

## Abstract

Public agencies have a responsibility to lead climate change efforts at the local level. To achieve this, they must have meaningful information to strategically plan their energy future and drive action. Interval consumption data offers the potential to provide enhanced information that can help target energy efficiency and distributed energy resource (DER) adoption.

The public sector market segment presents an untapped challenge: scale. Public agency sector customers manage portfolios of hundreds to thousands of meters. When staff are faced with unpacking an entire agency's portfolio to identify energy opportunities, it is not clear where to start or what to prioritize. Interval and monthly data at this scale is not actionable without visualization, trend analysis, and interpretation. It is not efficient for each public agency to address these challenges independently.

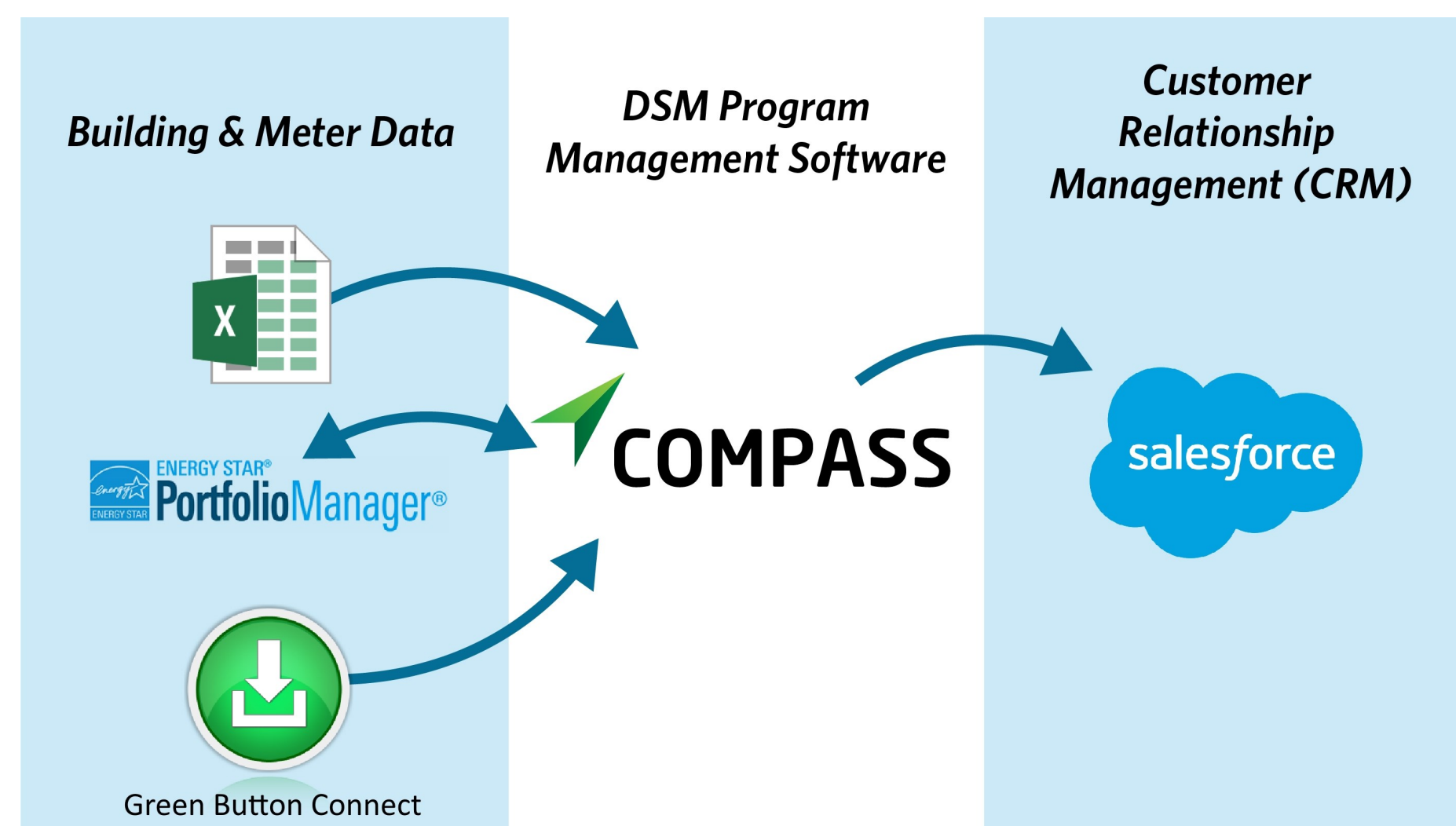
To assist in these challenges, the Southern California Regional Energy Network (SoCalREN) was created with ratepayer funds to assist public agencies in meeting the State's ambitious GHG reduction goals. SoCalREN and Performance Systems Development (PSD) collaborated to provide agencies with reports from Compass to offer actionable data insights. Unique to this approach is the ability to understand not only the building stock, but also infrastructure such as water pumping, street lights, and other public assets. Compass software automates the collection, analysis, and reporting of utility consumption and billing data. The Energy Coalition supporting SoCalREN, works with public agencies to translate that information into action.

