

Energy Conservation Plan 4rd Quarter FY2014

Texas Facilities Commission

COVERING THE PERIOD
JUNE 1, 2014 THROUGH AUGUST 31, 2014

Texas Facilities Commission

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This report is submitted by the Texas Facilities Commission in accordance with Executive Order No. 49, Tex. Gov. Exec. Order RP49 (Oct. 27, 2005) and Texas Gov't Code § 2166.409 | Date Enacted: 05/23/13 | Date of Last Amend: 05/23/13, requiring each state agency to develop a plan for conserving energy and to report back to the Office of the Governor and the Legislative Budget Board on a quarterly basis with goals achieved and ideas for additional savings. This report is also available on the Texas Facilities Commission website at <http://www.tfc.state.tx.us/divisions/commissionadmin/tools>. For general information about this report, contact Farshad Shahsavary, Manager of Energy and Engineering at (512) 463-7366.

Table of Contents

| | | |
|------|---|---|
| I. | Executive Summary | 2 |
| II. | Definitions and Acronyms | 2 |
| III. | Ongoing Energy and Forensics..... | 4 |
| | TFC Utility Consumption..... | 4 |
| | Energy Workgroup Meetings..... | 4 |
| | Utility Invoicing Analysis..... | 5 |
| | Deferred Maintenance System Upgrades..... | 5 |
| | TFC Agreement with Austin Energy for Curtailment of Electricity Usage (Load Cooperative)..... | 5 |
| | Temperature Adjustments in Buildings | 5 |
| | Building Energy Walkthrough Audits..... | 5 |
| | Energy Efficiency and Sustainability Campaign | 6 |
| | William P. Hobby (WPH) Outside Air | 6 |
| | Central Services Building (CSB) Lighting and Controls..... | 6 |
| | John H. Winters (JHW) Outside Air..... | 6 |
| IV. | Future Energy and Resource Reduction Plans | 6 |
| | Building Energy Walkthrough Audits..... | 6 |
| | Continuation of Temperature Adjustments in Buildings | 6 |
| | Austin Energy Utility Rates Following Existing Long Term Contract..... | 6 |
| | Performance Contracting..... | 6 |
| | “Light Emitting Diode” (LED) Lighting..... | 6 |
| | Central Plant Optimization..... | 6 |
| | Water Consumption Reduction Plans | 6 |
| | Occupancy Sensor Installations | 7 |
| | Measuring and Rebalancing Outside Air and Pressurization of TFC Buildings..... | 7 |
| | Alternative Energy | 7 |
| | Energy Contract Solicitation/Negotiation | 7 |
| V. | Conclusion..... | 8 |
| | Attachment A: Historical Utility Use and Cost Report..... | 9 |

I. Executive Summary

The objective of the Office of Energy Management (OEM) is to identify and implement strategies for the Commission's building inventory to achieve energy and other utility savings while maintaining a healthy and comfortable work environment. OEM works across the lines of multiple program areas to pursue these strategies, ranging from reviewing repairs, and equipment replacements for Operations and Maintenance, to implementing operations initiatives through Building Automation and Controls, to consultation with project management on deferred maintenance projects. The OEM Program also pursues a certain portfolio of independent projects that contribute to the overall goals of the program. Additionally, OEM is involved with negotiations of lower cost energy contracts with utility providers, modification of existing building mechanical systems with digital building automation and energy management systems; specification of energy efficient equipment and systems in the replacement of antiquated systems; assessment of emerging alternative energy solutions, and utilization of energy programs, low cost energy loans and grants where feasible to achieve these goals.

II. Definitions and Acronyms

The terms and acronyms used in this report and/or in other quarterly energy conservation plan reports are defined below for reference:

“AHU” means air handling unit which circulates air as part of an HVAC system.

“BAS” means building automation system.

“BHB” means the Brown-Heatly Building.

“CFL” means compact fluorescent lamp.

