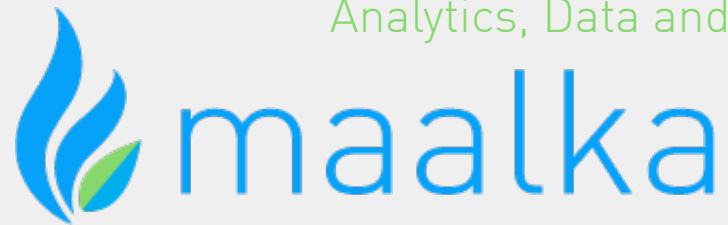


# THE VOLTTRON DASHBOARD

An Extensible Platform for Volttron Enabled Visualizations,  
Analytics, Data and Program Management

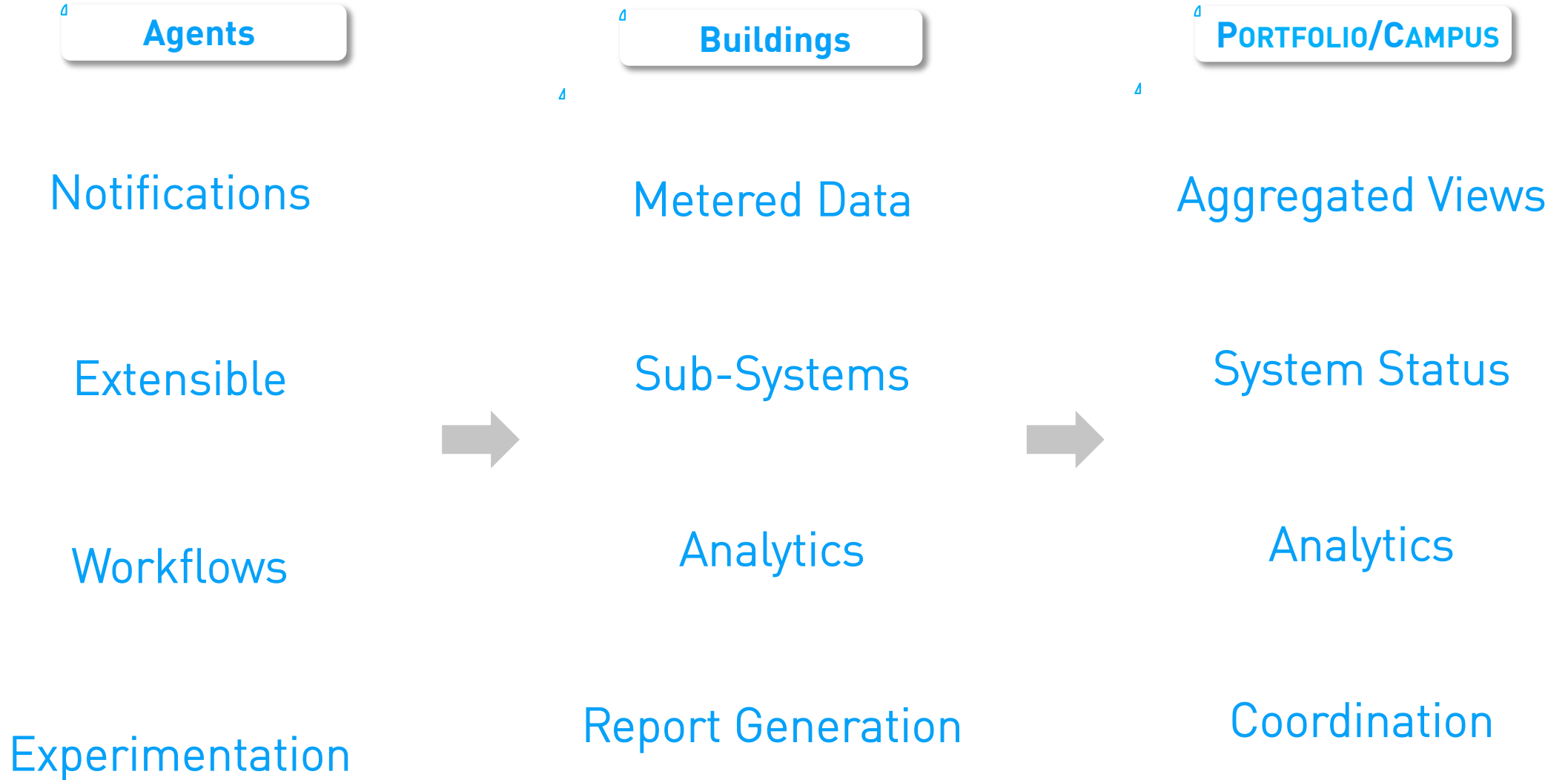


DISCOVER A  
SUSTAINABLE  
WORLD

Dr. Rimas Gulbinas – CEO Maalka  
[www.maalka.com](http://www.maalka.com) 16 May 2017

