# Benefits of Effectively Tracking and Managing Your Energy Use

## 5 Cities Plus Columbus 2017

08/17/2017



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# Presentation Highlights

- Identifying that we had a problem

- The search for a solution

- Live Demo

- What we found and lessons learned

- Future Initiatives and Other Applications

*"I choose a lazy person to do a hard job because a lazy person will find an easy way to do it."*

*–Bill Gates*

# Louisville MSD Background

- Wastewater, Stormwater and Ohio River Flood Protection for Louisville & Jefferson County, KY

- 3,300 miles of combined and sanitary sewer, 5 regional treatment centers, 376 Sq. Mile Drainage Area, 29 miles of Levee System (with 16 Flood Pump Stations).

- $900 Million Consent Decree with 2025 deadline

- $4.3 Billion in needed repair and reinvestment based on recent Facility Plan

- Implementing Effective Utility Management

# Our Energy Tracking Problem

- No point person or review process, responsibility changed hands multiple times

- Too many bills

- Provider not much help

- Bills can vary widely, hard to budget

- EUM metrics required tracking energy usage

# Our Energy Tracking Problem



- The bills
  - 330+ Energy consuming sites with over 400 meters (that we know of…)
  - 20 Different Rate Categories for Electricity
  - Bills going to multiple places
  - Service Address on Bill ≠ Asset Location
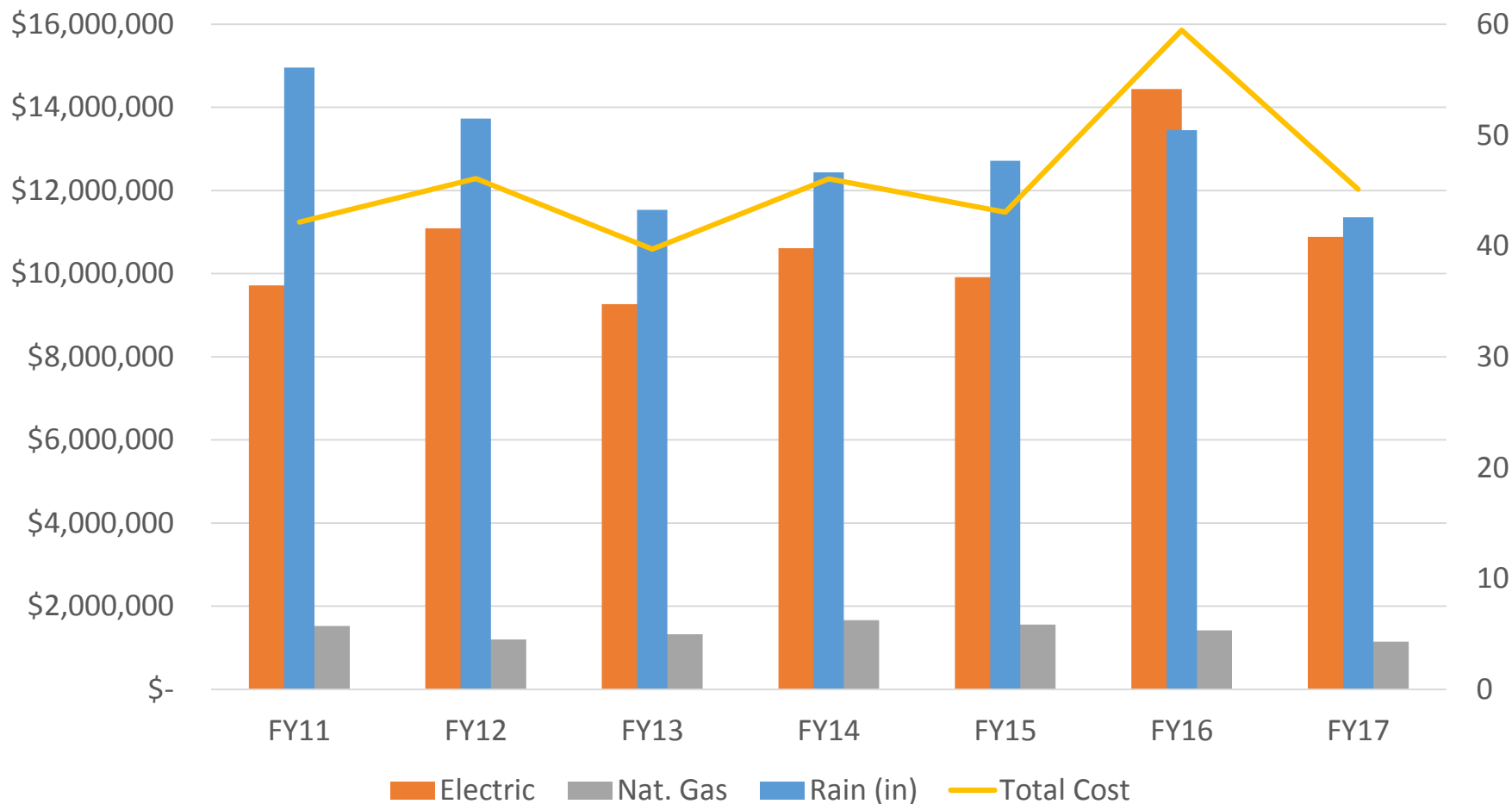
Mailed **7/24/17** for Account # **3000-1067-2180**

