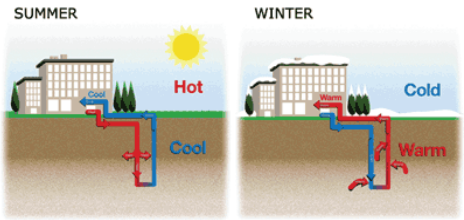
CMPD Providence Division FY 2016 Report

INTRODUCTION

CMPD Providence Division one of three divisions to be designed to earn a green building certification. Specifically, this certification is a LEED (Leadership in Energy and Environmental Design) Certification. Sustainable features allow for a building to be substantially more energy efficient and environmentally friendly when compared to traditional design features.



One specific sustainability feature of this division is a geothermal heating and cooling system. Geothermal works because the ground beneath our feet is warmer then the outside air in the winter and cooler in the summer. Inserting a series of small pipes into the ground allows heat to be transferred to and from the building. This type of heating and cooling system uses much less energy than a traditional heating & cooling system such as a boiler and chiller.

The information contained in this report includes data on energy, water, waste, transportation, and human experience.

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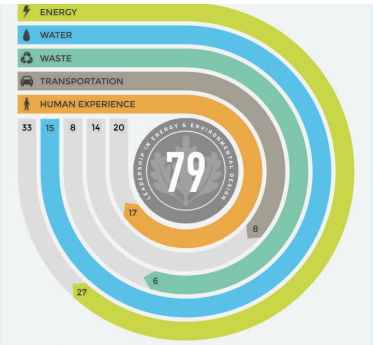
INSIDE THIS ISSUE

LEED Dynamic Plaque.....2
EASY Energy Management Software.....2
Energy Use Intensity.....3
Energy Cost Index.....3
Water Usage.....4
Waste Data.....4
Transportation.....6
Human Experience.....6



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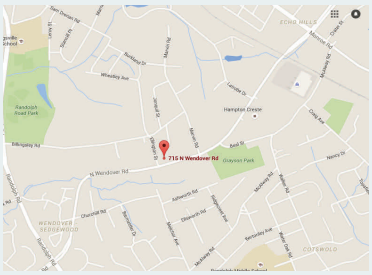
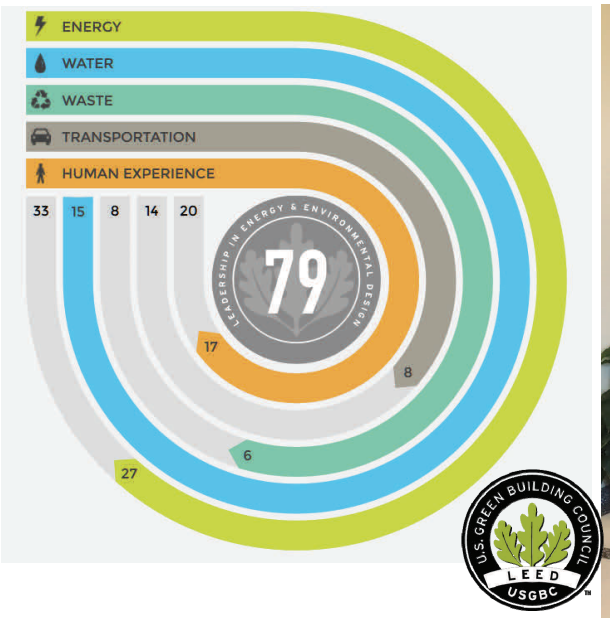
715 N. Wendover Road
Charlotte, NC 28211