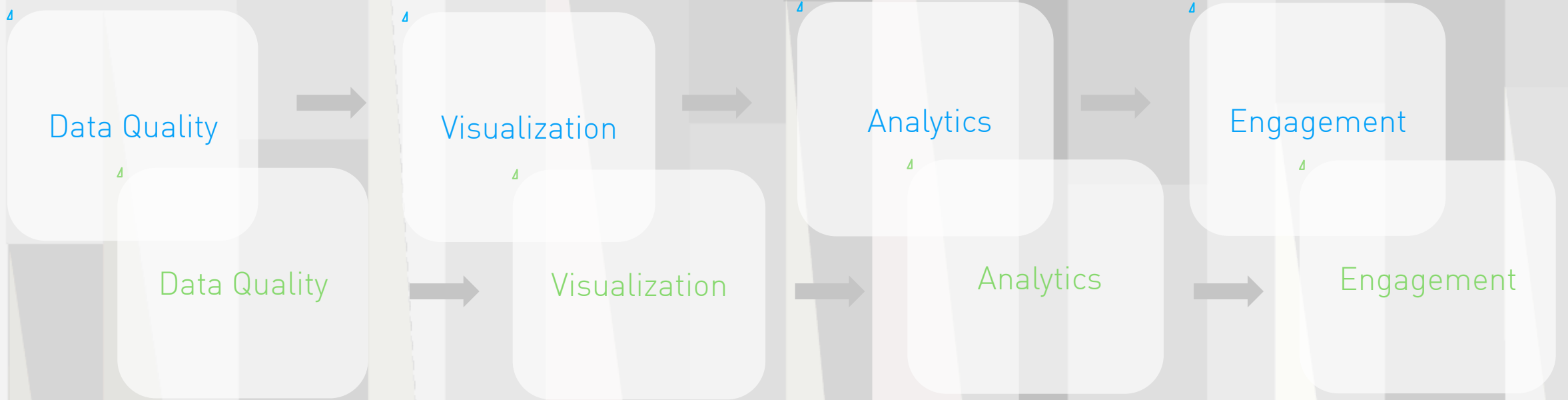


# Maalka | THE INSIGHTS





# Maalka | MAKING VOLTTRON AGENTS AND DATA USEFUL



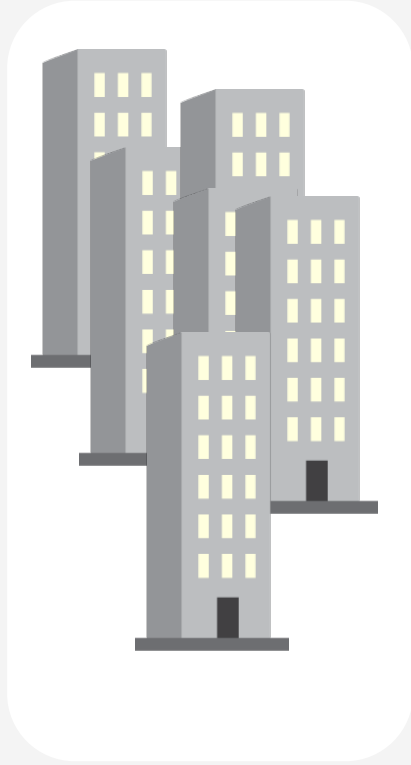
Program Alignment



# Maalka | CAMPUS/DISTRICT LEVEL DATA AGGREGATION

PROGRAM MANAGEMENT AND TRACKING

YEARLY & YEAR-2-DATE REPORTS



**MISSOULA BENCHMARKING PROGRAM**

PROGRAM SETUP PROGRESS

OVERALL COMPLETION: 100%

CHECKLIST:

- Selected Program
- Uploaded Data
- Completed Building Validation
- Completed Energy Validation
- Set Baselines

BUILDINGS THAT PASS VALIDATION: 102 | BUILDINGS THAT DO NOT PASS VALIDATION: 1234

BUILDINGS THAT PASS VALIDATION WILL GET:

- Progress Report
- Competitive Reports
- Energy Charts

DATA QUALITY

46 TOTAL ERRORS | 13 MISSING FIELDS

Property Types: Assembly Cultural entertainment: 1, Assembly Religious: 1, Office: 2, Public safety station: 3, Other: 1

**SOUTHFACE - GRANTS TO GREEN**

City

Property Types

- Urgent Care/Clinic/Other Outpatient: 3
- Senior Meeting Hall: 8
- Senior Care Community: 2
- Residence Hall/Dormitory: 16
- Preschool/Daycare: 7
- Performing Arts: 15
- Parking: 2
- Other - Public Services: 1
- Other - Lodging/Residential: 6
- Other - Entertainment/Public Assembly: 2
- Other - Education: 8
- Office: 28
- Non-Religious Workspaces: 1
- Zone 2: 1
- Adult Education: 1
- College/University: 30
- Convention Center: 1
- Distribution Center: 4
- Fast Food Restaurant: 1
- Fitness Center/Health Club/Gym: 4
- Hotel: 1
- K-12 School: 12
- Library: 6
- Mixed Use Property: 4
- Multi-Family Housing: 12
- Museum: 21

Zoom | Square Feet | Year Built | EUI Trend

Property Name	Address	Function
317 Main St	317 Main St Yarmouth	Other - Education
1 Steps	1105 Euclid Ave Atlanta	Performing Arts

**California Prop 39**

Total Annual Cost vs Savings

Lighting - Retrofit Interior Lamps to LED

Lighting - LED Exit Signs

Lighting - Interior Fixture Retrofit

Lighting - Exterior Fixture Retrofit

Lighting - CFL Lamp Retrofit

Lighting Controls

Lighting - Interior Linear Fluorescent Reimaging

HVAC - Retrocommissioning (Continuous)

HVAC - VAV System

HVAC - Room/Window AC

HVAC - Packaged/Split System AC/Heat Pump/VRF

HVAC - New Economizer

HVAC - HVAC and Air Handler Repairs

HVAC - Evaporative Cooler

HVAC - Demand Controlled Ventilation

HVAC - Cooling Towers

HVAC - Condensing Furnace

HVAC - Chiller/Boiler Replacement

HVAC Controls - Programmable/Smart Thermostats

HVAC Controls - Energy Management System

HVAC Controls - Door Switch/Occ. Sensors

HVAC Controls - Chiller Controls Upgrade

Total savings per year | Total cost

**Total Cost: \$591,804,308**

**Savings per Year: \$40,178,303**

**Years to Payoff: 15**

Explore

City

Property Types

EEM Type

Special Education Schools (Public): 22 | Adult Education Centers: 18

Preschool: 15 | Alternative Schools of Choice: 23

LEA: 253 | Continuation High Schools: 78

K-12 Schools (Public): 49 | District Community Day Schools: 16

Intermediate/Middle Schools (Public): 411 | Element Schools in 1 School Dist. (Public): 103