“CHP” means combined heat and power plant and is defined as the use of a heat engine or a power station to simultaneously generate both electricity and useful heat.

“CPP” means central physical plant.

“CWS” means Condenser Water system

“DARS” means the Department of Assistive and Rehabilitative Services.

“DHNL” means the Department of State Health Services New Laboratory.

“DM” means deferred maintenance.

“DOE” means (federal) Department of Energy.

“EMS” means energy monitoring system.

“EOT” means the E. O. Thompson Building.

“ERCOT” means Electric Reliability Council of Texas

“FY” means fiscal year.

“HVAC” means heating, ventilation, and air conditioning.

“JER” means the James E. Rudder Building.

“JHR” means the John H. Reagan Building.

“JHW” means the John H. Winters Building.

“LAR” means Legislative Appropriations Request

“LED” means light emitting diode.

“Motors” means ultra-high efficient motors.

“FEE” means Facility Energy & Engineering

“OEM” means Office of Energy Management.

“PDB” means the Price Daniel, Sr. Building.

“RDM” means the Robert D. Moreton Building.

“REJ” means the Robert E. Johnson Building.

“SCADA” means the supervisory control and data acquisition.

“SCB” means the Supreme Court Building.

“SECO” means the State Energy Conservation Office.

“SFA” means the Stephen F. Austin Building.

“SHB” means the Sam Houston Building.

“TCC” means the Tom C. Clark Building.

“TES” means thermal energy storage system.

“TFC” means the Texas Facilities Commission.

“TLC” means Texas Legislative Council.

“TIERS” refers to a Data Center in JHW that is rated per Telecom Industry Standard TIA-942 system.

“TJR” means the Thomas Jefferson Rusk Building.

“VFD” means variable frequency drive.

“WBT” means the William B. Travis Building.

“WPC” means the William P. Clements Building.

III. Ongoing Energy and Forensics

TFC Utility Consumption: Energy consumption data continues to indicate a decline into FY2014 as compared to that of FY2012 and FY2013. The chart below (Figure 1) represents comparison and trends for the TFC’s quarterly electrical consumption (KWH) complete through 3QFY14. Generally 5%-6% reduction in electrical energy consumption is represented by comparing the first three quarters of FY10 through FY13. **Happy to report 9% electric usage reduction and 15% utility cost reduction during 3QFY14 compared to 3QFY13, this is due to cooler summer, lack of legislative session, and closer management of TFC facilities.** Attachment A (at the end of this document) shows historical utility usage and costs across the TFC portfolio.