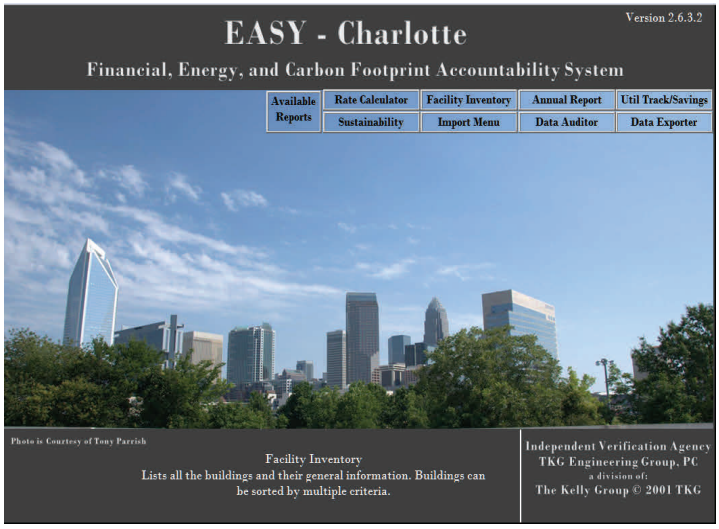
LEED Dynamic Plaque



Leadership in Energy and Environmental Design (LEED) is a rating system devised by the United States Green Building Council (USGBC) to evaluate the environmental performance of a building and encourage market transformation towards sustainable design. Traditionally, buildings that were designed to be sustainable received a plaque. As LEED continued to evolve, a new tool emerged to address the sustainability performance of a facility during operations. This is the LEED dynamic plaque.

A LEED Dynamic Plaque provides building occupants and facility managers instant access to utility and sustainability data for a specific facility, thereby providing opportunities to further reduce energy usage. All points from the plaque are awarded based on the sustainability performance of other facilities in the world and in the region with the same criteria. The LEED Dynamic plaque was installed in the Providence Police Division facility on April 2016. In addition to the plaque, Creech & Associates, the design firm for the facility, created a presentation board mounted around the plaque that highlights some of the facility's sustainability features for the public to see. Overall, operationally the facility is performing very well. The data from the LEED dynamic plaque was used to obtain the waste, transportation, and human experience data of this report.

EASY Energy Management Software

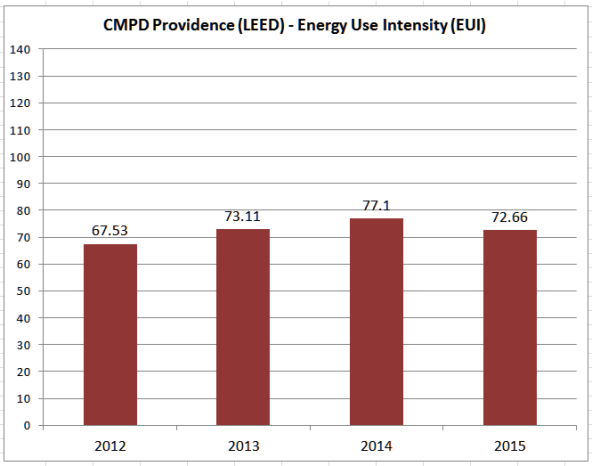


The Building Services division of Engineering & Property Management uses a custom energy management software called EASY to analyze the energy efficiency of the facilities that building services manages. Clyde Bower from E&PM Business Services helps the energy team by maintaining this software.

The energy use of facilities can be compared by several criteria. Similar facilities can even be compared in a category.

For this report, the energy usage per SF (EUI) and energy cost per SF (ECI) of CMPD Providence were obtained through EASY thanks to Clyde Bower.

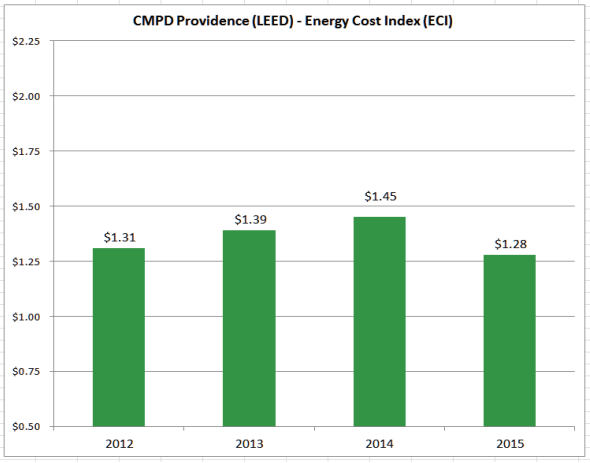
Energy Use Intensity



Energy Use Intensity (EUI) is a way to measure the total amount of electricity and gas that was consumed to operate a facility for a year, measured in thousands of British thermal units (kBtu). Once the total energy is known, it is divided by the total SF of the facility to provide the energy use per SF or EUI.

Providence displayed the highest EUI in 2014, however according to Energy Star, the average EUI for Police Stations is 88, so even though Providence's highest score was 77.1 in 2014, overall providence is doing well since it is below the national average.