Blind Schools (Blind): 486 | Homeless Schools (Blind): 1496

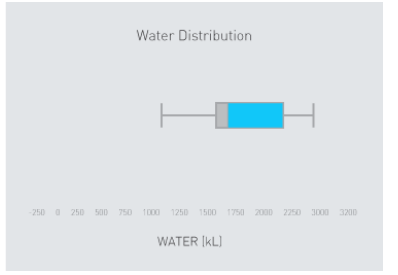
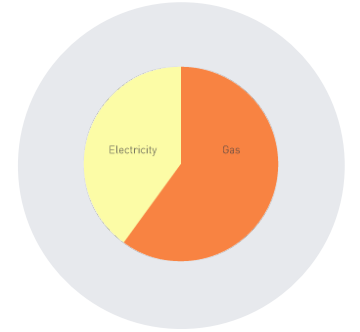
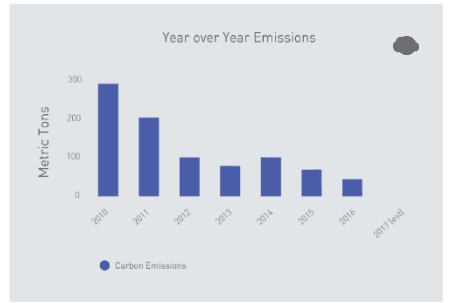
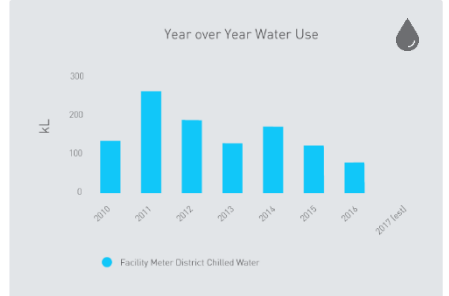
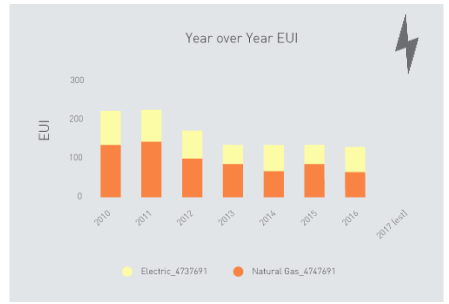
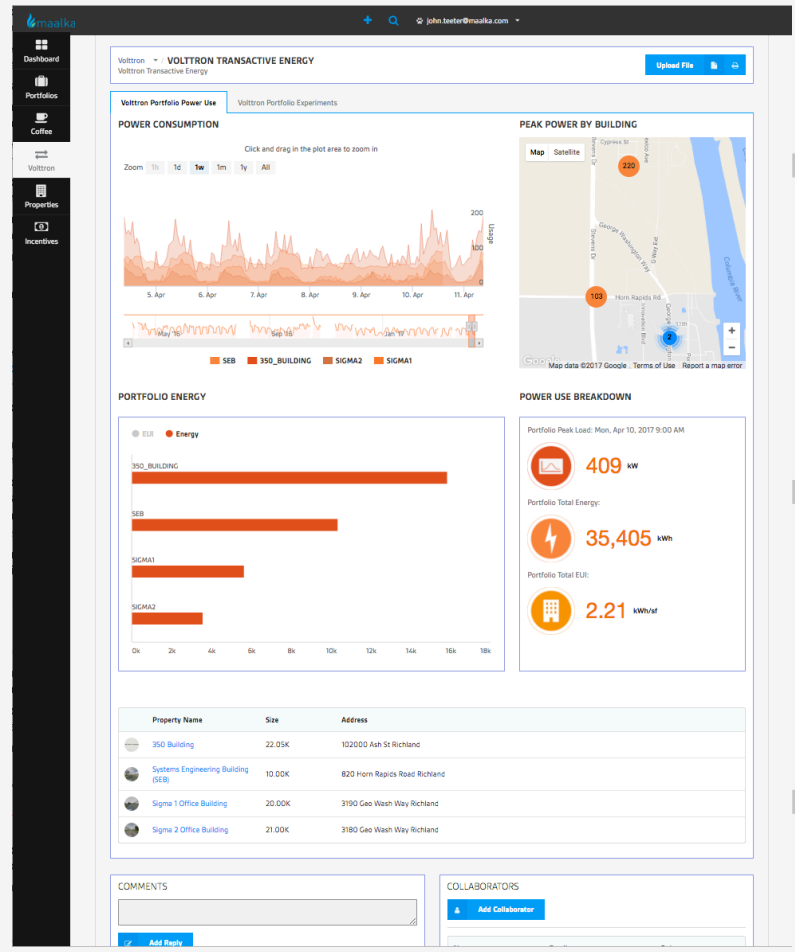
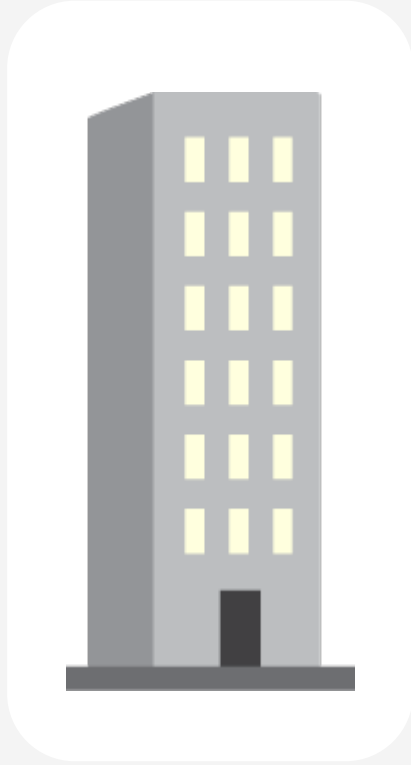


# Maalka | DoE VOLTRON - TEMPORAL INTEGRATION

REAL-TIME

Weekly/Monthly

YEARLY



Total GHG Emissions:

