Energy & Water Management Plan

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

I. Introduction

The Texas Commission on Environmental Quality (TCEQ) is committed to using and conserving energy and water efficiently, in keeping both with its mission as a steward of the environment and the state's mandates regarding the use and conservation of energy and water. TCEQ's energy and water efficiency policies satisfy the requirements of the State Energy Conservation Office's Resource Efficiency Plan, Governor Rick Perry's Executive Order 49, Senate Bill 700 (83rd Texas Legislature), and Senate Bill 59 (85th Texas Legislature), the latter three relating to energy and water management planning by state agencies.

TCEQ, in 2005, adopted a goal of five percent reduction in electricity and fuel use, using 2005 as the baseline, Appendix 1 outlines energy and water consumption at TCEQ headquarters and the agency's fleet fuel use between 2005 and 2016. Note, however, that the Texas Legislature has mandated that the Texas Facilities Commission (TFC) manage facilities at the TCEQ headquarters complex. TFC also manages other state-owned properties that TCEQ occupies. As facilities' manager, with associated responsibility for energy and water management, TFC has significant responsibility for generating energy and water-related efficiencies at TCEQ's state-owned facilities. As such, this TCEQ energy and water management plan references TFC's mandated role and that agency's plans for energy and water management. TCEQ supplements TFC's efforts, primarily focusing on purchasing energy-efficient vehicles and on ensuring an agency-wide culture of business and individual responsibility that prioritizes opportunities to secure energy and water-related efficiencies.

Section IV outlines efficiency projects undertaken over time. Current energy and water use is a product of efficiencies yielded from already implemented and ongoing projects, plus usage now consumed in the course of the regular business day in furtherance of the agency's mission.

II. Texas Facilities Commission's Role

The Texas Facilities Commission's Office of Energy Management's objective is to "identify and implement strategies to achieve energy and other utility savings in all TFC facilities and at the same time maintain a healthy and comfortable working environment."[1] TFC's strategic energy and water management initiatives,[2] relevant to TCEQ, and as excerpted from TFC's strategic plan, include the following:

- reduce energy and water consumption and achieve increased energy efficiency through ongoing, effective education of Commission (TFC) and tenant agency staff about their role in energy conservation activities
- assessment and installation of equipment that is more energy efficient
- modification of existing building mechanical systems with digital building automation and energy management systems

[1]Office of Energy Management." *Texas Facilities Commission.* 27 Oct. 2016. http://www.tfc.state.tx.us/divisions/facilities/prog/FMD/EnergyManagement.html
[2] Texas Facilities Commission, *Agency Strategic Plan, Fiscal Years 2017-2021*, p. 9

- specification of energy efficient equipment in the replacement of antiquated systems, in conjunction with both building maintenance activities and the implementation of deferred maintenance projects
- conduct retroactive commissioning efforts to achieve continual improvement in energy and water efficiency and to reduce maintenance costs
- use best efforts to obtain the most favorable utility rates possible
- review energy and other utility usage for facilities in the Commission's inventory of state-owned property to identify anomalies and abnormal usage and generate an assessment for corrective action
- assess emerging alternative energy solutions and utilize energy enhancement rebate programs, low cost loans, grants, and tools such as energy savings performance contracts to implement energy efficiency projects
- reporting to (the) TFC Commission and the governor's office about the current status and future plans of OEM in regards to energy conservation initiatives, utility usage, and deferred maintenance projects related to energy and resource conservation.[3]

III. Texas Commission on Environmental Quality's Role

Current Activities

TCEQ's energy and water management activities at state-owned and leased facilities include:

- developing and/or circulating energy and water-related conservation workplace policies and procedures
- working cooperatively, within available resources, with TFC and/or lessors on energy and water initiatives
- ensuring staff awareness of the importance of their roles in energy and water management
- ensuring staff compliance with energy and water-related policies and procedures
- ensuring staff awareness and compliance with recycling guidelines
- purchasing and/or leasing energy efficient vehicles
- purchasing and/or leasing energy efficient equipment and appliances
- submitting to TFC, for its consideration when leasing TCEQ's regional facilities, that the eventual leased space at a minimum provide the following: LED lighting, an automated building management system controlling electrical and mechanical systems, low flush toilets and urinals, occupancy sensors to adjust lighting, and faucet sensors to turn water on and off

[3] "Office of Energy Management." *Texas Facilities Commission.* 27 Oct. 2016. http://www.tfc.state.tx.us/divisions/facilities/prog/FMD/EnergyManagement.html

IV. TCEQ's Energy and Water Management History

In addition to the above activities, actions implemented previously include the following:

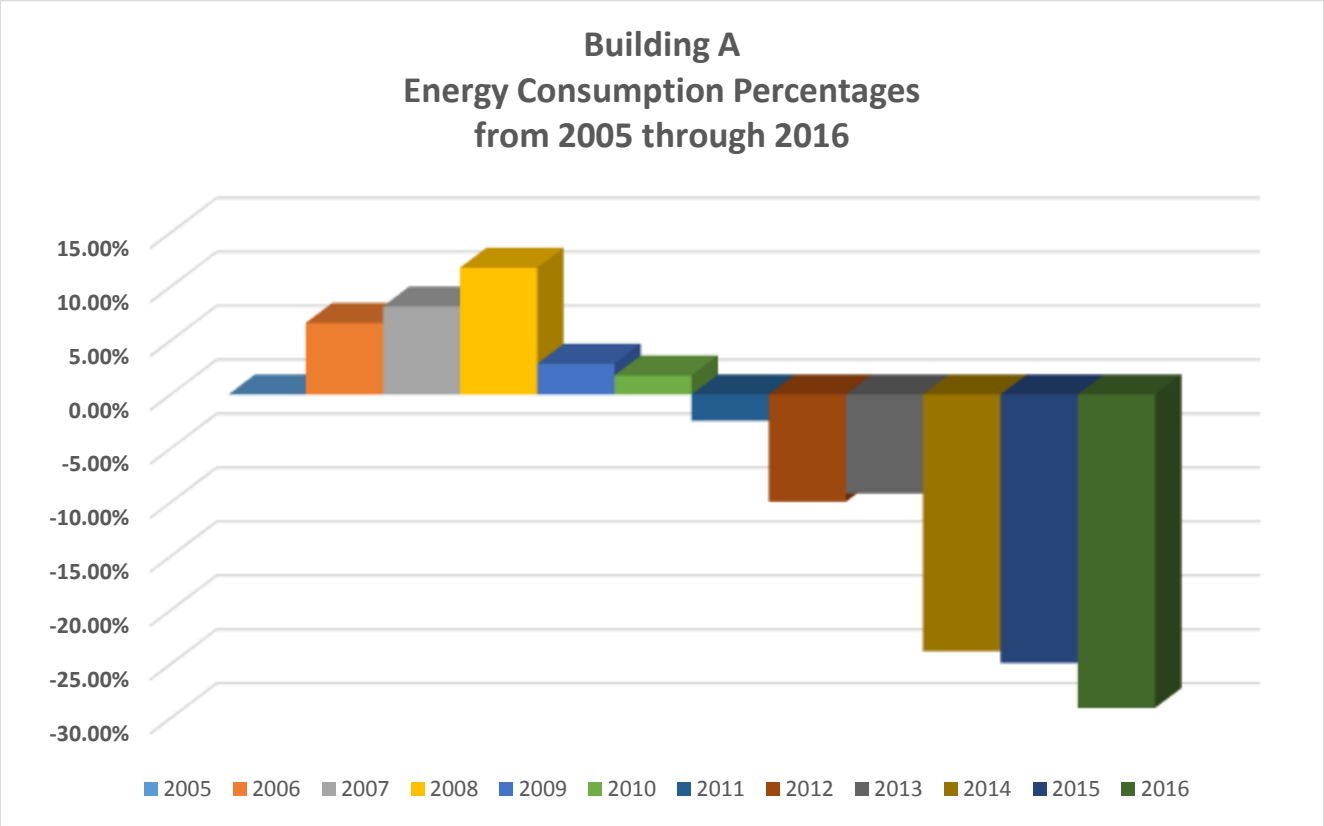
- implemented policy establishing energy efficiency standards for electrical equipment and appliances
- installed occupancy sensors throughout Building A and in agency conference rooms (Austin)
- replaced electronic light ballasts to accommodate more efficient fluorescent lighting tubes that generate less heat (Austin)
- installed new energy management software to allow for more effective management of heating, ventilation, and air conditioning systems
- installed HVAC thermal storage system in Building A, providing ice to cool the building during peak, daytime electrical demand and so reduce costs (Austin)
- replaced roofing and insulation in Buildings B, C, D, and E to improve energy efficiency (Austin)
- installed solar screens on Building C (Austin)
- installed window film in Buildings A-E (Austin)
- replaced caulking and applied sealant to improve R-rating of tilt walls in Building A (Austin)
- replaced inefficient, leaking plexiglass in atrium of Building C with a roof and flat glass, resulting in less temperature exchange and increased HVAC efficiency (Austin)
- coordinated, with TFC, the purchase and installation of energy star-rated compressors, chillers, and related HVAC components utilizing environmentally sensitive refrigerants
- implemented agency policy to purchase, when feasible, hybrid and/or alternative fueled vehicles when replacing passenger cars, SUVs, or full-size pickup trucks
- initiated plan to ensure that a majority of the agency's fleet would use alternative fuels
- installed an onsite LPG refueling station to reduce travel for refueling
- replaced two gasoline-powered, mail delivery vans with electric vehicles (Austin)
- installed video conferencing equipment, facilitating delivery of training and other communication between TCEQ locations without incurring travel-related costs
- prohibited unjustifiable idling of agency vehicles
- replaced modular furniture lamp fixtures with smaller, more efficient ones (Austin)
- converted fluorescent light to LED lights in Building A, 1st floor, and in Building E (Austin)
- installed LED parking lot lights (Austin)
- installed motion sensors on vending machines, to shut off advertising lights and reset the compressor to an energy saving schedule
- implemented an agency awareness program on energy and water use and conservation

- implemented quarterly, after-hours walk through of TCEQ headquarters to document needed energy and water management corrective action (Austin)
- installed xeriscape beds throughout the main campus (Austin)
- installed low flush toilets (Austin)
- facilitated water audits (Austin)

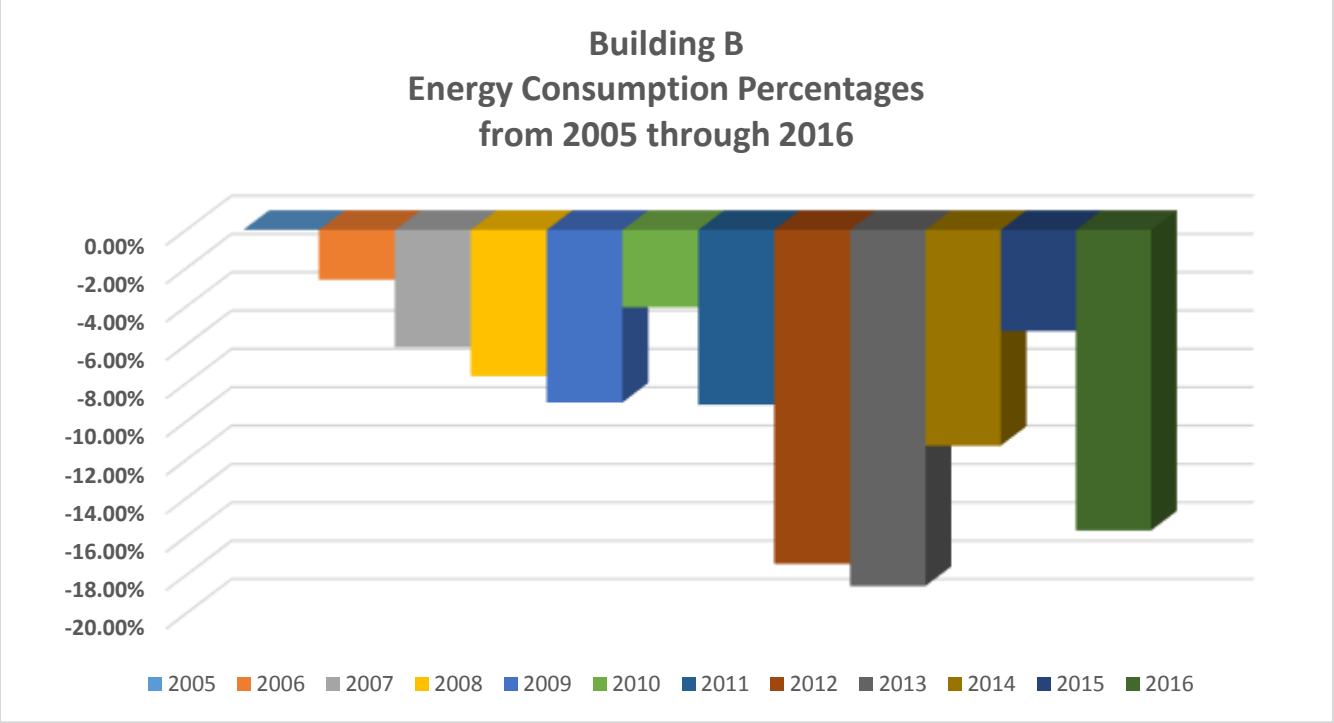
APPENDIX I

TCEQ's Electricity, Water, & Fuels Use History (2005-2016)