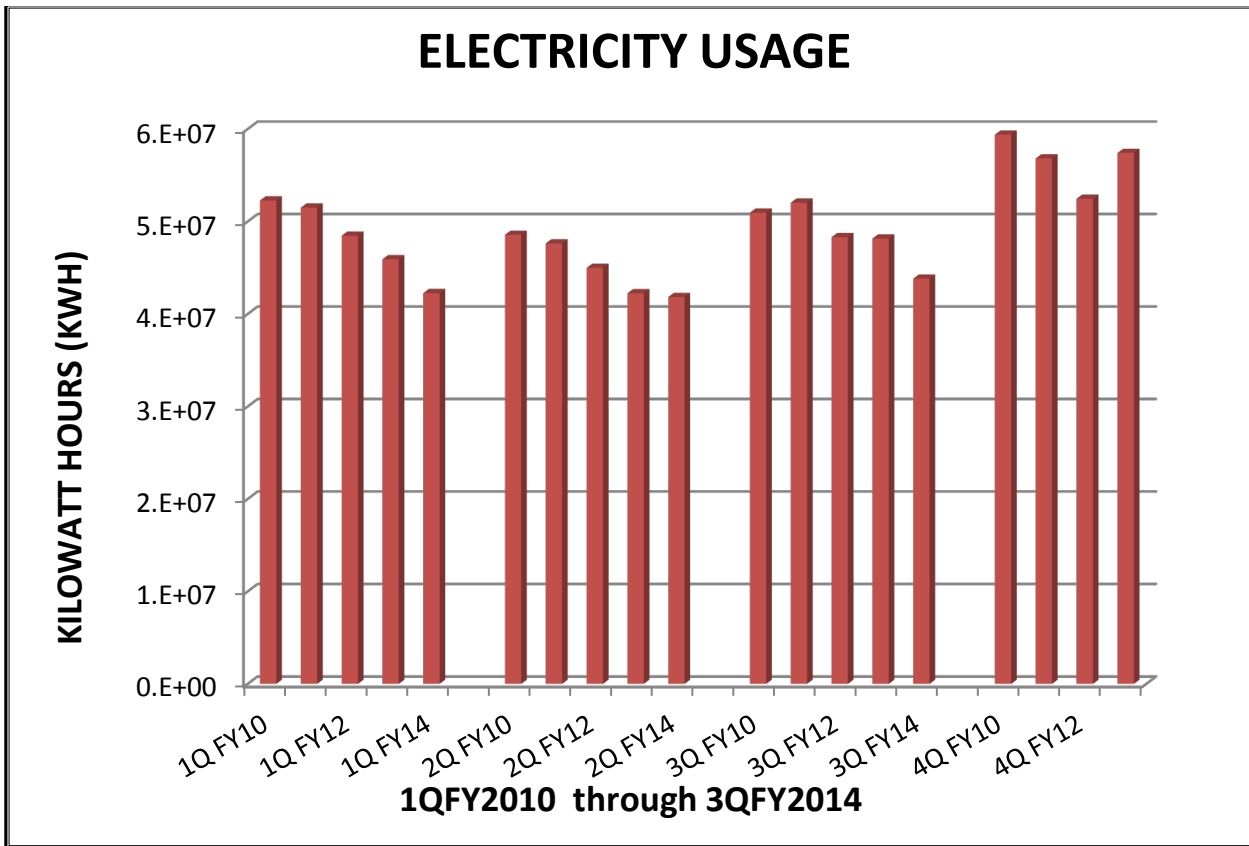


Figure 1- TFC Quarterly Electrical Energy Consumption (KWH)

Energy Work Group Meetings: OEM will continue to organize regular meetings of the TFC Energy Work Group which includes Commissioners Novak and Hermosa, FDC Management, TFC Fiscal Management, and Property/Real Estate Management. In 2014 OEM is focusing on three areas in order to maximize results. These areas are:

- 1- Developing a plan to collaborate with the fiscal division to perform a more rigorous review of our utility bills to verify their accuracy and to identify anomalies. This will ensure we are paying for accurately recorded consumption and expose any operational issues that may be wasting resources.-

- 2- OEM continuing support of the deferred maintenance program in reviewing designs, making suggestions for improvement, and vetting proposals for use of new technology.
- 3- Expansion of the load cooperative agreement with Austin Energy for the coming cooling season. These high priority efforts are outlined in more detail below.

While concentrating on these main focus areas OEM will continue to actively manage and study other means to further increase energy efficiency across TFC platform. Some of these efforts and strategies are listed in this report.

Deferred Maintenance System Upgrades: Various facilities were targeted for system upgrades for 2012/13 and 2014/15 through the TFC deferred maintenance program. OEM continues to work with Project Management to influence project scopes for energy & operational enhancements with deferred maintenance funding. Enhancements implemented after 9/1/2011 will comply with SECO enhanced energy and performance codes such as Water Efficiency Standards for State Buildings & Institutions of Higher Education Facilities, ASHRAE 90.1 (2010), and ASHRAE 62 (2004) & 2009 IECC.

OEM will continue working with FDC Project Management to ensure eligible energy rebates are pursued throughout the entire project portfolio. FY12-13 and FY10-11 projects which are concluding have begun to generate rebates with energy providers including a \$20,694.00 rebate for work performed at TCEQ's Park 35, Building A with more rebates expected during the next quarter.