**1,956 METRIC TONS CO2e**

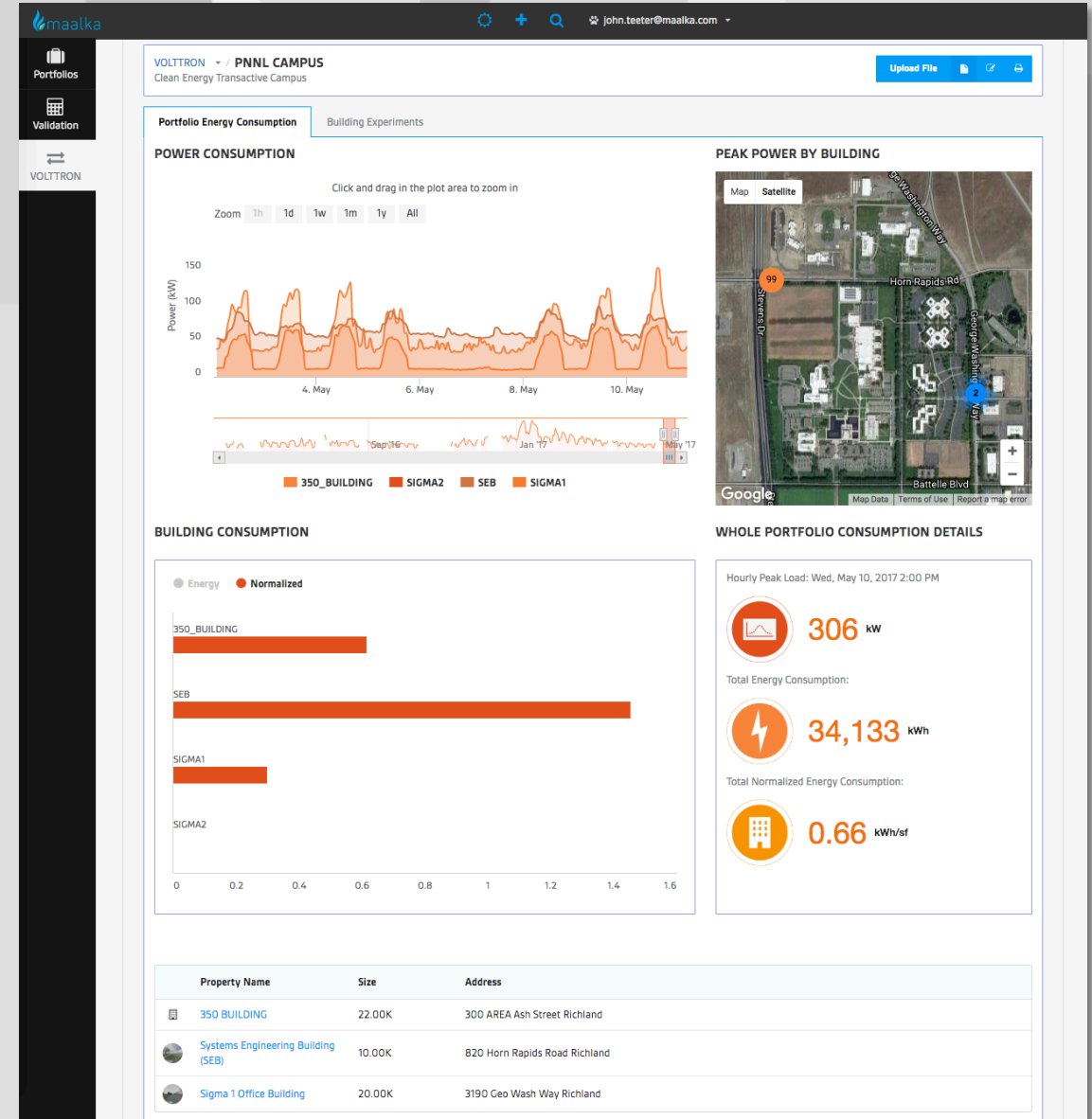


# Maalka | CONSTANTLY UPDATED INSIGHTS - TIME SERIES

## Campus Level

4

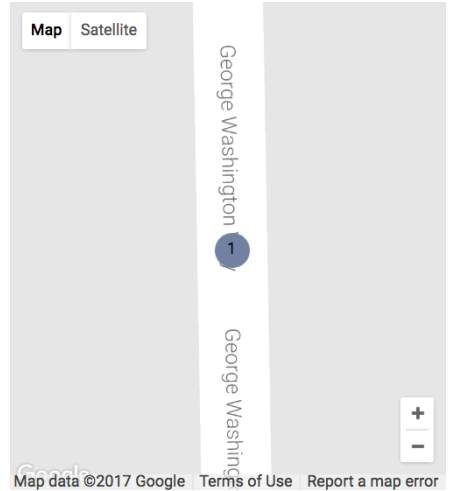
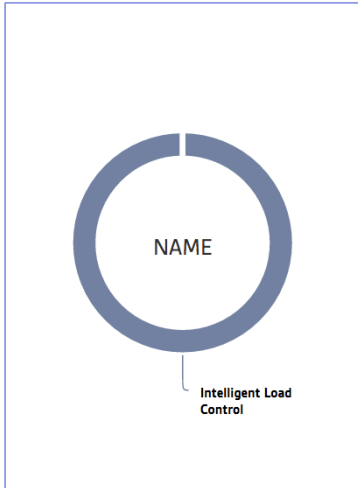
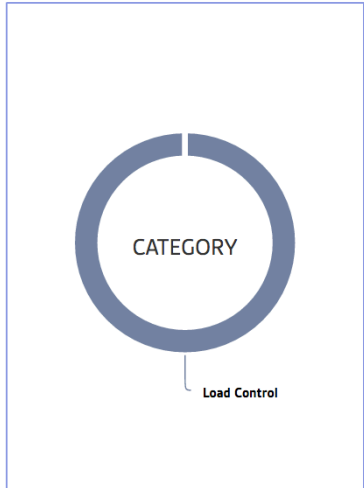
- 1 How much energy are my buildings using now?
- 2 How much energy did my buildings use yesterday?
- 3 What are my peak loads?
- 4 How much total energy is my portfolio using?



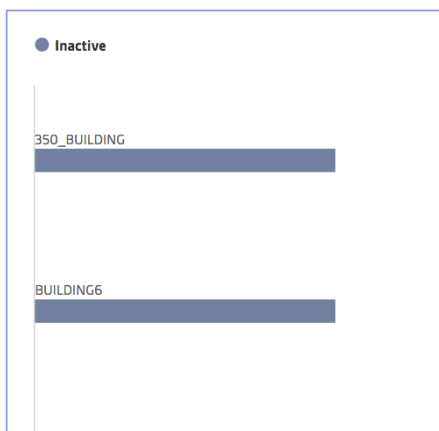


4 What are my current Experiments?

4 What Experiments have been run?



### EXPERIMENT SUMMARY



### EXPERIMENT RESULTS

Search...