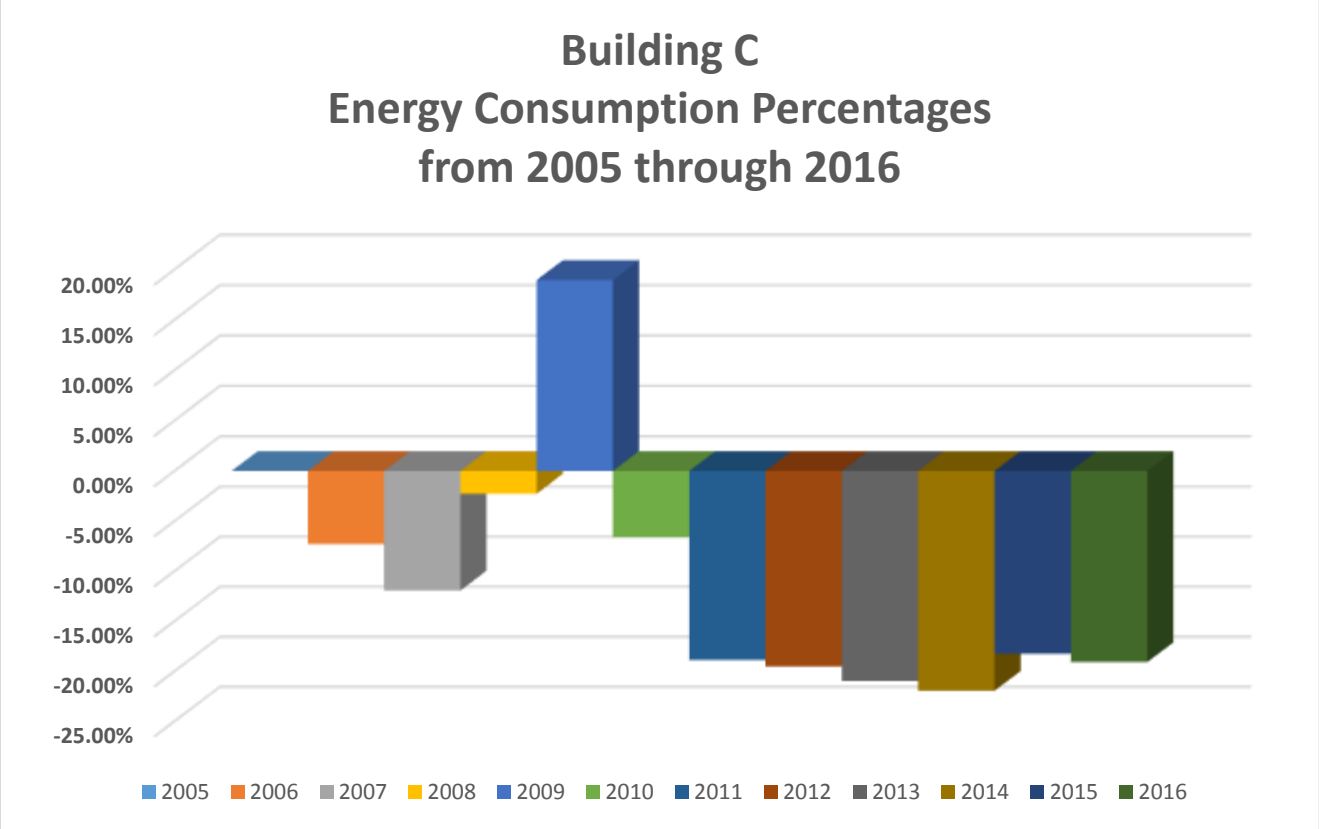
Energy (Electricity) Consumption Percentages (2005-2016)



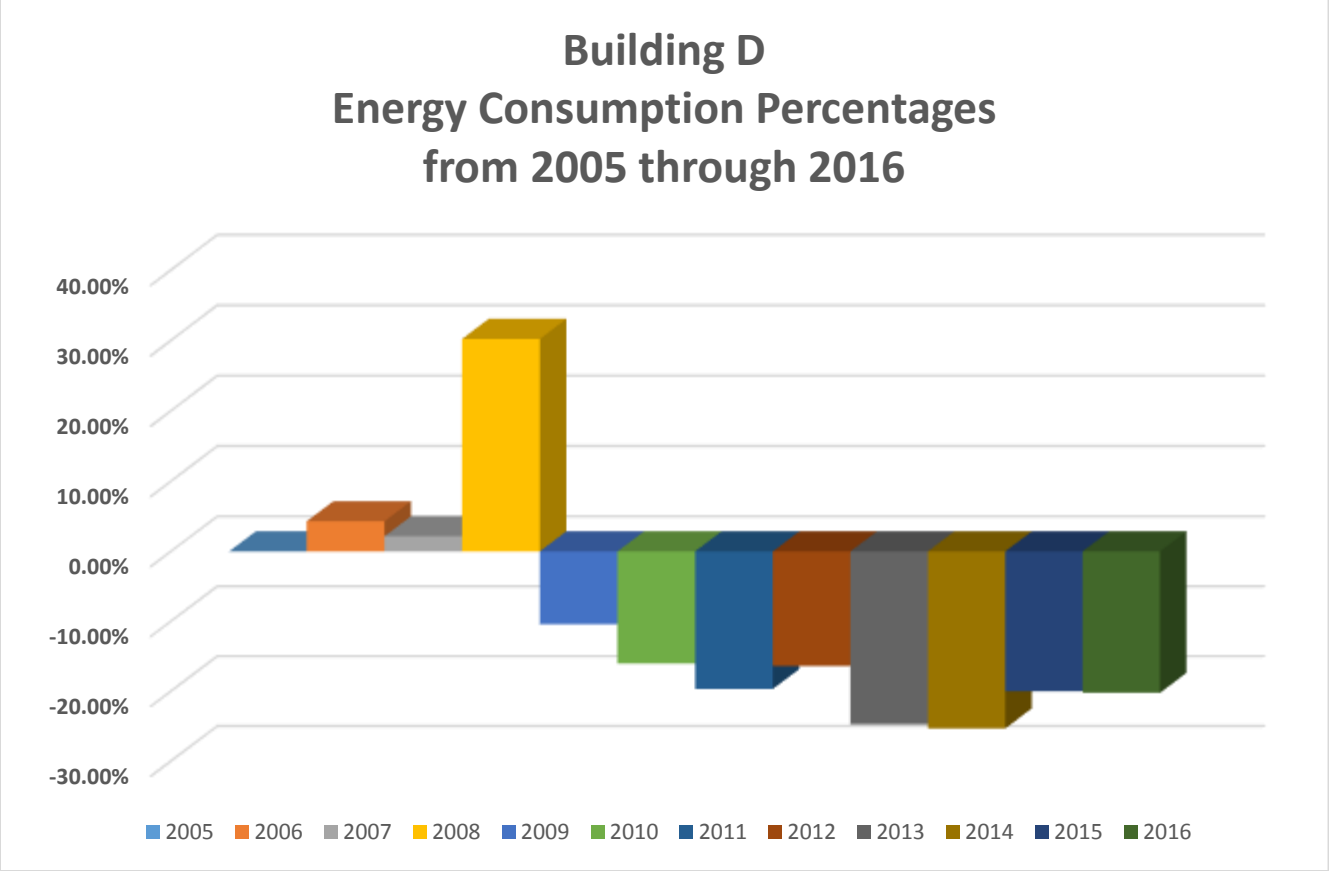
Bldg. A Energy Consumption	Percentage
2005	0.00
2006	6.63
2007	8.17
2008	11.75
2009	2.86
2010	1.77
2011	-2.42
2012	-9.95
2013	-9.17
2014	-23.80
2015	-24.88
2016	-29.6