AMOUNT DUE
**$42,517.99**

DUE DATE
**8/15/17**

Account Name:  **METRO SEWER DIST**
Service Address: Various Location
LOUISVILLE KY

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# Historical Energy Costs



MSD Energy Costs vs Rainfall

Legend: Electric | Nat. Gas | Rain (in) | Total Cost

Note: MSD Fiscal Year is July 1 – June 30

# Historical Energy Costs



MSD Energy Costs vs FPS Days

Legend: Electric, Nat. Gas, FPS Days, Total Cost
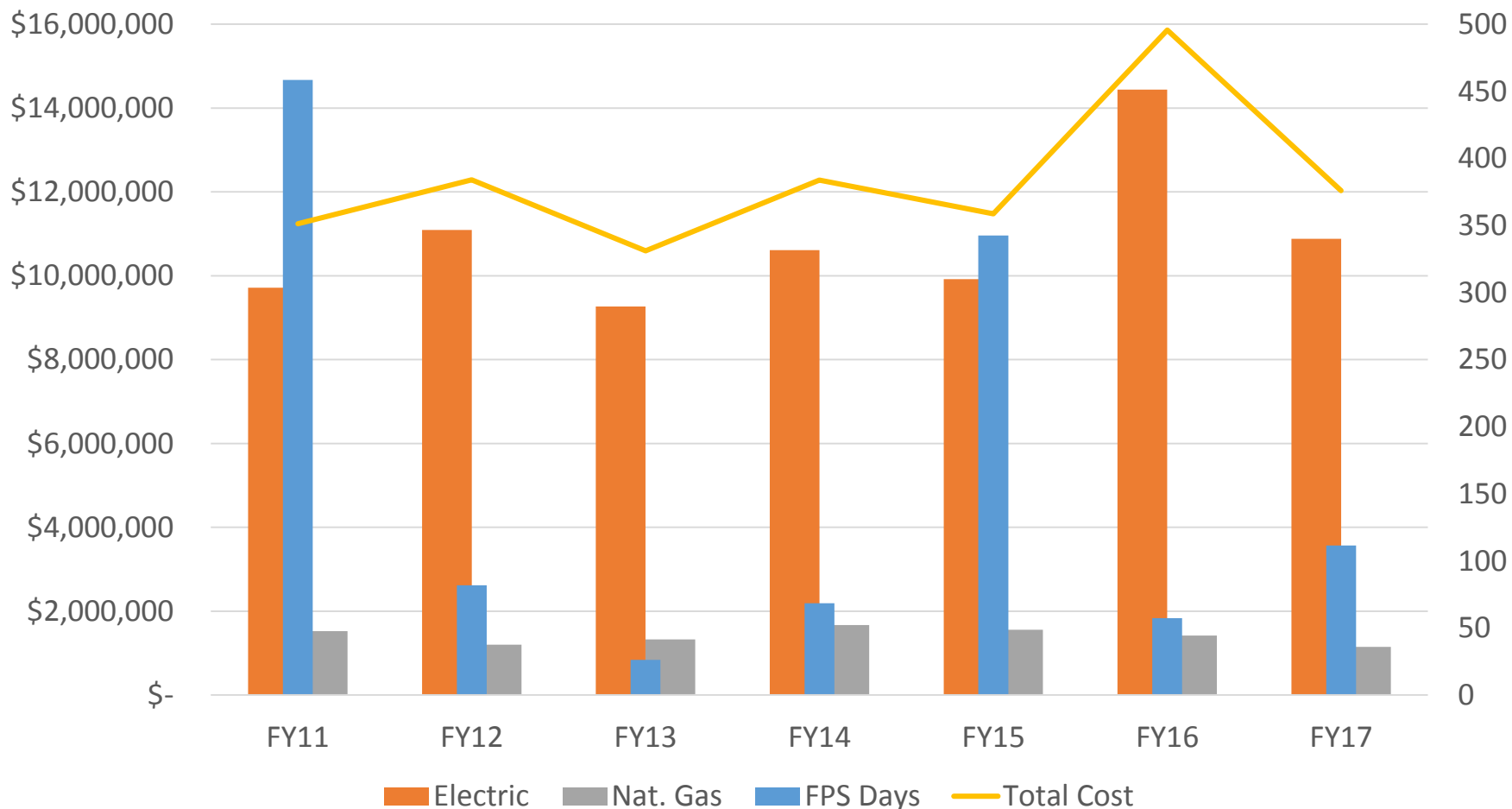
Note: MSD Fiscal Year is July 1 – June 30