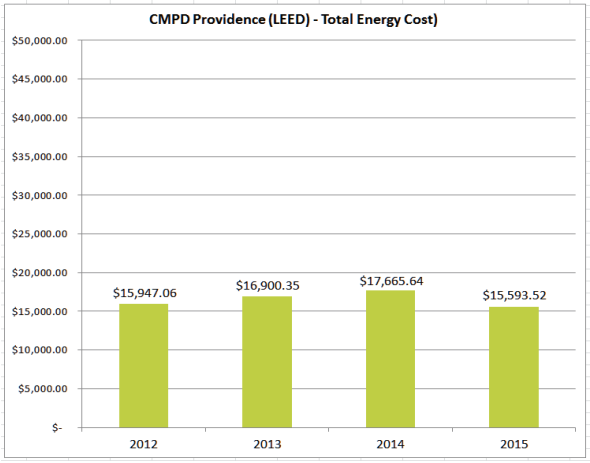
Energy Cost Index



Energy Cost Index (ECI) is a way to measure the cost per square foot to operate the building. The total cost in dollars of electricity and gas are divided by the square footage of the facility to provide the ECI.

Providence displayed the highest EUI in 2014, however according to Energy Star, the average EUI for Police Stations is $1.44, so overall providence is doing well in this category too.

Total Energy Cost



The total energy cost is total dollar amount of electricity and gas that it cost to operate the facility for a given year.

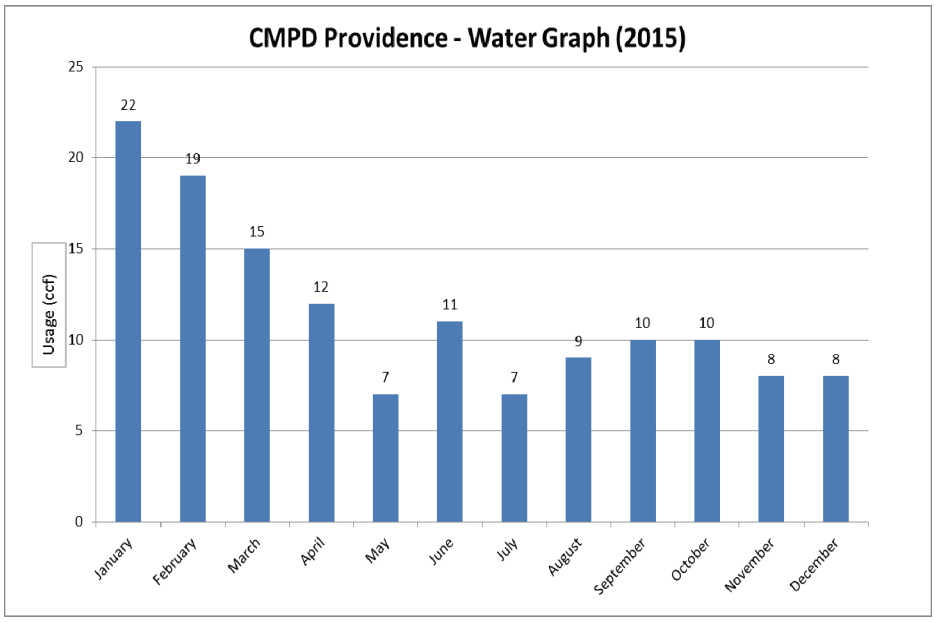
Providence displayed the highest EUI in 2014 at $17,655.64.

Energy Conclusions

Providence displays a fairly even trend between all three categories, so there is no need to perform an energy audit in FY 2017.

Water Usage

The data in this chart was obtained by EASY and displays the monthly water usage in hundred cubic feet (ccf) for calendar year 2015.



The LEED Dynamic plaque, awarded the facility 15 points in this category which is the highest points possible. The local average is also 15 points.

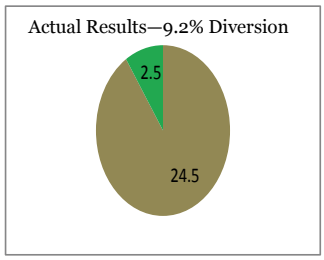
The points are high because the site contains no permanent irrigation. Even though the local average is 15 points too, most of this facility's water usage probably comes from the showers. The shower usage makes up for the difference in no landscaping assuming other facilities in the area have permanent irrigation systems but no showers.