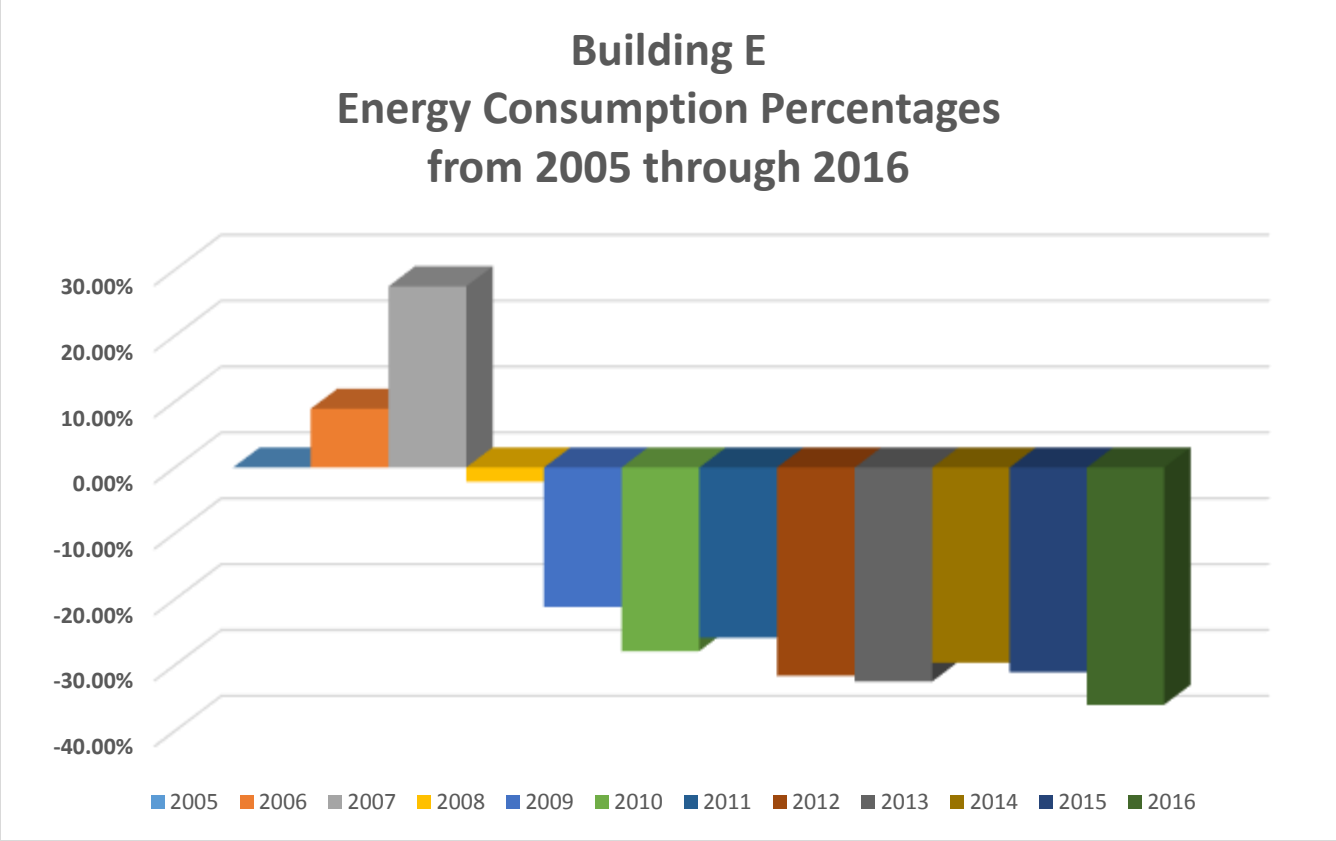
Bldg. B – Energy Consumption	Percentage
2005	0.00
2006	-2.60
2007	-6.11
2008	-7.63
2009	-9.00
2010	-4.04
2011	-9.12
2012	-17.41
2013	-18.57
2014	-11.26
2015	-5.28
2016	-15.68