- Current load of (47.0823770614) kW is below demand limit of 500.0 kW.

350\_BUILDING ILC

Thu, Apr 20, 2017 3:13 AM

Intelligent Load Control Load Control
- Current load of (47.3040614641) kW is below demand limit of 500.0 kW.

350\_BUILDING ILC

Thu, Apr 20, 2017 3:12 AM

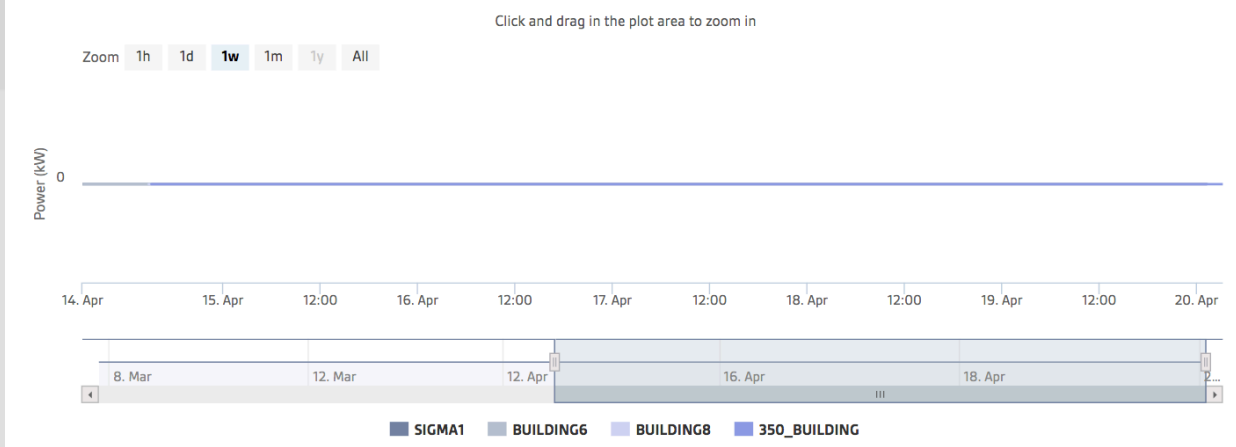
Intelligent Load Control Load Control
- Current load of (47.5262064838) kW is below demand limit of 500.0 kW.

350\_BUILDING ILC

Thu, Apr 20, 2017 3:11 AM

Intelligent Load Control Load Control

### EXPERIMENT ACTIVITY



Property Name	Size	Address
350 BUILDING	22.00K	300 AREA Ash Street Richland
BUILDING6		
BUILDING8		
Sigma 1 Office Building	20.00K	3190 Geo Wash Way Richland

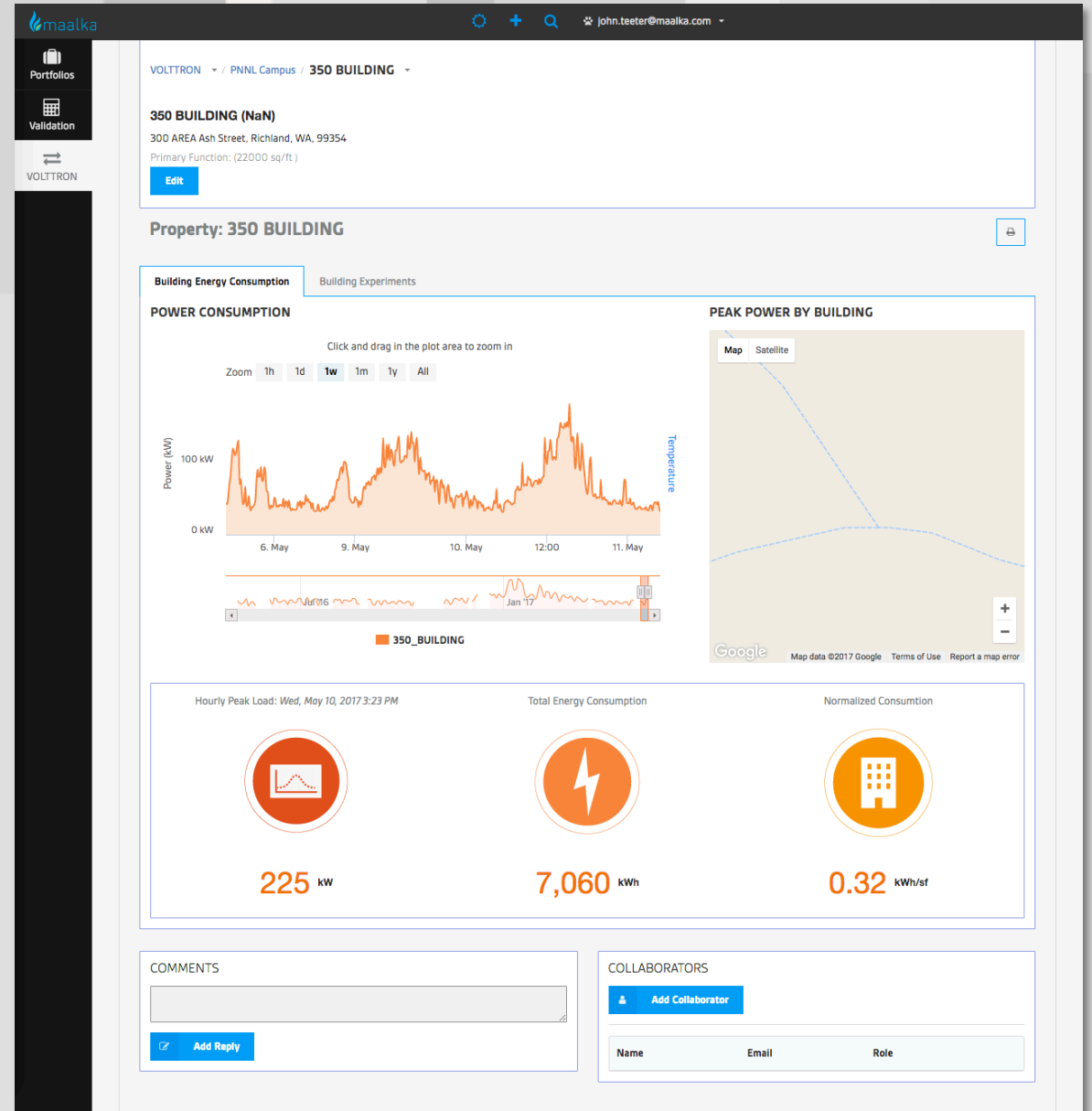


# Maalka | CONSTANTLY UPDATED INSIGHTS

## Building Level

4

- 1 Current Resource Consumption
- 2 Asset Tracking
- 3 Rollups and Reports
- 4 Engagement/Outreach





