



Facilities and Construction

Energy and Water Management Plan 2019-2020

1. Goals

Central Texas College (CTC) strives to comply with the State of Texas Government Code, Chapter 447.009 of at least 2% reduction in overall energy consumption each fiscal year.

2. Strategy for Achieving Goals

CTC will pursue energy contracts and energy projects using a holistic approach to reduce overall energy consumption. The college will use the following strategy and priorities to identify ongoing energy reduction opportunities:

- Reduce energy requirements throughout campus buildings through lighting retrofits and equipment upgrades and maintenance.
- Leverage new technology, alternative energy sources, incentives, demand response or performance contracts when possible to reduce energy requirements and improve facilities.
- Building upgrades including updated, energy efficient and more modern facilities.
- Implementation of facilities master plan and facility condition assessment deficiency improvements.
- Building inspections for deficiency improvements.
- Procurement of more fuel-efficient vehicles.

3. Progress Report

See chart below for electrical, natural gas and water consumption by fiscal year. The college was able to obtain an overall savings in fiscal year 2019-2020 over the benchmark year.

| | Electricity | | Natural Gas | | Water | |
|------------------------|-------------|----------------|-------------|-------------|------------|--------------|
| Fiscal Yrs | KWh | COST | MCF | COST | GAL | COST |
| 2016-2017 | 17,070,205 | \$1,170,839.43 | 104,756 | \$74,489.87 | 79,113,064 | \$225,617.01 |
| 2017-2018 | 17,631,552 | \$1,147,677.48 | 118,656 | \$85,401.03 | 32,228,079 | \$98,616.83 |
| 2018-2019 ¹ | 18,292,110 | \$1,038,682.67 | 120,833 | \$60,258.08 | 34,314,944 | \$103,870.04 |
| 2019-2020 | 17,866,705 | \$991,848.16 | 112,749 | \$58,407.32 | 25,474,713 | \$80,616.20 |
| Percent change from | | 4.5% | | 3.07% | | 2.23% |
| 2020-2021 Goal from | | 2% | | 2% | | 2% |

¹Baseline year

The college campus has undergone two major energy efficiency and infrastructure improvement projects since 2009.

In 2008-2009, CTC implemented a major energy management project costing the college over \$12 million dollars. The project included savings through lighting, water conservation, computer power management, transformer replacement, DDC controls upgrades, chiller and boiler replacement, mechanical system upgrades, cooling tower water treatment upgrades, vending machine controls, and steam system upgrades. Project estimates show annual savings/benefits of approximately \$875,000 per year from the 2008-2009 project baseline year.

In 2017, CTCD utilized a third party company to analyze all utility billings including electric, gas, water and sewer for errors on current and past billings.

In 2017-2020, CTC implemented additional campus wide infrastructure improvements projects costing the college over \$31 million dollars. The project included new chillers, boilers, chilled/hot water piping, transformers, LED lighting, electrical distribution system, water treatment upgrades, steam system upgrades, and DDC controls upgrades. The new equipment is more energy efficient and will result in cost savings.

In 2020, the campus was able to save dollars by closing buildings and classrooms. Students began utilizing on-line learning due to COVID-19 which reduced overall utility demand throughout campus.

4. Demand Side Energy Management:

The following are improvements implemented to achieve demand side energy savings.

Electrical

- 2018 Changed old parking lot lights to LED.
- 2018 upgraded interior lighting to LED's in hallway areas B150.
- 2018 Upgraded room 1075 lighting to LED's in B150.
- 2018 upgraded suite 6 lighting to LED's.
- 2018 upgraded automotive shop lighting to LED's.
- 2019 upgraded theater lighting to LED's room 106 B112.
- 2019 upgraded lighting in Student Services building, north wing 1st floor to LED's.
- 2019 upgraded parking lot lighting.
- 2020 ongoing Upgrading lighting across campus to LED's and Breezeways, canopies, wall packs in the mall areas.
- 2020 implemented new building controls software to optimize the operation of the central plant.
- The stand-alone plants at each building reduces the cost of electricity by allowing the big chiller in the power plant to run at minimum speed, as well as the steam boiler in the plant.
- All the new plants are equipped with hot water boilers instead of steam, and all of the pumps are new and are provided power through drives which allows them to run at minimum speed reducing electricity.
- Ongoing the college uses solar shades and screens to reduce the heat load within campus buildings.

Water

- Efficient use of irrigation system by installing MP Rotors. Water use is considerably less and coverage is far superior than with the use of conventional sprays heads (PGJ) or adjustable Vann spray heads.
- Adjust all controllers to only operate within a certain water window.
- Considerations for the use of reclaimed water will be pursued when financially feasible and available in our area.
- The college has a licensed irrigator on staff to ensure the irrigation system is operating properly and addressing water breaks in a timely manner.

Natural Gas:

- New natural gas piping was installed in mechanical yards and throughout campus providing a more reliable and efficient fuel distribution system reducing line breaks and loss of natural gas.
- Implemented back-up propane fuel to boilers allowing the college to take advantage of lower natural gas industrial rates.
- Evaluate future performance contract opportunities for cost savings.

5. Supply Side Energy Management:

CTC will continue to seek out favorable energy pricing through competitively bidding for electricity and natural gas contracts. Through this process, the college has been able to save approximately \$157,000 over five years or 3.6% annually on electricity rates.

In 2018, CTC signed new gas contracts, through our competitive bidding process, enabling the college to save approximately \$43,000 or 16% on natural gas rates over a three year period.

The college will continue to evaluate opportunities for cost savings through various performance contract(s) which might allow the college to offset future construction project costs.

The college has a contracted water rate through the City of Copperas Cove. Pricing is reviewed on a periodic basis to ensure the college is not overpaying for water.

6. Transportation/Equipment fuel Consumption

- CTC has a vehicle purchasing policy to ensure fuel efficient equipment gets purchased as the fleet is replaced. For local area use, the gasoline powered vehicles are being replaced with electric powered vehicles.
- Vehicle Maintenance has instituted a fuel saving technique within the department by requiring all within to use vehicle driving logs. The logs will ensure that mileage, run time, and driver responsibilities can be managed.
- Purchase of tires advertised as being more fuel efficient
- Changing air filters and spark plugs on the mowers to keep them running as efficient as possible
- Routine maintenance on them which is the best way to keep them as fuel efficient as possible
- CTC purchases fuel through a competitively bid vendor allowing for fuel discounts and/or rebates.

See chart below for fuel consumption by fiscal year:

| Fiscal Yrs | Regular Gallons | Cost for Unleaded | Diesel Gallons | Cost for Diesel |
|------------------------|-----------------|-------------------|----------------|-----------------|
| 2016-2017 | 14,117.9 | \$26,188.20 | 531.9 | \$1207.65 |
| 2017-2018 | 13,516.1 | \$30,306.81 | 251.6 | \$660.02 |
| 2018-2019 ¹ | 13,903.5 | \$30,347.71 | 998.7 | \$2,371.49 |
| 2019-2020 | 11,147.0 | \$20,008.07 | 234.8 | \$561.52 |
| Percent change from | | 3.4% | | 7.6% |
| 2020-2021 Goal from | | 2% | | 2% |

¹ Baseline Year

7. Employee Awareness Plan

Energy conservation training, signage and programs are reviewed and/or initiated by CTC. The college utilizes communications via campus wide newsletter to improve overall employee awareness. Staff utilizing campus vehicles will also be provided with information on ways to conserve fuel.

8. Designated Contact Person

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