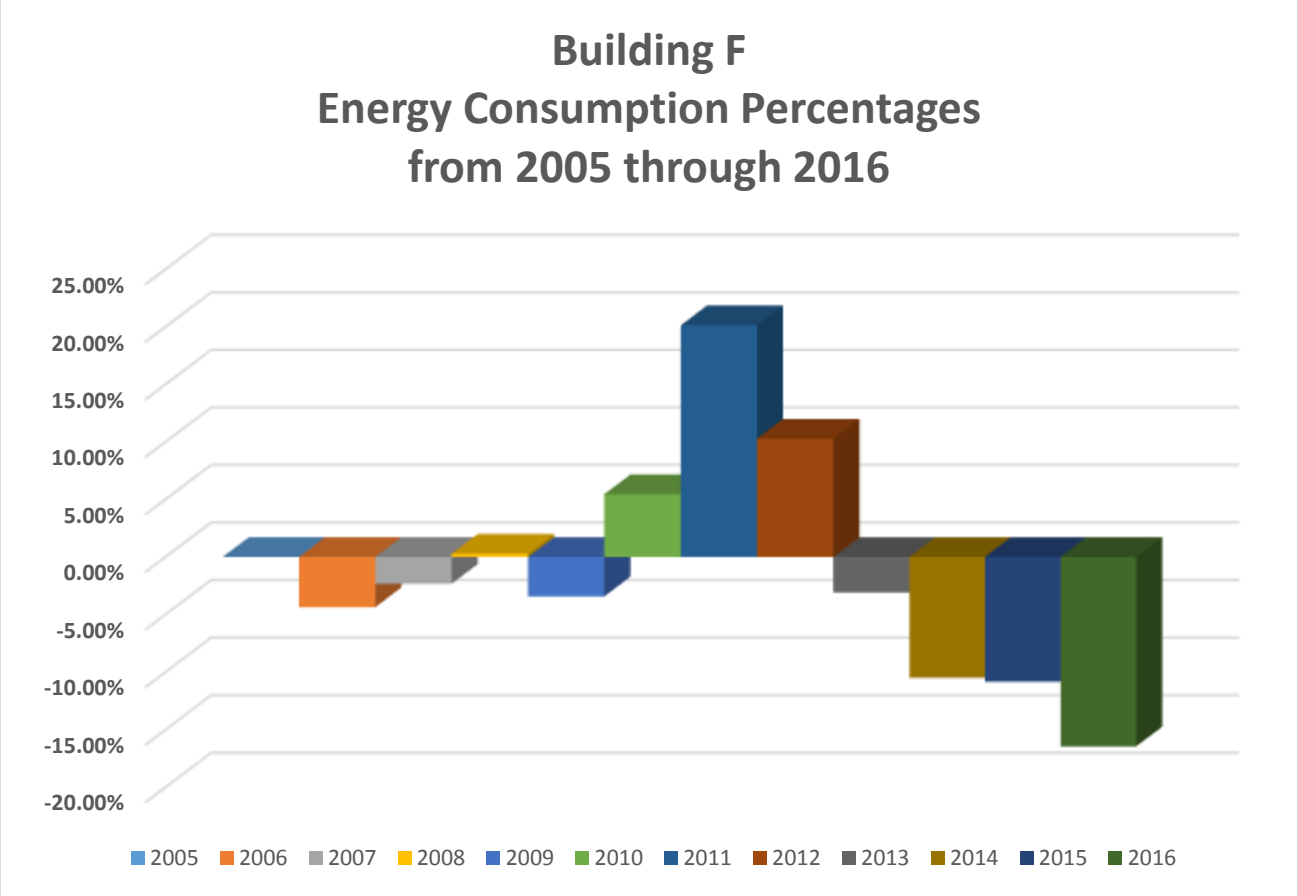
Bldg. C – Energy Consumption	Percentage
2005	0.00
2006	-7.27
2007	-11.93
2008	-2.26
2009	-18.95
2010	-6.61
2011	-18.87
2012	-19.51
2013	-20.98
2014	-21.95
2015	-18.24
2016	-19.07



Bldg. D – Energy Consumption	Percentage
2005	0.00
2006	4.30
2007	2.15
2008	30.21
2009	-10.41
2010	-16.03
2011	-19.70
2012	-16.38
2013	-24.71
2014	-25.34
2015	-20.01
2016	-20.23

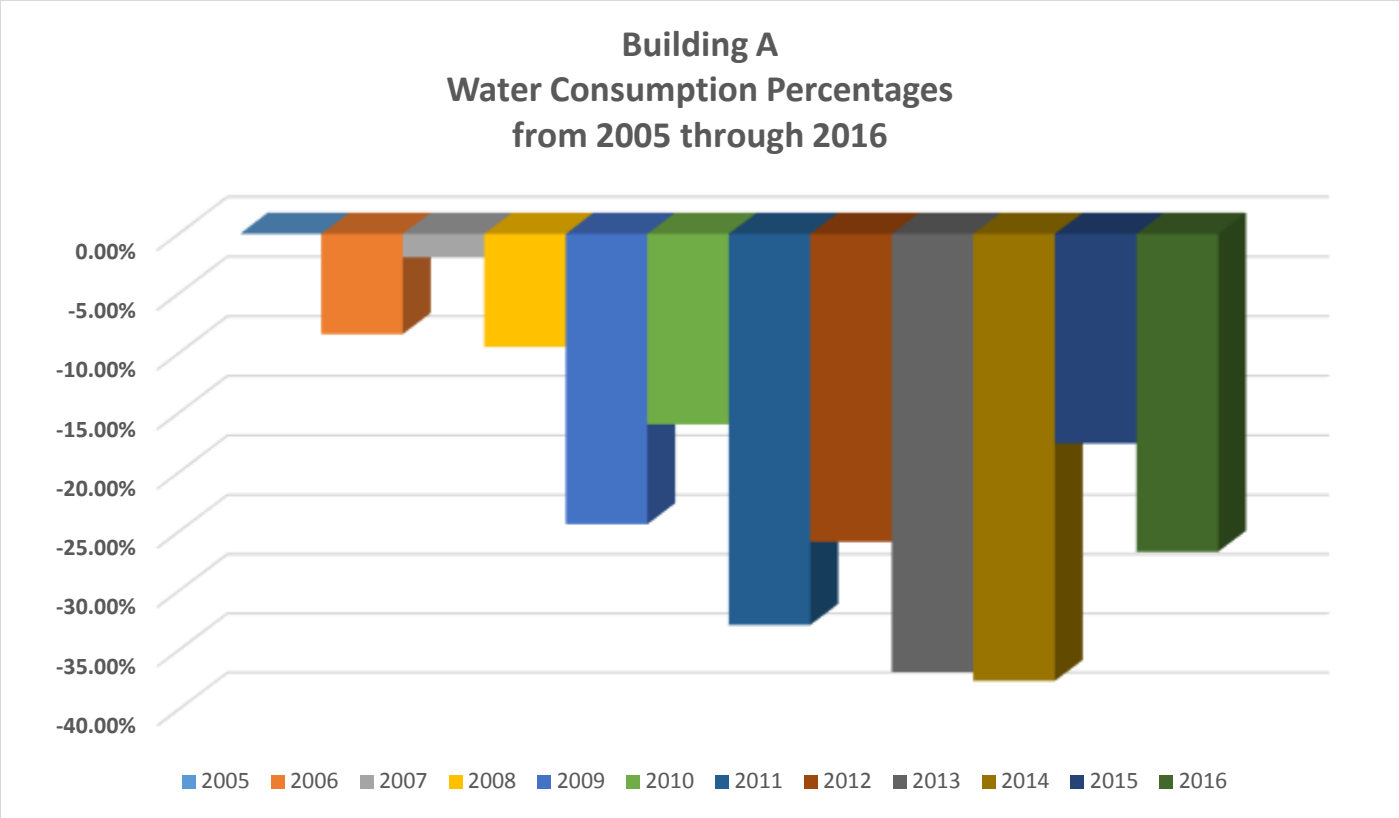


Bldg. E – Energy Consumption	Percentage
2005	0.00
2006	8.91
2007	27.50
2008	-2.16
2009	-21.16
2010	-27.88
2011	-25.83
2012	-31.60
2013	-32.48
2014	-29.62
2015	-31.08
2016	-36.03