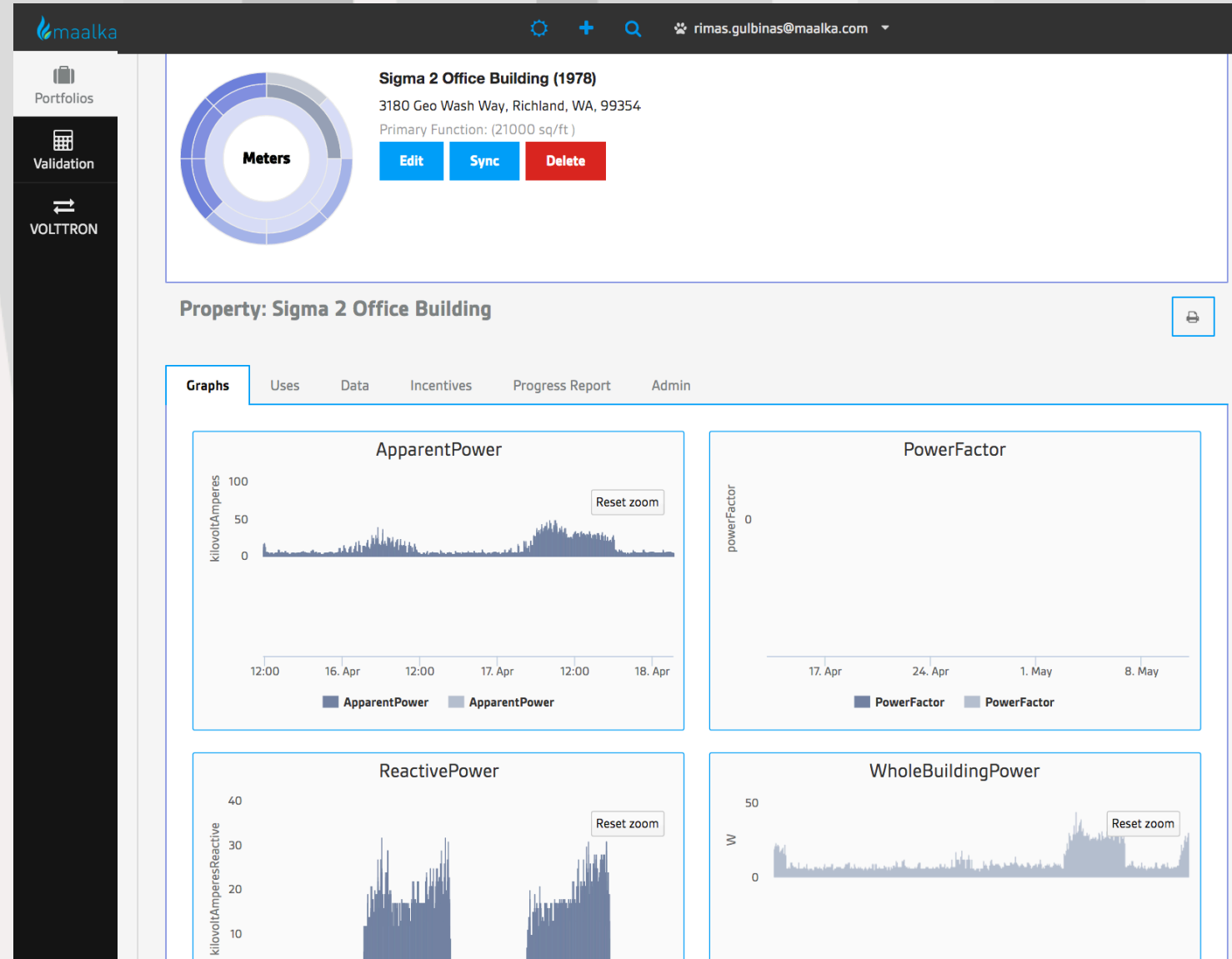


# Maalka | CONSTANTLY UPDATED INSIGHTS

## Building Level

4

- 1 Weather
- 2 Troubleshooting Data
- 3 Additional Applications
- 4 Trending Points





# Maalka | REPORTABLE INSIGHTS

## Building Level

Graphs Data Incentives Files **Progress Report** Goals Retrofit Report SuperUser Adm



### DC REDUCTION PROGRESS UPDATE

4 DC VILLAGE

YEAR JOINED:  
2012

BASELINE YEAR:  
2012

TARGET YEAR FOR 20% REDUCTION:  
2017

PROPERTY TYPE:  
Other

#### PROGRESS TO-DATE:

**23%**  
ON TRACK

4 DC Village has reduced its Weather Normalized Source EUI by 23% from your 2012 baseline year through 2015. Your building has committed to 20% energy efficiency improvement by 2017.

For more information, visit [www.dc.com](http://www.dc.com).

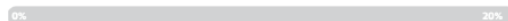
#### COMPARISON CHART

HOW YOUR BUILDING COMPARES TO OTHER DC REDUCTION PARTICIPANTS

#### YOUR DC REDUCTION PROGRESS



#### AVERAGE PROGRESS FOR OTHER "OTHER" PARTICIPANTS



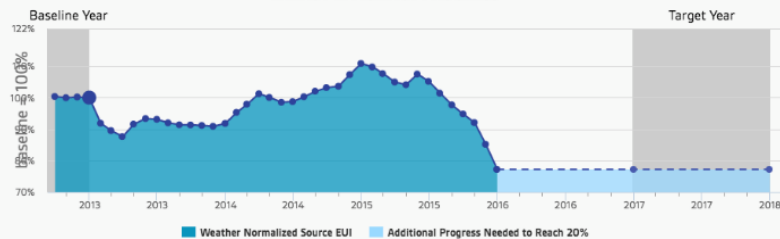
#### AVERAGE PROGRESS FOR ALL PARTICIPANTS THAT JOINED IN 2012



Together, Better Building Challenge participants have reduced weather-normalized energy use by nearly 12%, representing savings of more than \$6MM per year and greenhouse gas emission reductions equivalent to removing more than 14,000 vehicles from the road.