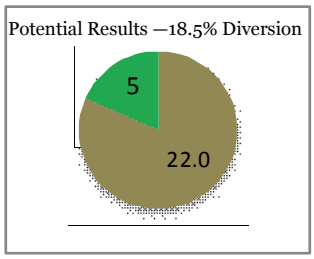
Waste Data

As one of the requirements of the LEED dynamic plaque, a minimum of one waste audit needs to be conducted per year. The results are then manually uploaded to the plaque. On June 9th from 8:30am-11:30am Patrick Cerri from Building Services performed this waste audit with Greens Commercial Cleaning, the cleaning contractor of CMPD Providence. As a result of this audit, some interesting and noteworthy information and data emerged.

Waste Audit Actual Results			
Trash	lbs	Recycling	lbs
Bag 1	12.5	Bag 1	1.25
Bag 2	7.0	Bag 2	1.25
Bag 3	1.0		
Bag 4	1.0		
Bag 5	3.0		
Bag 6	0.0		
Total	**24.5**	**Total**	**2.5**

Waste Audit Potential Results			
New Total	22.0	New Total	5





A total of 6 bags of trash and 2 bags of recyclables were collected from the facility.

Trash bag 1 was collected from all the trash bins inside the facility and weighed 12.5lbs.

Trash bags 2-6 were collected from the five trash receptacles that are mounted on the poles of the canopy in the back of the building.

Recycle bag 1 was collected from the recycle bins in the conference rooms and in the break room.

Recycle bag 2 was collected from the recycle bin in the back of facility near the pole mounted trash bins.

All the trash and all the recyclables were measured with a result of 24.5 lbs of waste and 2.5 lbs of recyclables. A 9.2% recycle (diversion) rate.

Patrick then sorted through all the trash and took out an additional 2.5lbs of what would have been recyclable and the results were measured again. Potentially, this would have resulted in a 18.5% diversion rate.

LEFT: The five trash bins located in the back of the facility contained most of the potential recyclable materials mixed in with the trash such as plastic bottles, aluminum cans, and glass.

ABOVE: There is only one recycle bin at the back of the facility and five trash bins (trash bags 2-6). The recyclables in this bin (Recycle Bag #2) weighed 1.25lbs which is exactly as much as all the recyclables from the interior of the facility (Recycle Bag #1)

RIGHT: It was discovered that nearly all the offices and cubicles did not use their personal recycle bins. Instead, they were stacked either on top or below the waste bin. However, only few of the recyclables were mixed with trash bag #1.

LEFT: There is a waste dumpster (left) and a cardboard dumpster (right) at the back of the facility that is collected weekly by Republic Services.

RIGHT: There are also three small blue comingled recycle bins behind the cardboard dumpster. This is where Greens Commercial cleaning empties the recycle bags obtained from the recycle bins at the facility.

For the purposes of the LEED Dynamic Plaque, only the actual results were inputted. The potential results resulted in about twice the recycling capacity. So there is an additional 2.5lbs of recyclable materials that is being lost everyday from this facility, which is 912lbs per year.

Conclusion: It is recommended that 1-2 more recycle bins be placed at the back of the facility to increase the diversion rate for the facility. Also, a label such as the one to the right should be placed on each large recycle bin.

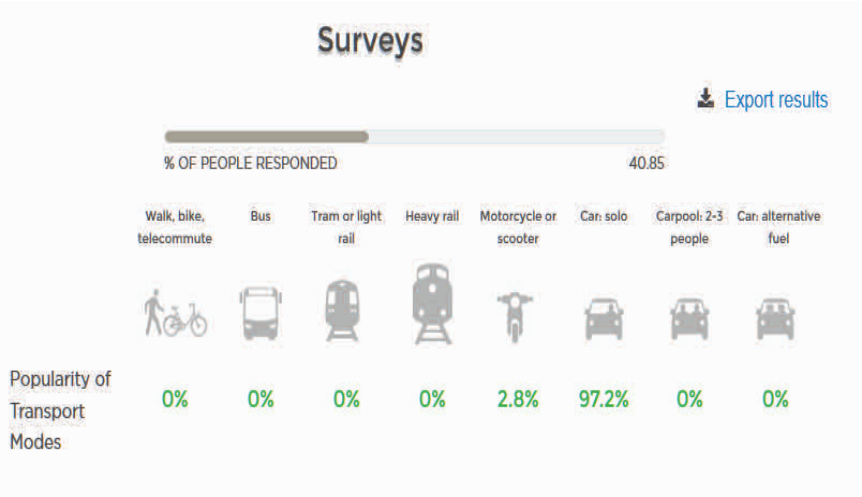
Transportation

As one of the requirements of the LEED Dynamic Plaque, a transportation survey needs to be administered at least once per year. The results of this survey are automatically uploaded to the plaque.