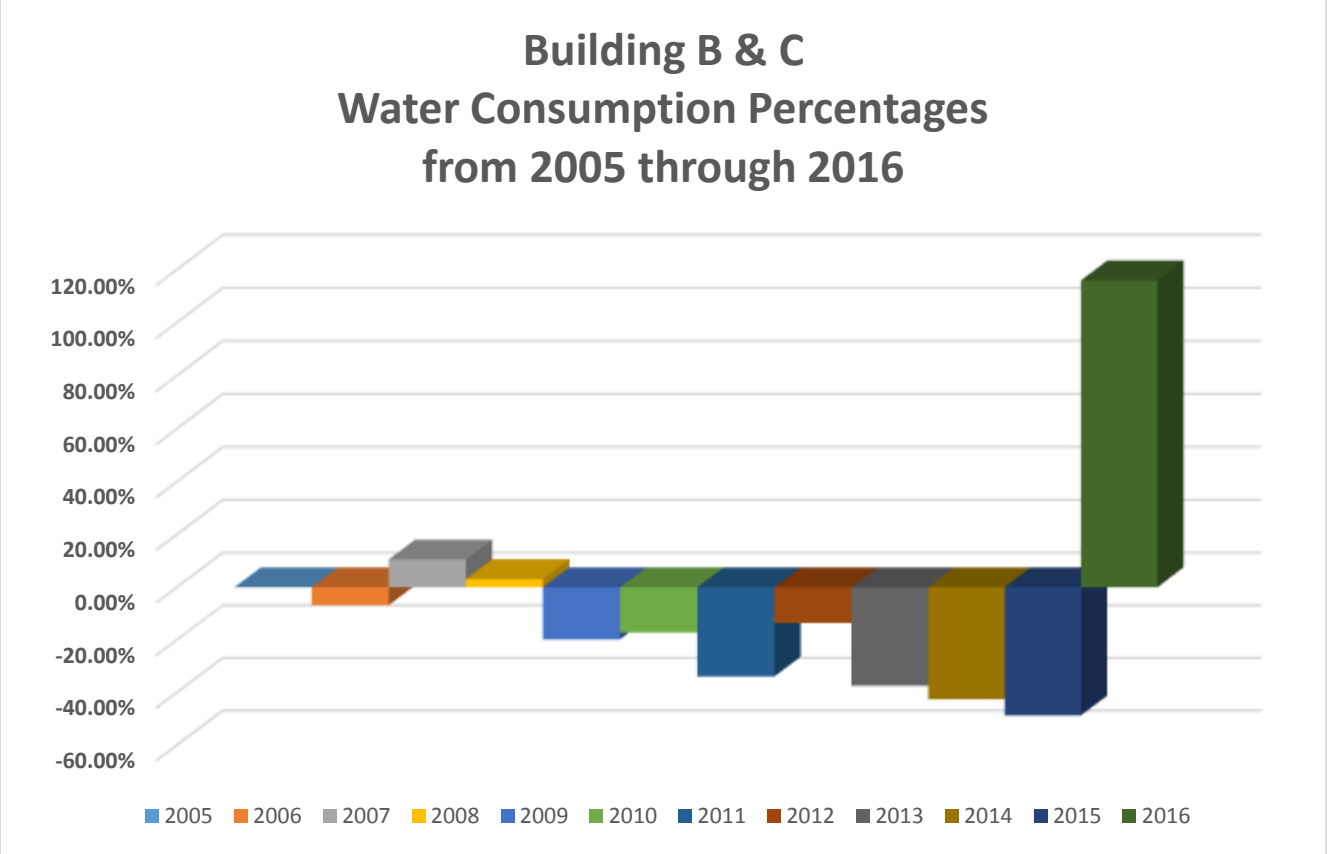


Bldg. F – Energy Consumption	Percentage
2005	0.00
2006	-4.36
2007	-2.33
2008	-0.28
2009	-3.43
2010	5.45
2011	20.13
2012	10.27
2013	-3.09
2014	-10.49
2015	-10.84
2016	-16.45

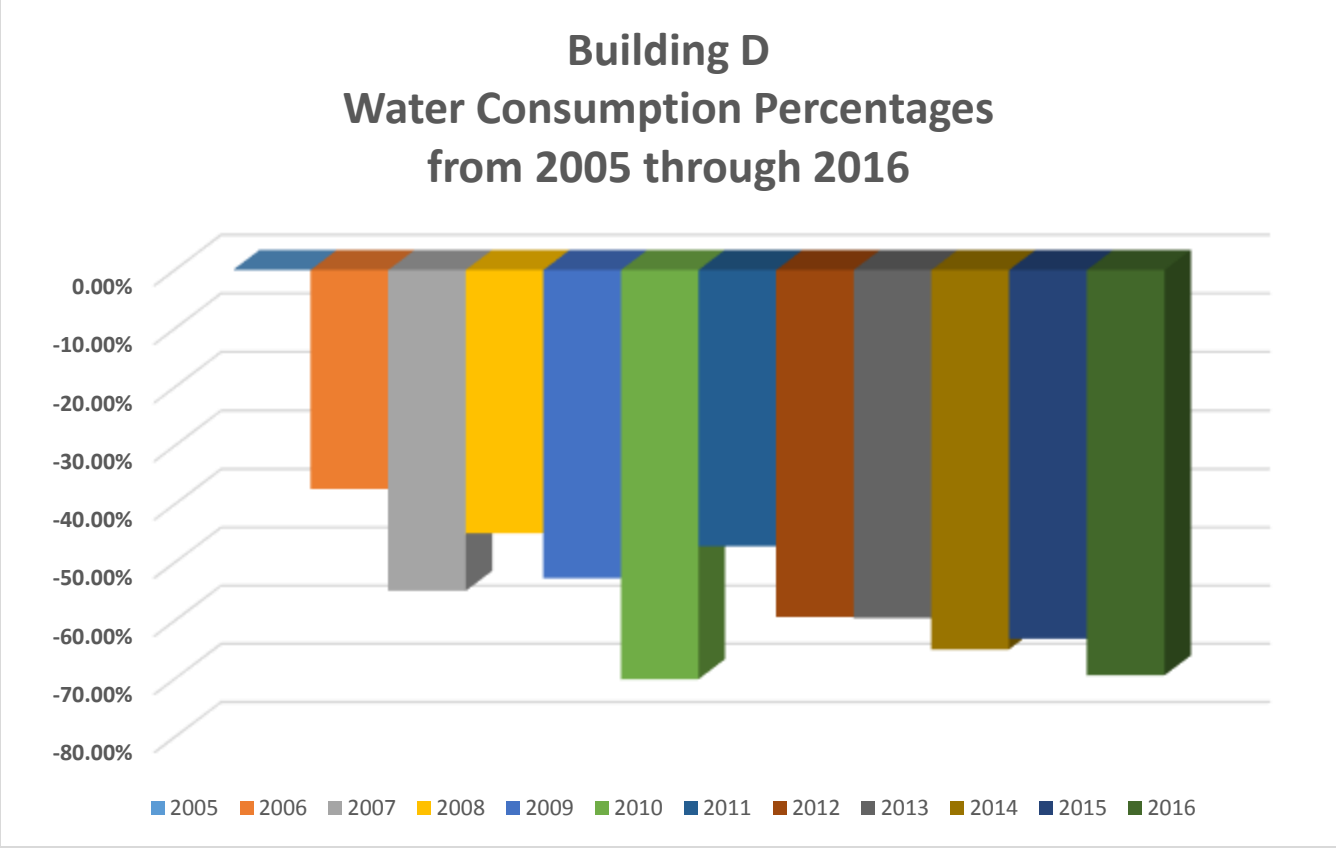
TCEQ Buildings A-F Water Consumption Percentages (2005 – 2016)