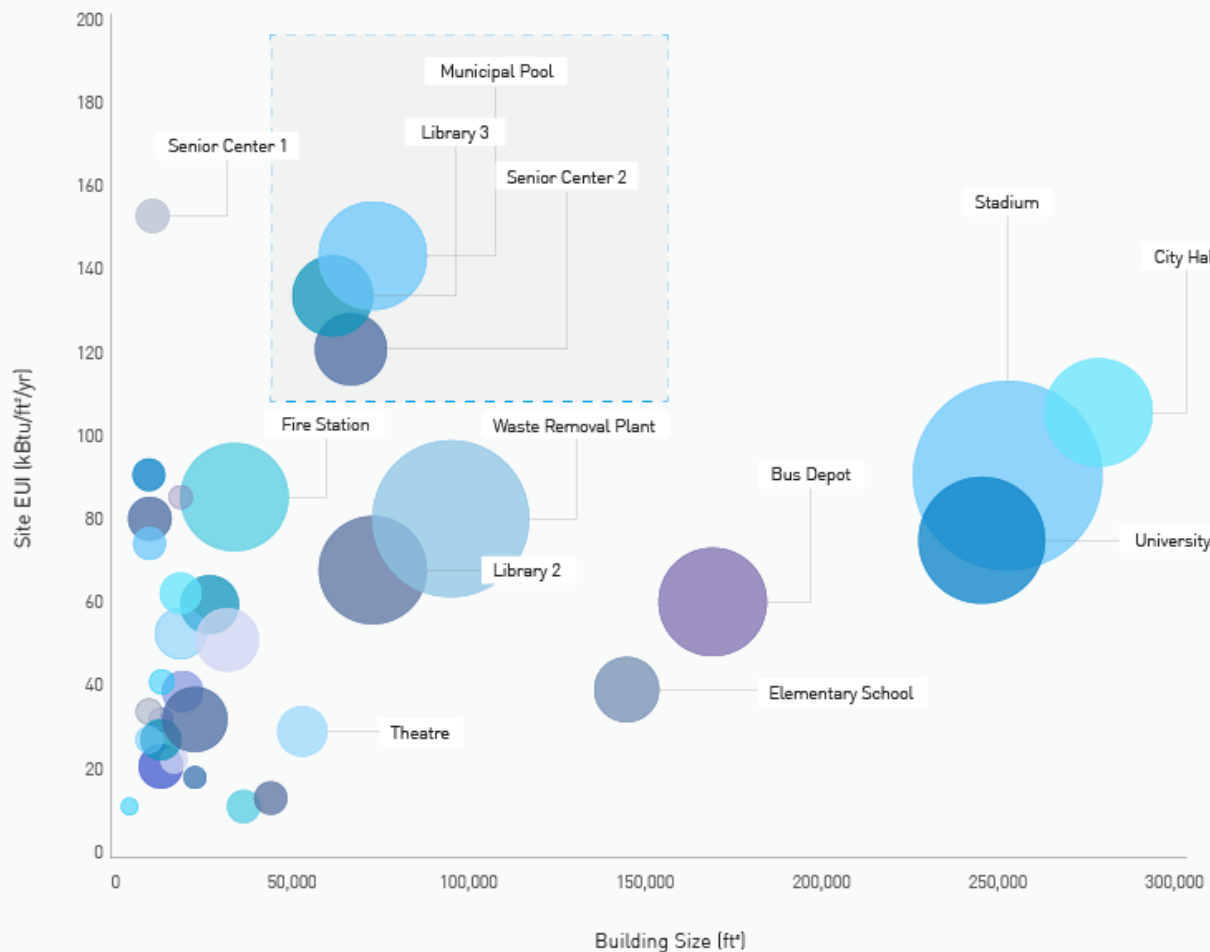
#### ENERGY EFFICIENCY PROGRESS



This chart shows your energy efficiency progress to-date, based on Weather Normalized Source EUI. In order to reach your 20% DC Reduction commitment by 2017, your building must reduce energy use intensity by a simple