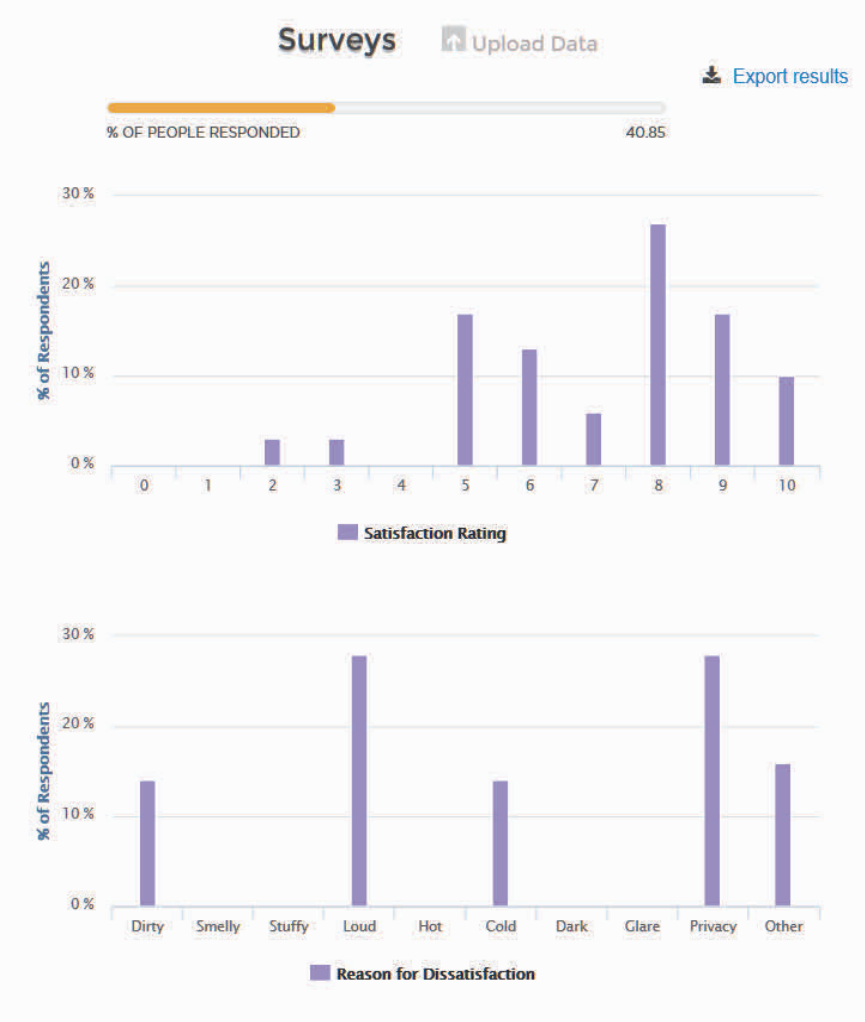
Captain Nathan King assisted by emailing the link to all the police personal located at the facility.

LEED Requires a minimum 20% response rate and providence displayed a 41% response rate. Even though only 2.8% of the respondents use a method of getting to work other than a car with only themselves (car solo), it was enough to obtain 8 points in the category, which is also the local average.

Due to the nature of this facility, it is common to have these results.



Human Experience



As one of the requirements of the LEED Dynamic Plaque, a human experience survey needs to be administered at least once per year. In addition to the survey, carbon dioxide (CO_2) readings and Volatile Organic Compounds (VOC) readings need to be obtained as well. The results of the comfort survey and results of the readings (CO_2 and VOC readings not included in this report) are automatically uploaded to the plaque.

Captain Nathan King assisted by emailing the comfort survey link to all the police located at the facility.

LEED Requires a minimum 20% response rate and providence displayed a 41% response rate.

Overall, most of the respondents were satisfied, scoring an 8 and above. For those that were not satisfied, privacy and noise were the top two concerns. CMPD and E&PM could potentially use the data in the comfort surveys to address these concerns directly, and even design future divisions to address these concerns.