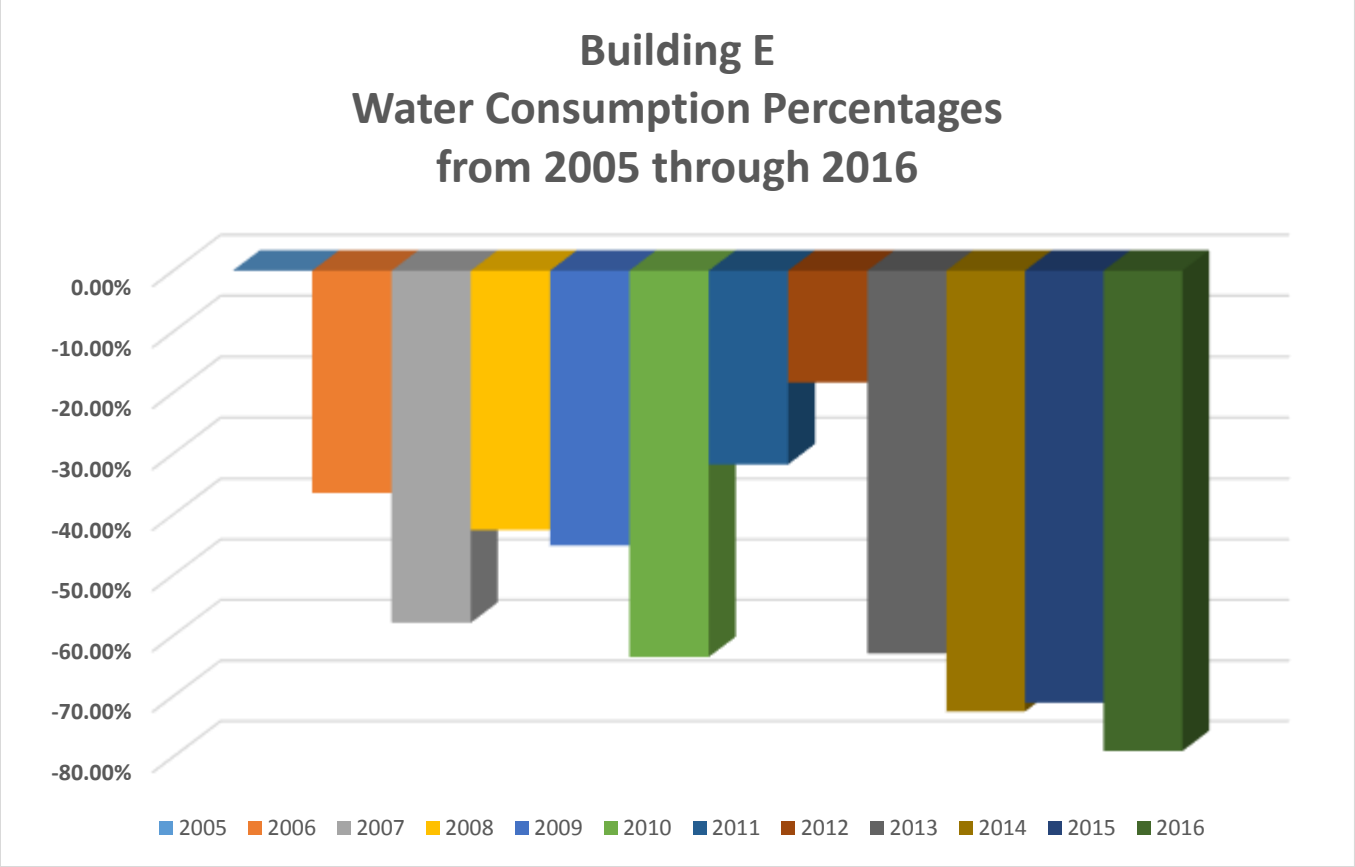
Bldg. A – Water Consumption	Percentage
2005	0.00
2006	-8.40
2007	-1.96
2008	-9.48
2009	-24.37
2010	-15.95
2011	-32.87
2012	-25.86
2013	-36.85
2014	-37.60
2015	-17.57
2016	-26.70



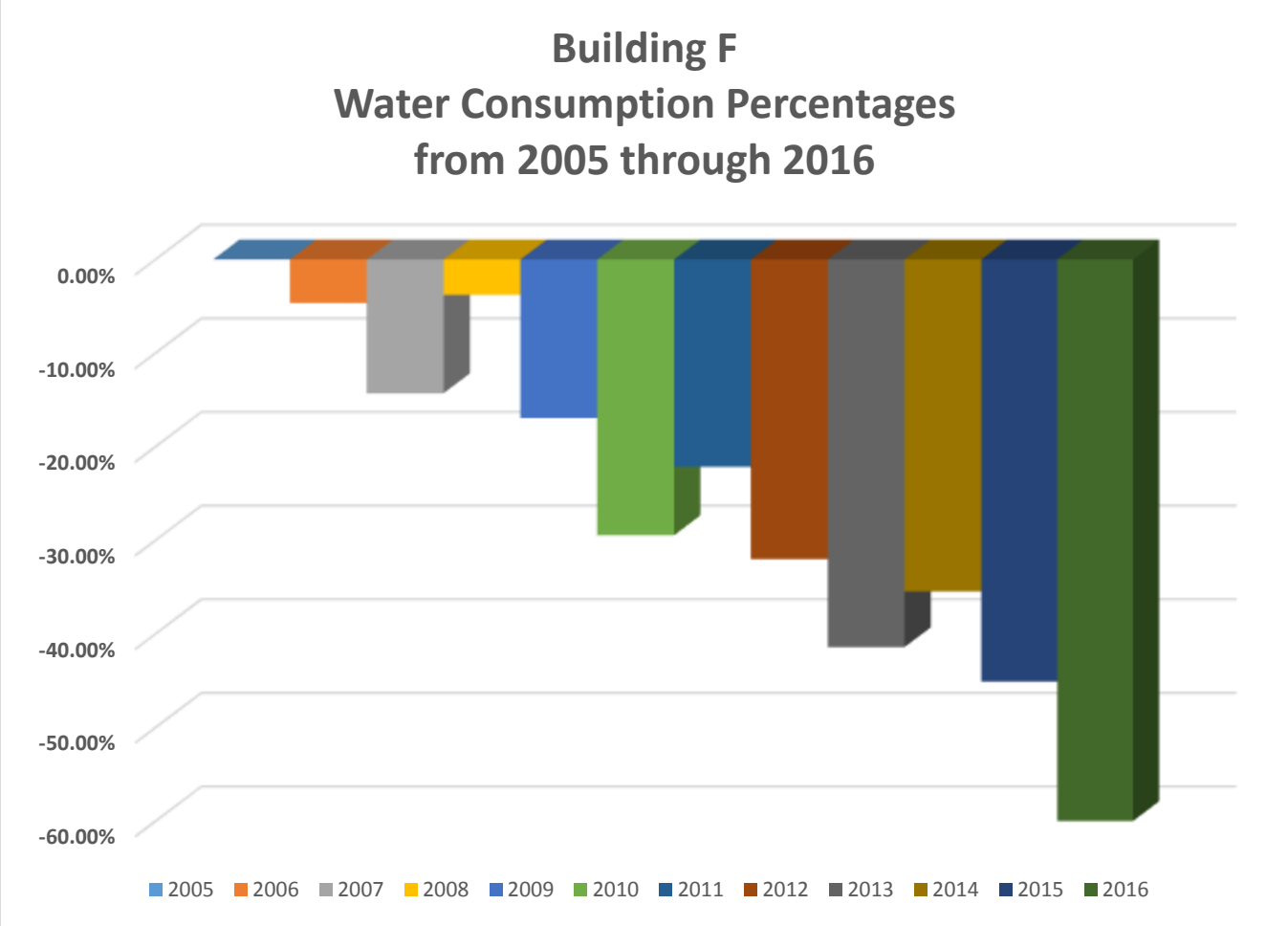
Bldg. B & C – Water Consumption	Percentage
2005	0.00
2006	-6.80
2007	10.55
2008	3.09
2009	-19.78
2010	-17.19
2011	-33.91
2012	-13.53
2013	-37.41
2014	-42.53
2015	-48.68
2016	115.94