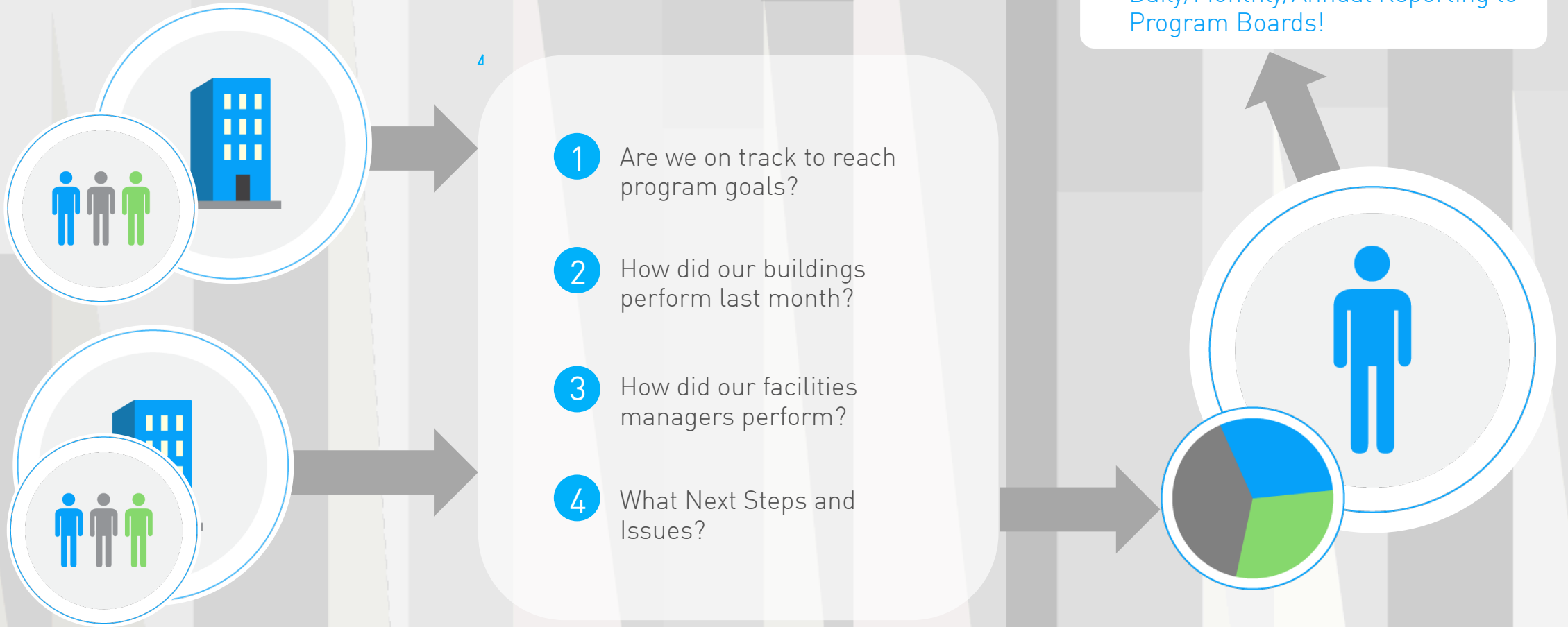
## Portfolio Level

### Building Size, EUI, kBtu Distribution





# Maalka | REPORTING AND ENGAGEMENT





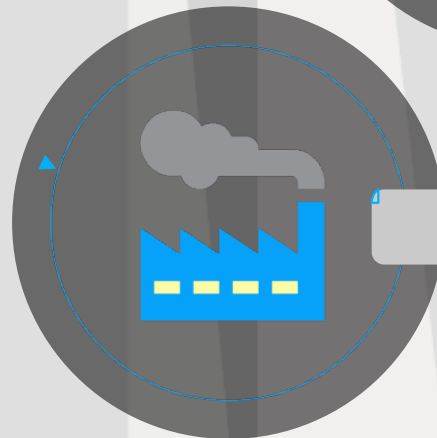
# Maalka | OUTBOUND REPORTING



COMPLIANCE REPORTING



ASSET MANAGEMENT



EMISSIONS ACCOUNTING

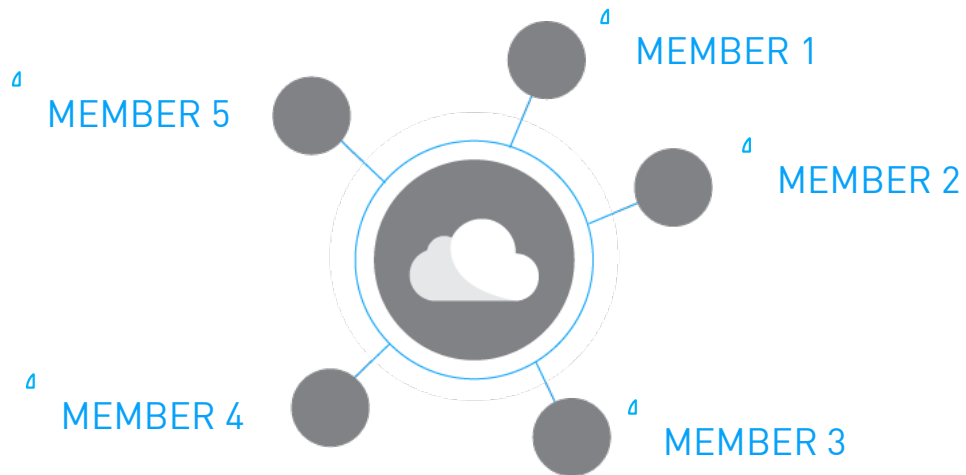


# MANAGE PROGRAMS ON SECURE DATA PLATFORMS

Maalka has varying levels of data separation and security.

For typical use-cases, private portfolios can lie on the same maalka instance – separated but accessible depending on permissions.

For mission critical cases, portfolio can lie on a private maalka instance.



GOVERNMENT PORTFOLIO

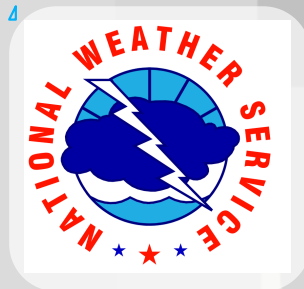
CORPORATE PORTFOLIO

- Each member has a separate, secure portfolio
- On-platform comparisons between members
- Analytics of similar building across members
- Outreach and analytics for all cities

- Comparisons can only be made with private access through the API for each instance



# Maalka | INTEROPERABLE DATA STANDARDS



# Maalka | SUPPORTED INITIATIVES



2030  
DISTRICT®



Community Building Renewal





## Maalka | TESTIMONIALS

“Maalka is directly supporting Retrofit Chicago Energy Challenge’s efforts to track, quantify, visualize, and communicate participants’ efforts to improve energy performance by at least 20% within five years. Maalka’s team quickly grasped the analytical needs and opportunities facing our program, and we’ve been impressed by Maalka’s collaborative and effective approach to platform design and rapid iteration to help buildings save energy and reduce operating costs.” [Jamie Ponce, Chicago City Director, C40 Cities Climate Leadership Group](#)

“Maalka's platform allows us to not only maintain our Portfolio Manager/Energy Star data, but, more importantly, focus on continuous improvement and evaluate why our energy has changed and what we're going to do about it.

Their platform presents an opportunity to streamline our workflow by combining simplified data reporting with more sophisticated data visualizations for analysis and management reporting as well as some basic project management tools for our facility team. We've found the platform easy to use and look forward to continue exploring new integrations and tools that simply were not available to us before at a reasonable time and price level.” [Jason Page, Director, Alliance for Sustainable Colorado](#)





# THE VOLTTRON DASHBOARD

Thank You!

<https://volttron.maalka.com>

Dr. Rimas Gulbinas – CEO Maalka  
[www.maalka.com](http://www.maalka.com) 16 May 2017