TFC Agreement with Austin Energy for Curtailment of Electricity Usage (Load Cooperative): TFC has contracted with Austin Energy for the 2014 calendar year to voluntarily curtail electrical load during excessively hot days when either generation or transmission capacity limits are potentially challenged. The Building Automation Team Manager's position has been filled and that individual is working with OEM on the execution of the Load Cooperative effort. OEM has already received two curtailment requests thus far this cooling season. TFC's responses to these curtailment requests have yielded an estimated \$7,400 in energy bill rebates. (Additional savings of an unquantifiable amount are realized from reduced consumption resulting from TFC's curtailment activities to reduce the electrical demand.)

Temperature Adjustments for Energy Conservation: OEM with the cooperation from TFC's Building Automation Team is continuing to evaluate buildings to modify set points for energy conservation on a case by case basis. The expectations, as our trial efforts in 2013 have shown, indicate significant energy savings can be met without creating comfort issues. This methodology will be applied to other buildings throughout TFC's inventory during the upcoming cooling season.

Building Energy Walkthrough Audits: OEM is continuing the process of performing "energy walkthrough audits" of buildings within its inventory. These walkthroughs, performed with building technicians, the building manager, and automation personnel are intended to 1) familiarize all parties with the mechanical / electrical systems in the buildings, 2) reveal potential energy savings opportunities as candidates for funding and 3) verify /refine scopes of work for deferred maintenance activity. These walkthroughs will continue upon availability of the Building Automation team, a critical participant in adjusting building controls to reduce energy usage.

Energy Efficiency and Sustainability Campaign: Based on the direction given by the Energy Work Group, OEM is continuing to work with our property management division to establish an ongoing energy efficiency and sustainability campaign as resources allow. A new inventory wide communicate is expected to be published shortly.

William P. Hobby (WPH): The engineering study to perform an HVAC review of air moving equipment in addition to garage lighting study for WPH is being appropriately combined with authorized FY2014-15 deferred maintenance scoped projects.

Central Services Building (CSB): OEM has begun the project to identify and install occupancy sensors and building automation in CSB through initial discussions with an engineering firm. This project will be appropriately combined with authorized FY2014-15 deferred maintenance scoped projects. Plans for building automation installation include the application of utility meters (electricity, natural gas, and water). CSB metering installation will be used as a “pilot” program to study future TFC wide utility metering installations. Authorized FY 2014-15 deferred maintenance projects include scope that will allow for the development of standard specifications for the two types of building automation systems that are ubiquitous within TFC’s inventory.

John W. Winters Building (JHW): OEM is working through the Project Management team to improve outside air systems in each of the 3 buildings of JHW. This work should return JHW to more efficient HVAC operations and will set the stage for significant deferred maintenance improvements on the data center infrastructure over the next two years.

IV. Future Energy and Resource Reduction Plans

Building Energy Walkthrough Audits: OEM will continue performing “energy walkthrough audits” of buildings within its inventory to reveal potential energy savings opportunities as candidates for funding and verify / refine scopes of work for deferred maintenance activity.

Continuation of temperature adjustments for energy conservation: OEM will continue to work with Building Automation and Property Management to adjust and refine temperature set points to improve energy efficiency and energy cost savings across the TFC inventory. As previously mentioned this work will be expanded into all other TFC facilities in an ongoing effort.

Austin Energy electric rates following the existing Long Term Contract (Summer 2015): OEM has begun discussions with Austin Energy on rate structures following the expiration of the current Long Term Contract in May of 2015.

Performance Contracting: A draft Scope of Work has been prepared to initiate a Request for Qualification for an energy project to be undertaken by TFC. This project is expected to include such energy measures as lighting upgrades, building envelope upgrades, mechanical/controls upgrades and commissioning of mechanical/lighting systems. OEM has identified an array of facilities that would serve as a good fit for this project method. These facilities will be vetted as the project matures.

