



# 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. Per [34 Tex. Admin. Code §19.14 \(2016\)](#), these goals must be included in a comprehensive energy and water management plan (EWMP) submitted every fiscal year to the State Energy Conservation Office (SECO) by **Oct. 31**. 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 **Fiscal Year 2021**. Save this form as "EWMP-Agency-FY2020.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 visit the [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: Midwestern State University

Agency Number: 735

*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***

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Title: Associate Vice President for Facilities Services

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Phone: 940-397-4648

### ***Reporting/Submission Contact***

Name: Kyle Owen

Title: Associate Vice President for Facilities Services

Email: kyle.owen@msutexas.edu

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### Section 3: Providing Agency

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

Yes  No

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

If YES, please complete the following:

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

Yes  No

#### 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.*

Midwestern State University (MSU) provided an energy management master plan to the LBB in November 2012 in compliance with Executive Order RP 49 and updated the plan in a submission to the LBB in October 2017. An update on recommendations from the 2017 report are as follows:

1. Renovation of the Daniel Building (now referred to as the Bridwell Activities Center) was completed in August 2022 and incorporated modern energy code standards.
2. Continuing efforts to replace compact fluorescent bulbs with LEDs when they burn out:
  - a. Clark Student Center: Replaced 78 – 2x4 LED fixtures and one 2x2 LED fixture.
  - b. Fain Fine Arts, Room C115: Replaced 20 – 2x4 LED fixtures.
  - c. West Campus Annex, Football administration office area with cubicles: Replaced 56 – 4 lamp 2x4 fluorescent fixtures to LED 4’ lamps.
  - d. Daniel/Bridwell Activities Center, Second floor: Approx. 90% fluorescent bulbs changed to LED.
3. A significant effort to begin replacing fluorescent bulbs in campus buildings was initiated in FY21 and has continued through FY22. Approximately 40% of the light fixtures (392) in Prothro-Yeager-Beawood-O’Donohoe were replaced with LED light fixtures to complete the LED upgrades for this entire building (\$42k). Another 383 fixtures were replaced on the first and second floors of Moffett Library (\$82k) with plans to replace most of the remaining fixtures on the third floor in FY23.
4. Repairs to the concrete deck on two older cooling towers were completed to increase their life for another 10+ years. Spalling off concrete from the fan’s perimeter structure was repaired along with replacement of the fan shrouds, blades, drive shaft, and filter media to improve its overall efficiency.
5. Wichita Falls Museum of Art at MSU: MEP firm designed HVAC upgrades to improve air quality, add HVAC controls to four galleries, and reduce noise and energy use for these systems. Funds to complete the upgrades are under review.

6. MSU’s chilled water system is sized to allow for campus expansion. However, the steam system is considered undersized such that additional buildings cannot be added to its loop. The last two campus buildings MSU constructed, Legacy and Centennial, have their own dedicated boilers instead of using steam from Central Plant. In 2021, the Legislature provided funds to evaluate the campus steam load requirements and add energy efficient boilers in the Central Plant so new buildings can be heated with the existing tunnel loop instead of installing individual boilers in new structures. The funds became available in August 2022 to proceed with the design effort. A contract has been initiated with a MEP firm to move forward with this project.

Energy usage results are as follows: From FY21 to FY22, MSU observed an 8.8% increase in electricity usage, a 9.3% increase in gas usage, and a 2.9% decrease in water usage. The electricity and gas increases are attributed to more students, faculty, and staff back on campus after pandemic concerns eased. A failed city water meter resulted in two months of zero usage so the water decrease is not likely to be realized in FY23 when the meter is replaced. In FY22 compared to FY17, MSU observed a 6.3% increase in electricity usage, a 6.2% increase in gas usage, and a 14.6% decrease in water usage. The increase is attributable to an 8% increase in campus square footage during that time.

### Goals

*The Goals section must summarize the future goals for utility conservation. Pursuant to [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 use 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.*

| Utility              | Target Year | Benchmark Year | Percentage Goal |
|----------------------|-------------|----------------|-----------------|
| Water                | FY2021      | FY2016         | 1%/year         |
| Electricity          | FY2021      | FY2021*        | 1%/year         |
| Transportation Fuels |             | FY2016         | 1%/year         |
| Natural Gas          | FY2021      | FY2016         | 1%/year         |

\*[Texas Government Code Section 388.005\(c\) and \(f\)](#). Entities who began energy conservation tracking prior to September 1, 2007 or in attainment areas, may substitute their own electricity benchmark year.