# Searching for a Solution

- First Step: Understanding the bills and matching with assets



- Second Step: Evaluate Options
  - External: $1-$2M depending on customization level
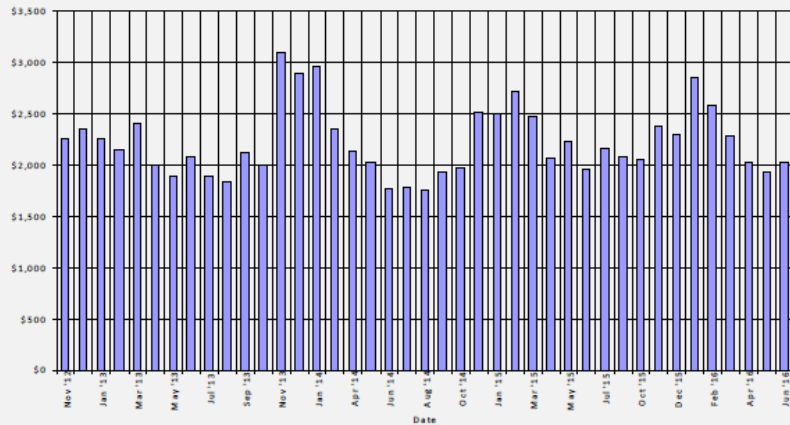  - Internal: Available Resources

# 1st Version – MS Access
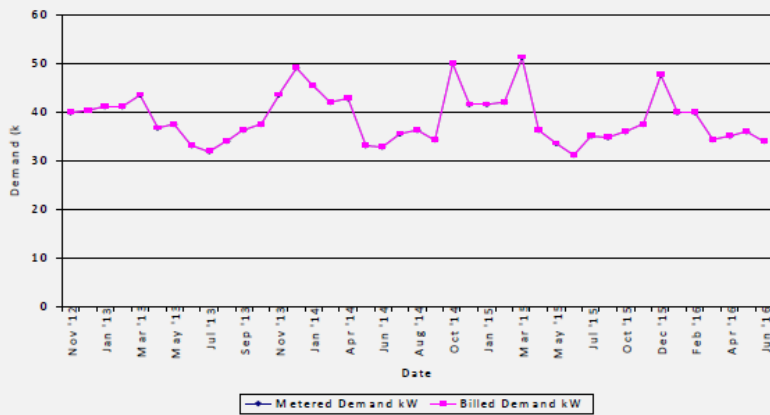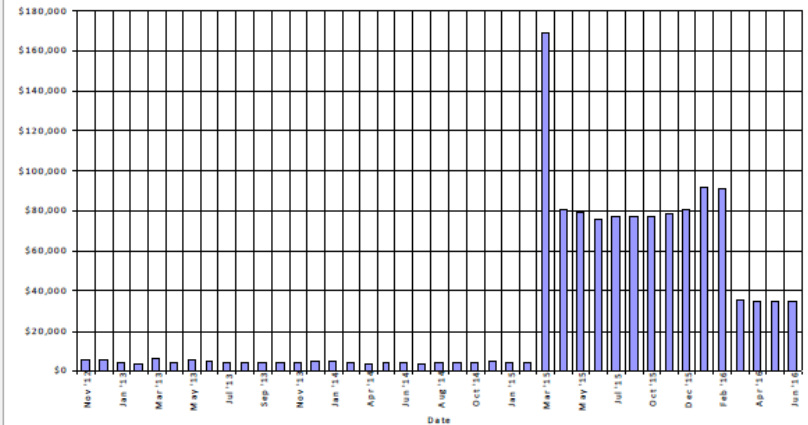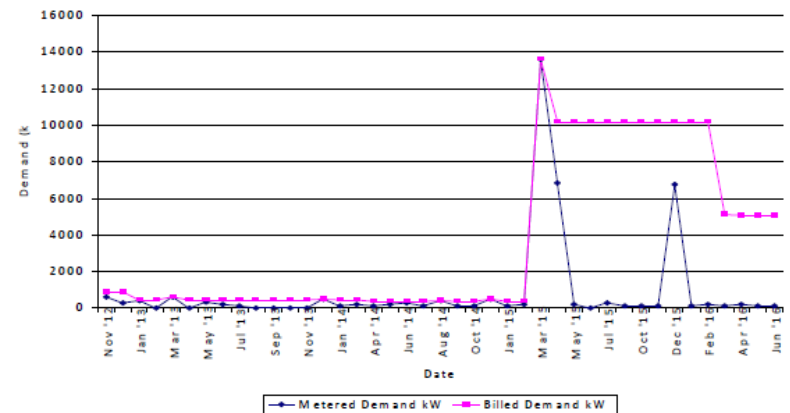
# 2ⁿᵈ Version - MS Excel