Central Plant Optimization (Ongoing): Sam Houston and Stephen F. Austin physical plants are responsible for providing air conditioning and heating to 17 separate facilities. TFC is beginning to convert these plants into fully variable plants, initially concentrating on the Sam Houston plant. Demand flow control strategies are being considered for controlling these variable plants. Such strategies are estimated to increase chilled water energy efficiencies by 35%.

Water Conservation Plan: TFC will continue implementing several water efficiency strategies in properties throughout its inventory in compliance with SECO’s requirements including the installation of water conserving plumbing fixtures for replacement of plumbing fixtures as routine maintenance, metering key water process use areas within the TFC building inventory, and implementing water conservation in landscaping modifications as the opportunities arise. Additional in-depth study is needed.

| TFC Plumbing Fixture Flow Requirements | | |
|---|--------------------------|--|
| Fixture Type | Flow Requirements | Comments |
| Water Closets Flush Valves | 1.28 gpf MAX | |
| Urinal Flush Valves | 0.25 gpf MAX | |
| Lavatory Faucets | 0.5 gpm MAX | Lavatory faucets shall be self closing (automatic sensor preferred for TFC projects) |
| Showerheads | | Must meet EPA WaterSense criteria |
| Water Fountains | | Must be self-closing |

Table.1 – Water Saving Fixtures

Occupancy Sensor Installations (Contingent upon funding availability): TFC is pursuing the installation of occupancy sensors across its portfolio to control internal lighting and HVAC systems. This initiative will begin with a few small pilot installations to test their effectiveness and tenant response. This is a major, multiyear effort but could result in significant energy and cost savings.

Measuring and Rebalancing Outside-Air and Pressurization of TFC Buildings (Contingent upon funding availability): TFC is planning new efforts to begin measuring outside air flow (compared to industry guidelines) into its buildings. While this program may be cost neutral from an energy conservation approach, it is essential to providing a quality work environment for State employees. TFC considers outside air and internal air quality as an issue that directly affects energy consumption and therefore a metric that merits OEM’s attention. This is a multi-year project and contingent upon funding availability.

Alternative Energy (Contingent upon funding availability): TFC is considering various types of alternative energy to power our portfolio. In most instances the alternative energy sources are costly or impractical but there are other options. As an example, one option is to contract and purchase Green-Choice electricity from Austin Energy. Green-Choice is a wind power contract with Austin Energy supporting the production of wind generated power. The Green-Choice power normally costs more than the current contract or commercial rates but the rates are locked and immune from escalation for the period of the contract. Currently the proposed rates by Austin Energy are too high, but TFC will monitor these opportunities for their potential to reach a cost neutral or cost savings level of performance.

Energy Contract Solicitation/Negotiation OEM is guiding TFC’s efforts in the solicitation and negotiation of a new electrical utility contract in the deregulated energy market for our buildings in Houston, Waco and Fort Worth. Shopping this service in the deregulated energy market will ensure competitive and best value electrical utility rates for our assets that obtain their energy from this market. OEM is partnering with TFC’s Procurement Division to either research energy procurement document templates for a TFC self-performed solicitation or to partner with an on-going State contractor that offers this solicitation service.

V. Conclusion

TFC is committed to identifying and implementing practical ways of managing resources with a focus on continuous improvement. TFC strives to provide the highest quality facilities and utility services to state agencies with a commitment to fiscal responsibility and stewardship of resources. Comments or suggestions for improvements that can be made to TFC’s on-going, current, or future projects are welcome. Please direct

your comments to John Raff, Deputy Executive Director, at (512) 463-3567 or Farshad Shahsavary, Manager of Energy and Engineering at (512) 463-7366.

