



**Nov 1, 2018**

## **285 Erb Measurement & Verification Findings**

### **Summary Findings**

The following Measurement and Verification (M&V) analysis demonstrate the positive effect the H2minusO Flow Management Device (FMD) has had on the meter reading efficiency at 285 Erb. We were provided consumption data for 2016, 2017 and 2018 measurement periods. After a detailed analysis of the datasets, the meter reading efficiency showed moderate improvement. The daily consumption decreased by an average of 5.29% with a payback in 1.60-years, exceeding the ROI projections of 5% with a payback in 1.73-years. The measured results likely would have been higher given that in the last week of the post-measurement period, 6-units were newly occupied by a number of students.

### **Key Project Metrics**

<b>One time project investment: \$5,795.00</b>
<b>Projected consumption 2018: 13990 m3</b>
<b>Cost per m3: \$4.88</b>
<b>Install date: July 7, 2018</b>

### **Pre-Installation**

<b>Projected Savings: \$3,535.40</b>
<b>Projected Savings: 5.00%</b>
<b>Projected ROI (Yrs): 1.73 years</b>

### **Post-Installation**

<b>Measured Savings (\$): \$3,611.43</b>
<b>Measured Savings (%): 5.29%</b>
<b>Measured ROI (yrs): 1.60 Years</b>



**M&V Findings**

The FMD was installed on Aug 7, 2018. Table-1 summarizes the consumption results for the FMD post-installation period from Aug-Sept 2018 relative to the same periods in 2016 and 2017 with no FMD. Column-7 shows the average daily water consumed for each period which is based on the actual water bills provided as well as actual water meter readings conducted post-H2minusO installation in 2018. The total consumption (m3) recorded in column-5 for each of the start and end periods (column-3 and column-4), shows a significant increase from 2016 to 2017 of 11.86%; but a moderate decrease of 5.29% after the installation of the FMD (column-8 row-3). It is also important to note that the Year-over-Year (YoY) consumption increase from 2016 to 2017 was more than 16%. So the 11.86% increase when comparing the same YoY periods supports the billing data showing that this facility was experiencing increasing water consumptions on an annual basis. Furthermore, 6 units experiencing increased occupancy, because of student tenants, resulting in an increase in water consumption during the last week of the measurement period. Subsequent major water events during the rest of Sept and Oct (boiler leak and water pipe rupture) prevented us from extending the M&V period.

Despite the water issues experienced at this facility, the decrease in consumption, when analyzing the buildings consumption patterns, confirms the improved meter reading efficiency post-installation of the FMD. These measured results confirm improved efficiencies of a minimum of 5.29%.

Table 1: M&V Summary Results

#	H2 Reference	Start Period	End Period	Consumption (m3) in Period	# Days in Period	Average Consumption (m3/day)	Change in Consumption (m3/day) YoY Same Period
2	Post-Install	2016-08-02	2016-09-01	957	30	31.90	
4	Post-Install	2017-08-01	2017-09-06	1,303	36	36.19	11.86%
6	Post-Install	2018-08-07	2018-09-06	1,038	30	34.62	-5.29%

Graph 1: Total Consumption (m3) – Year-Over-Year (YoY)/Period-Over-Period (PoP)