- Get & Transform Functions
  - Power Query: Connect to, preview and transform large data sets, and the ability to merge or append large data sets

- Benefits
  - Already included in Excel 2016
  - Free to download from Microsoft for previous versions (2010 & 2013)
  - Can be automatically updated when new data arrives
  - Can be shared across an organization



Connecting to and transforming data in Excel

1. Connect  2. Transform  3. Combine  4. Share
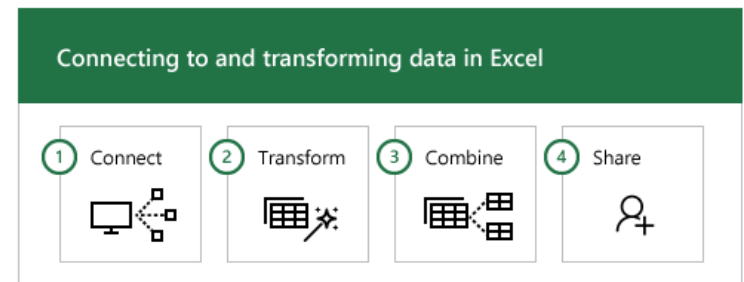
# Initial .TXT File

[Raw Text File](#)

- 350-400 Rows of data
- 31 Columns
- Some lines are duplicates
- Dates are formatted in yyyy/mm/dd
- Data is shaped and cleansed monthly automatically
- Each month's .txt file is appended to previous months files automatically

| Name | Date modified | Type |
|---|---|---|
| 01072017-1007_MSD_Extract.txt | 1/7/2017 10:07 AM | Text Document |
| 02042017-1001_MSD_Extract.txt | 2/4/2017 10:01 AM | Text Document |
| 02062016-1000_MSD_Extract.txt | 2/6/2016 10:00 AM | Text Document |
| 03042017-1001_MSD_Extract.txt | 3/4/2017 10:01 AM | Text Document |
| 03052016-1001_MSD_Extract.txt | 3/5/2016 10:01 AM | Text Document |
| 04012017-1001_MSD_Extract.txt | 4/1/2017 10:01 AM | Text Document |
| 04022016-1001_MSD_Extract.txt | 4/2/2016 10:01 AM | Text Document |
| 05062017-1001_MSD_Extract.txt | 5/6/2017 10:01 AM | Text Document |
| 05072016-1001_MSD_Extract.txt | 5/7/2016 10:01 AM | Text Document |
| 06032017-1001_MSD_Extract.txt | 6/3/2017 10:01 AM | Text Document |
| 06042016-1001_MSD_Extract.txt | 6/4/2016 10:01 AM | Text Document |
| 07012017-1001_MSD_Extract.txt | 7/1/2017 10:01 AM | Text Document |
| 07022016-1001_MSD_Extract.txt | 7/2/2016 10:01 AM | Text Document |
| 08052017-1001_MSD_Extract.txt | 8/5/2017 10:01 AM | Text Document |
| 08062016-1001_MSD_Extract.txt | 8/6/2016 10:01 AM | Text Document |
| 09032016-1001_MSD_Extract.txt | 9/3/2016 10:01 AM | Text Document |
| 09112015-0855_MSD_Extract.txt | 9/11/2015 8:59 AM | Text Document |
| 10012016-1001_MSD_Extract.txt | 10/1/2016 10:01 A... | Text Document |
| 10032015-1006_MSD_Extract.txt | 10/3/2015 10:06 A... | Text Document |
| 11052016-1001_MSD_Extract.txt | 11/5/2016 10:01 A... | Text Document |
| 11072015-1001_MSD_Extract.txt | 11/7/2015 10:01 A... | Text Document |
| 11102016-1413_MSD_Extract.txt | 11/10/2016 2:13 PM | Text Document |
| 12052015-1001_MSD_Extract.txt | 12/5/2015 10:01 A... | Text Document |

