctors, and staff are on the frontline of energy usage, and we can make a difference when they participate in conservation measures. Simple reminders to turn off lights, close doors, and report malfunctioning equipment will prevent unwarranted energy waste.

With the tight budgets on campus, the departments might benefit from the reduction of costs by realizing the savings in their departmental budgets. Working with Institutional Advancement to establish a solid communication plan and creating events to raise awareness while making it fun to participate. Without employee buy-in, the percentage of success drops.

**Section 4: Tenant Agency**

**Progress Report**

*The Progress Report Section must outline the progress of the implementation of projects from the previous Energy and Water Management Plan or Resource Efficiency Plan (if applicable), including a summary of the results of the projects in terms of utility efficiency and cost savings.*

Click to enter your agency's Progress Report.

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**Transportation Fuel Consumption (if applicable)**

Does your agency maintain one or more state-owned vehicles? Choose an item.

Does your agency report its fuel usage via the [Texas Fleet System](#)? Choose an item.

**Employee Awareness Plan**

*The Employee Awareness Plan Section must outline how the agency will make employees aware of direct utility consumption. Plans might include employee training, signage or recognition programs.*

Click to enter your agency's Employee Awareness Plan.

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