Attachment A: Historical Utility Use and Cost Report:

| State of Texas - TFC | | | | | | | | | |
|--|-------------------|------------------|----------------------|------------------|--------------------|-------------|-------------|------------------|--------------------|
| Utility Use and Cost History – FY11 thru 08/2014 | | | | | | | | | |
| Date | Electricity (kWh) | Total Elec. Cost | Natural Gas (Therms) | Natural Gas Cost | Chilled Water Cost | Water (CCF) | Water Cost | Waste Water Cost | Total Utility Cost |
| FY11 | | | | | | | | | |
| Annual Total | 207,955,022 | \$14,040,239 | 2,101,312 | \$1,275,740 | \$169,856 | 341,157 | \$1,208,100 | \$1,036,106 | \$17,730,041 |
| 09/11 | 16,884,761 | \$1,095,462 | 94,592 | \$7,267 | \$14,390 | 33,227 | \$123,341 | \$94,516 | \$1,334,976 |
| 10/11 | 16,347,268 | \$987,833 | 120,544 | \$63,773 | \$14,380 | 86,594 | \$305,942 | \$85,663 | \$1,457,590 |
| 11/11 | 15,221,403 | \$906,770 | 176,814 | \$418,089 | \$14,371 | 49,493 | \$164,953 | \$74,691 | \$1,578,873 |
| 12/11 | 15,411,633 | \$972,680 | 297,990 | \$37,569 | \$14,380 | 19,631 | \$74,927 | \$72,262 | \$1,171,818 |
| 01/12 | 15,317,242 | \$1,113,489 | 258,582 | \$6,164 | \$14,835 | 18,081 | \$73,423 | \$76,966 | \$1,284,877 |
| 02/12 | 14,246,912 | \$1,031,937 | 232,063 | \$131,797 | \$14,831 | 15,990 | \$63,588 | \$67,648 | \$1,309,802 |
| 03/12 | 15,822,720 | \$1,155,193 | 168,439 | \$74,923 | \$14,823 | 18,714 | \$74,270 | \$80,848 | \$1,400,056 |
| 04/12 | 15,651,138 | \$1,142,178 | 125,015 | \$48,225 | \$14,827 | 26,562 | \$101,795 | \$84,043 | \$1,391,068 |
| 05/12 | 16,824,707 | \$1,192,861 | 114,885 | \$42,423 | \$14,830 | 31,805 | \$119,910 | \$106,891 | \$1,476,915 |
| 06/12 | 17,308,941 | \$1,220,234 | 90,632 | \$9,206 | \$14,830 | 36,468 | \$146,597 | \$107,096 | \$1,497,964 |
| 07/12 | 17,528,810 | \$1,230,356 | 90,096 | \$45,426 | \$14,836 | 35,612 | \$145,963 | \$101,289 | \$1,537,870 |
| 08/12 | 17,614,691 | \$1,298,932 | 87,937 | \$46,929 | \$15,320 | 43,598 | \$178,031 | \$112,467 | \$1,651,679 |
| Annual Total | 194,180,227 | \$13,347,927 | 1,857,589 | \$931,790 | \$176,652 | 415,776 | \$1,572,740 | \$1,064,381 | \$17,093,490 |
| 09/12 | 16,234,449 | \$1,251,375 | 83,076 | \$37,622 | \$14,375 | 31,372 | \$129,905 | \$94,683 | \$1,527,960 |
| 10/12 | 16,745,813 | \$1,183,123 | 117,707 | \$64,389 | \$14,842 | 24,704 | \$99,207 | \$92,607 | \$1,454,169 |
| 11/12 | 15,237,586 | \$1,074,509 | 179,635 | \$93,532 | \$14,841 | 24,224 | \$94,185 | \$82,555 | \$1,359,623 |