# Live Demo

# EUM Charts
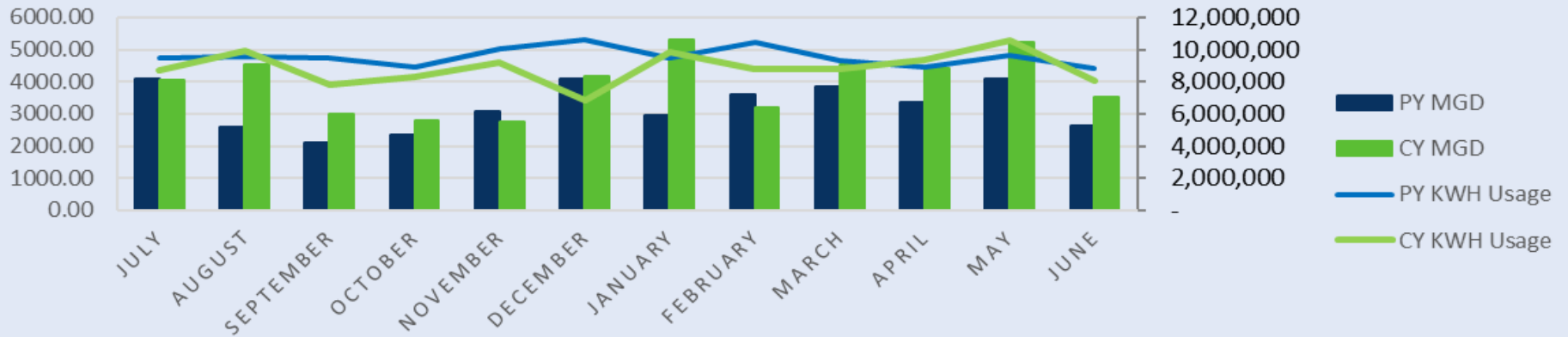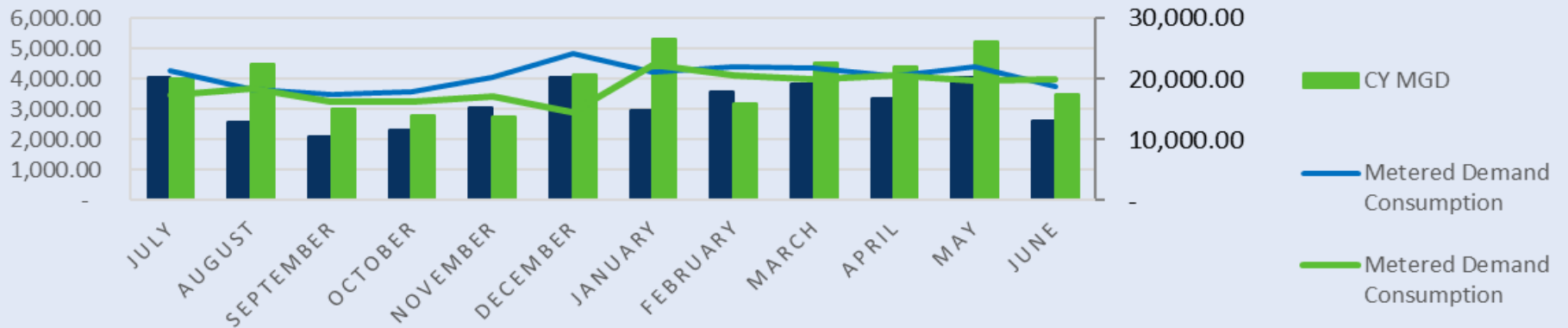
# Lessons Learned and Takeaways

- Demand Charges – Are not your friend

- Your service provider makes mistakes too
  - Incorrect Billings, Incorrect readings, wrong rate classes, paying for assets no longer owned, etc.

- Tracking energy usage and costs doesn't need a complicated, expensive tool

- Producing the tool in-house led to a better internal understanding of utility rates and energy usage

- The effort has already saved/recouped MSD approximately $500,000

# Next Steps

- Energy Usage Initiatives
  - Continue tweaking operations to avoid peak demand charges and inefficient energy usage
  - Further educate design teams on new facility design
  - Work with power provider on demand charges and rate classes
- Energy Tool Updates:
  - Continue to untangle the mess of bills
  - Further roll out to end users
  - Integrate additional KPIs and automated auditing tools
- Other Applications:
  - Utility Locating Requests and Invoices
  - Other Large Invoices

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# Questions?

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