### 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.*

MSU has been active in pursuing energy reduction technologies and procedures for ~15 years including a SECO loan in 2011 to save gas and electrical energy, and replacement of natural grass athletic fields with artificial turf in 2015 to reduce water consumption. In the fall of 2019, and in response to Health and Safety Code Section 388.005C passed by the 86<sup>th</sup> Legislature, MSU updated the energy master plan which was included in the FY20 submission. The consulting firm that developed the 2019 energy master plan determined the only financially feasible option for saving energy was to pursue LED light retrofitting (reference pages 4 and 5 of the master plan) at a cost of \$4.1 million. By retrofitting all campus lighting with LEDs, it is anticipated energy savings of 5.1% could be achieved. However, funding limitations

restrict MSU's ability to invest \$590k per year necessary to realize the 5.1% savings at the end of seven years. Instead, MSU plans to invest ~\$100k per year for the foreseeable future to retrofit lighting.

MSU continually seeks opportunities for energy efficient and reduction. In December 2020, MSU requested an energy usage report from Ameresco. Ameresco suggested LED lighting retrofits, upgrades to plumbing fixtures to low-flow technology, additional insulation for steam pipes, variable speed pumping for heating water hot water pumps, upgrades to fume hoods/fans for energy conservation, rehabilitation of cooling towers, replacement of an older boiler, and replacement of air handlers in two buildings (Hardin, Bolin) at a total of almost \$9 million with a twenty-year payback. Unfortunately, the payback period was unusually long and not reasonable. MSU continues to pursue LED retrofits at a more economical price with planned investments of approximately \$100k per year. MSU will address its aging concrete cooling tower in FY22.

The Legislature will provide funding for MSU to upgrade the utility system in Bolin Hall as part of a \$38M renovation project. The project will begin in December 2022 with design work, with construction expected to complete in late 2025. A significant part of the project's scope is to upgrade, replace, and retro-commission the existing mechanical, electrical, and plumbing building systems in order to gain energy efficiencies, as well as, to comply with the current building codes. This will include replacement of the pneumatic control system with Andover digital controls, replacement/retrofit of air handling equipment, replacement of exhaust fans, upgrade of electrical switch gear and transformers, and a new temperature control system for the greenhouse.

While the overarching university goal is to reduce utility costs by 1% per year, the economically feasible opportunities to achieve this goal are limited due to progress today and limited opportunities to install more energy efficient systems. The university however intends to pursue cost effective options wherever available.

### **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.*

MSU will continue efforts of retrofitting LED fixtures in the third floor of Moffett Library in FY23. Portions of other buildings will be converted to LED lighting each year until fully upgraded. The Bolin Hall renovation planning will begin in FY2023 with construction ending late 2025. Minimal if any upgrades are expected in FY23 since the design process will just been begun.

### **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.*

The cost of the lighting retrofit project for FY23 is \$84k and will be funded by State Higher Education Funds (HEF). In future years, approximately \$100k of lighting retrofit upgrades will be made each year, and will be funded by State Higher Education Funds.

### **Transportation Fuel Consumption (if applicable)**

If your agency maintains one or more state-owned vehicles and **does not** report fuel usage via the [Texas Fleet System](#), document the total gallons of transportation fuel used by your facility and fleet vehicles below.

Does your agency maintain one or more state-owned vehicles?  Yes  No

Does your agency report its fuel usage via the [Texas Fleet System](#)?  Yes  No  No Vehicles

| Transportation Fuel Type      | Amount |
|-------------------------------|--------|
| Unleaded Gasoline*            |        |
| Diesel                        |        |
| Bio-Diesel                    |        |
| E85 (Flex Fuel)               |        |
| Compressed Natural Gas (CNG)  |        |
| Unleaded for Gas Hybrids      |        |
| Liquified Petroleum Gas (LPG) |        |
| Ethanol                       |        |

\*Do not include unleaded gasoline for gasoline hybrids

**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).

Renovation of the Bridwell Activities Center included lighting control systems and motion sensors to reduce the use of electricity in this building. Similar upgrades will be installed as part of the Bolin Renovation Project, including an updated HVAC control system which should increase the efficiency of the heating and cooling equipment.

**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.

**Transportation Fuel Consumption (if applicable)**

If your agency maintains one or more state-owned vehicles and **does not** report fuel usage via the [Texas Fleet System](#), document the total gallons of transportation fuel used by your facility and fleet vehicles below.

Does your agency maintain one or more state-owned vehicles?  Yes  No

Does your agency report its fuel usage via the [Texas Fleet System](#)?  Yes  No  No Vehicles

| Transportation Fuel Type | Amount |
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|                          |        |

|                               |  |
|-------------------------------|--|
| Unleaded Gasoline*            |  |
| Diesel                        |  |
| Bio-Diesel                    |  |
| E85 (Flex Fuel)               |  |
| Compressed Natural Gas (CNG)  |  |
| Unleaded for Gas Hybrids      |  |
| Liquified Petroleum Gas (LPG) |  |
| Ethanol                       |  |

\*Do not include unleaded gasoline for gasoline hybrids

**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.*