| 12/12 | 14,078,194 | \$1,038,558 | 257,574 | \$157,263 | \$14,839 | 18,818 | \$75,498 | \$72,812 | \$1,358,970 |
| 01/13 | 15,812,606 | \$1,073,792 | 294,748 | \$165,116 | \$0 | 16,641 | \$76,530 | \$77,811 | \$1,393,249 |
| 02/13 | 14,471,636 | \$989,287 | 220,361 | \$76,369 | \$14,825 | 18,992 | \$83,621 | \$75,252 | \$1,239,353 |
| 03/13 | 16,899,369 | \$1,394,839 | 222,955 | \$90,883 | \$14,821 | 23,220 | \$99,645 | \$97,287 | \$1,697,476 |
| 04/13 | 16,293,189 | \$1,436,078 | 181,379 | \$109,812 | \$14,820 | 22,098 | \$93,820 | \$89,262 | \$1,743,792 |
| 05/13 | 17,940,855 | \$1,374,571 | 147,855 | \$82,871 | \$14,829 | 26,966 | \$111,986 | \$116,195 | \$1,700,452 |
| 06/13 | 18,484,998 | \$1,518,341 | 107,077 | \$79,041 | \$14,829 | 32,429 | \$140,191 | \$108,974 | \$1,861,377 |
| 07/13 | 19,354,947 | \$1,314,117 | 91,293 | \$60,881 | \$14,830 | 35,761 | \$156,090 | \$108,874 | \$1,654,792 |
| 08/13 | 22,100,031 | \$1,399,973 | 90,147 | \$46,904 | \$14,828 | 36,170 | \$157,781 | \$110,008 | \$1,729,494 |
| Annual Total | 203,653,672 | \$15,048,565 | 1,993,808 | \$1,064,683 | \$162,680 | 311,395 | \$1,318,460 | \$1,126,319 | \$18,720,707 |
| 09/13* | 24,188,685* | \$1,568,944* | 94,216 | \$60,824 | \$14,847 | 28,939 | \$129,532 | \$98,060 | \$1,872,206* |
| 10/13 | 14,624,281 | \$1,050,922 | 128,830 | \$72,072 | \$14,840 | 21,725 | \$102,139 | \$90,237 | \$1,330,209 |
| 11/13 | 13,552,431 | \$997,229 | 211,097 | \$107,218 | \$14,829 | 17,003 | \$82,918 | \$77,366 | \$1,279,560 |
| 12/13 | 14,074,834 | \$1,029,108 | 316,288 | \$186,077 | \$14,826 | 69,349 | \$78,598 | \$75,412 | \$1,384,021 |
| 1/14 | 14,308,749 | \$1,044,957 | 318,256 | \$220,610 | \$15,298 | 36,108 | \$79,612 | \$74,253 | \$1,434,730 |
| 2/14 | 13,446,268 | \$953,006 | 307,986 | \$196,118 | \$15,295 | 15,485 | \$76,421 | \$71,725 | \$1,312,565 |
| 03/14 | 14,446,549 | \$1,022,584 | 258,967 | \$160,452 | \$15,294 | 20,616 | \$97,781 | \$89,546 | \$1,385,656 |
| 04/14 | 13,664,337 | \$1,078,264 | 172,034 | \$121,817 | \$15,287 | 23,454 | \$109,297 | \$86,193 | \$1,410,859 |
| 05/14 | 15,706,557 | \$1,213,612 | 125,081 | \$87,242 | \$15,293 | 26,772 | \$123,329 | \$99,361 | \$1,538,838 |
| 06/14* | 16,064,111 | \$1,182,458 | 100,540 | \$68,894 | \$15,288 | 28,599 | \$138,182 | \$101,549 | \$1,506,371 |
| 07/14* | 16,246,716 | \$1,214,382 | 95,746 | \$64,921 | \$15,312 | 30,602 | \$159,078 | \$119,392 | \$1,573,085 |
| 08/14* | 4,311,193 | \$325,848 | 491 | \$207 | \$0 | 6,981 | \$36,402 | \$27,743 | \$390,200 |

* Data is not compiled completely and/or there are inaccuracies identified need to be investigated.