Bldg. D – Water Consumption	Percentage
2005	0.00
2006	-37.38
2007	-54.87
2008	-44.99
2009	-52.70
2010	-70.05
2011	-47.21
2012	-59.36
2013	-59.55
2014	-64.95
2015	-63.11
2016	-69.39

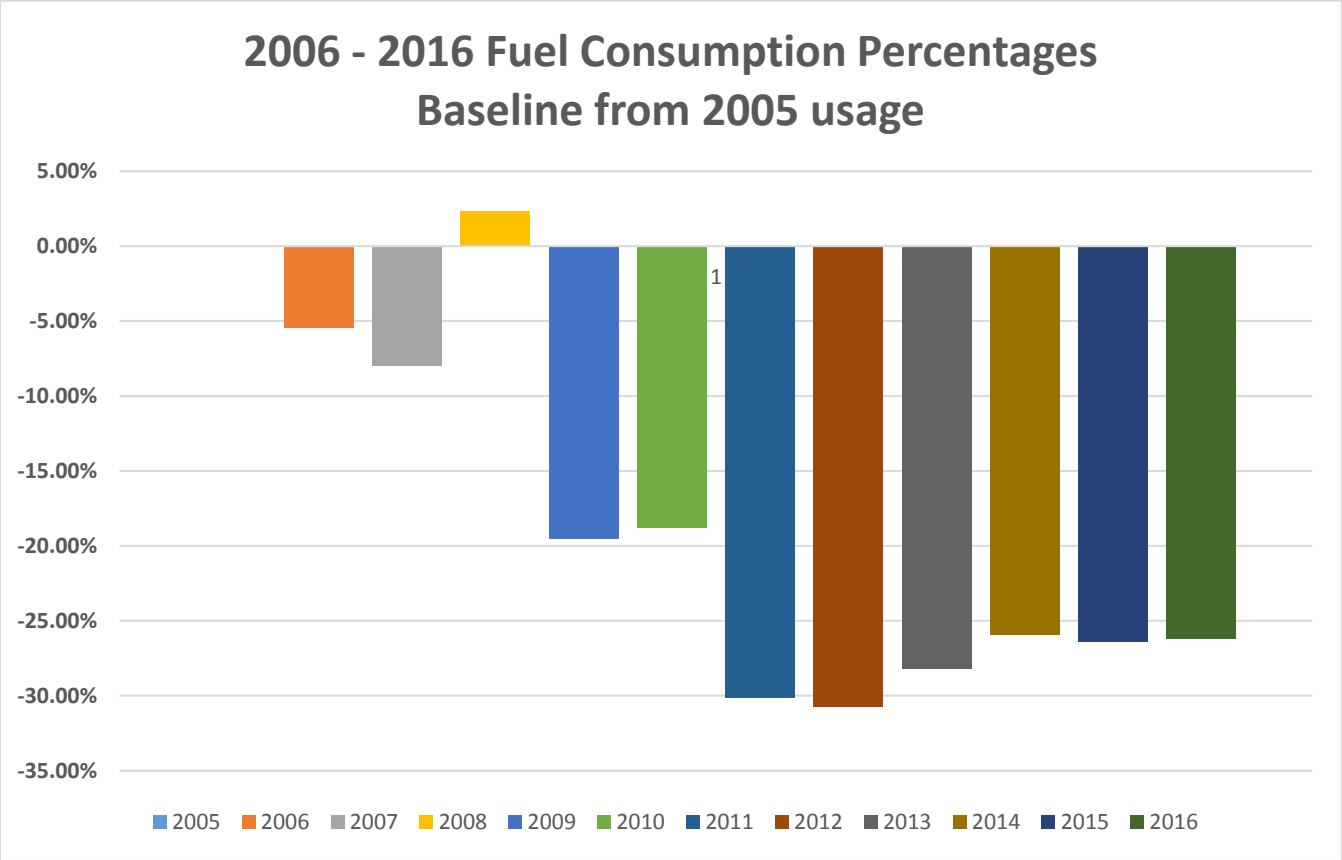


Bldg. E – Water Consumption	Percentage
2005	0.00
2006	-36.46
2007	-57.87
2008	-42.58
2009	-45.13
2010	-63.53
2011	-31.78
2012	-18.32
2013	-62.94
2014	-72.51
2015	-71.08
2016	-79.06



Building F – Water Consumption	Percentage
2005	0.00
2006	-4.64
2007	-14.30
2008	-3.77
2009	-16.94
2010	-29.46
2011	-22.15
2012	-32.01
2013	-41.41
2014	-35.45
2015	-45.08
2016	-59.98

TCEQ Fuel Consumption Percentages (2005 – 2016)



2006-2016 Fuel Consumption	Percentage
2005	0.00
2006	-4.42
2007	-8.00
2008	2.30
2009	-19.52
2010	-18.78
2011	-30.12
2012	-30.71
2013	-28.18
2014	-25.92
2015	-26.42
2016	-26.16