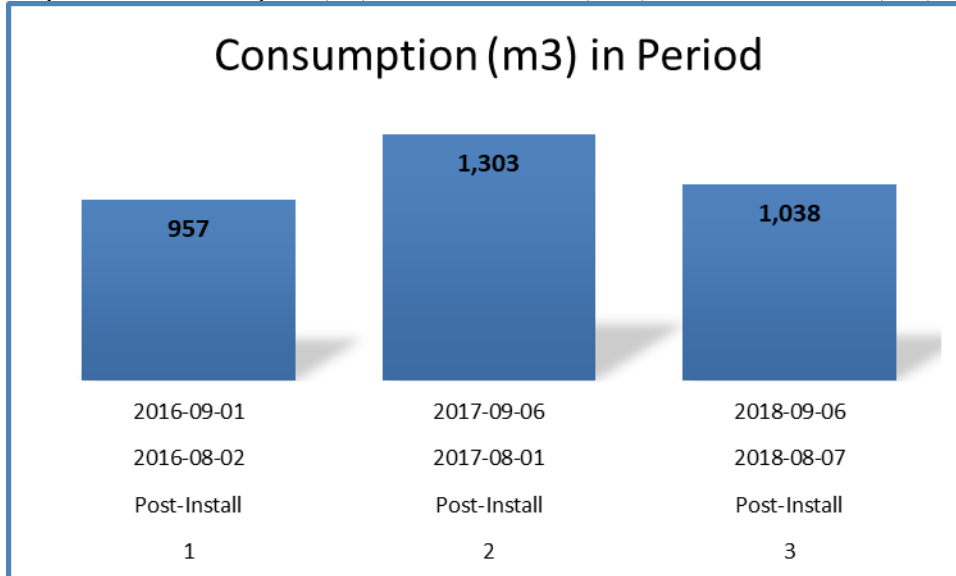
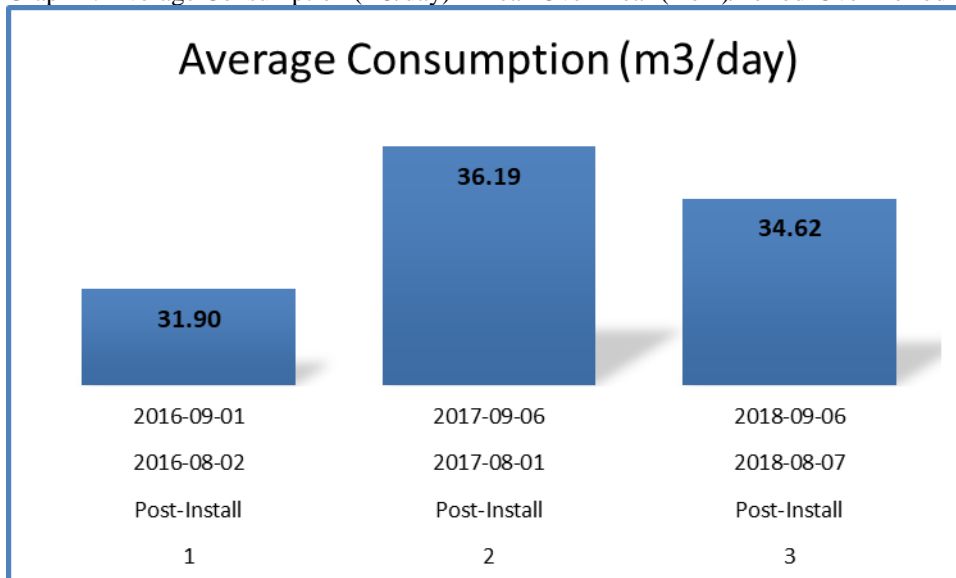


Chart 1 shows the total consumption (m3) for the measurement period based on the start and end date post-H2minusO FMD installation.

Graph 2: Average Consumption (m3/day) – Year-Over-Year (YoY)/Period-Over-Period (PoP)



Graph 2 shows the average daily consumption (m3) for the measurement period based on the start and end date post-H2minusO FMD installation.



Graph 3: Change in Consumption (%)– Year-Over-Year (YoY)/Period-Over-Period (PoP)

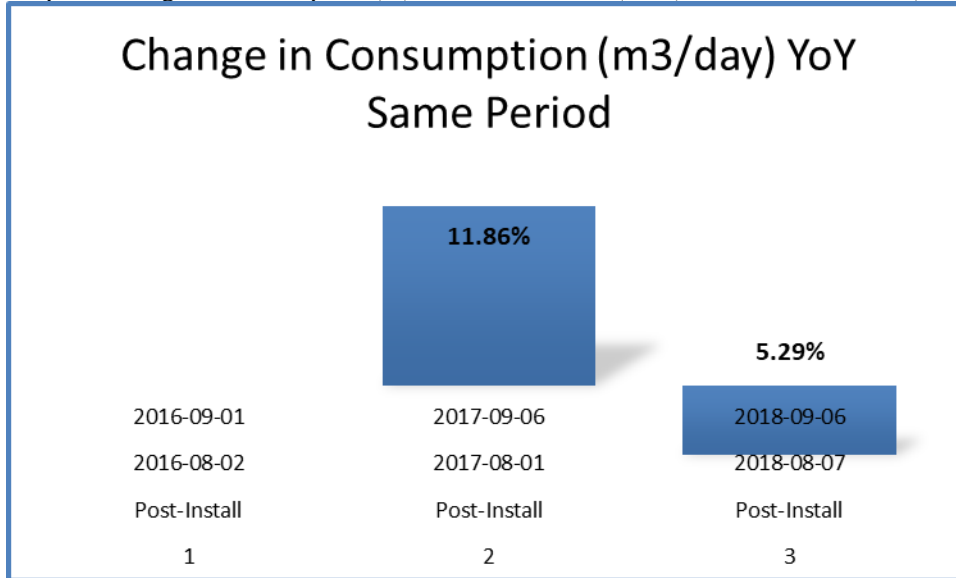


Chart 3 shows the average percentage change in consumption for the measurement period based on the start and end date post-H2minusO FMD installation.