## 1: Introduction

A solution has been developed and scaled to benchmark and target public agency load portfolios including buildings, street lights, and water and wastewater pumping. The solution includes software to automate and process data into reports and a programmatic process to use those reports to engage with agencies to motivate action and program participation.

## 2: Compass Solution

Compass provides an integrated software solution automating analytics and reporting, leveraging industry standards and Federal tools. Building and meter data sources feed data into Compass, Compass analytics and reports drive portfolio and building targeting, and Salesforce integration provides CRM functions.



**Compass:** Cloud software enables innovative and efficient Demand Side Management (DSM) energy program management to unlock savings.

**ENERGY STAR Portfolio Manager (ESPM) Integration:** ESPM is a Federal building benchmarking tool [ESPM]. Compass is integrated with ESPM via a API for 2-way updates.

**Green Button Connect (GBC) Integration:** GBC is an industry standard for sharing customer utility data [GBC]. Compass is integrated with Southern California Edison's GBC via API.

**Spreadsheet Upload:** Compass upload imports a spreadsheet with building and meter data provided by Southern California Edison to agencies.

**Salesforce Integration:** Salesforce.com is a cloud customer relationship management software used by many programs. administrators. Compass is integrated with Salesforce.com via API.

# Public Buildings Portfolio Reporting: From Interval Data to Action

*"SoCalREN has provided portfolio reports to nearly 50 public agencies in Southern California."*

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## 3: Reporting

Reports have been developed collaboratively with the goal to iteratively improve the information agencies are provided. Portfolio reporting include annual summaries by load type, annual summaries of time-of-use during demand windows, and load profile metrics. From these portfolio reports, buildings and assets with high consumption and anomalous performance are identified and targeted for further analysis. Individual building reports are used for further analysis to benchmark the building with ESPM and analyze and visualize GBC interval consumption.

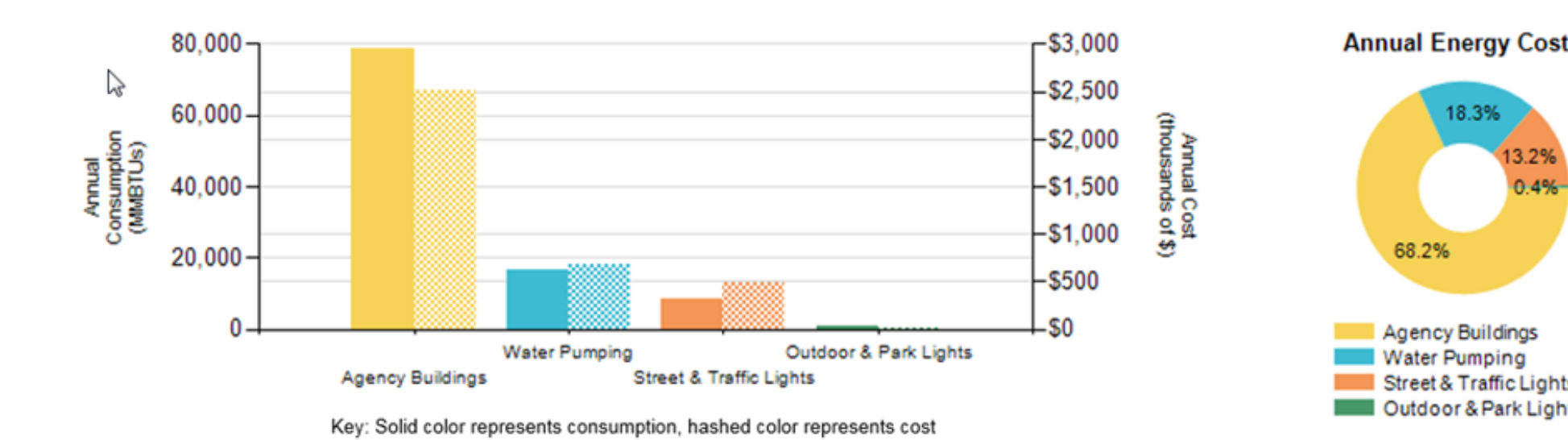
### Portfolio Report

#### Use Case:

- Portfolio level annual reporting that identifies savings opportunities, high consuming loads, and buildings with high annual changes for investigation

#### 2. Total Energy Portfolio

Your Total Annual Energy Cost is **\$3,695,468**



Agency Energy Use	Electric Consumption (kWh)	Electric Cost (\$)	Gas Consumption (therms)	Gas Cost (\$)	Total Energy Consumption (MMBtus)	Total Energy Cost (\$)	GHG Emissions (lbs CO2)
Agency Buildings	19,593,847	\$2,423,212	120,787	\$65,540	78,894	\$2,518,752	10,130,019
Water Pumping	4,897,727	\$674,754	0	\$0	16,701	\$674,754	2,532,125
Street & Traffic Lights	2,502,611	\$487,626	0	\$0	8,534	\$487,626	1,293,850
Outdoor & Park Lights	178,096	\$14,336	0	\$0	607	\$14,336	92,076

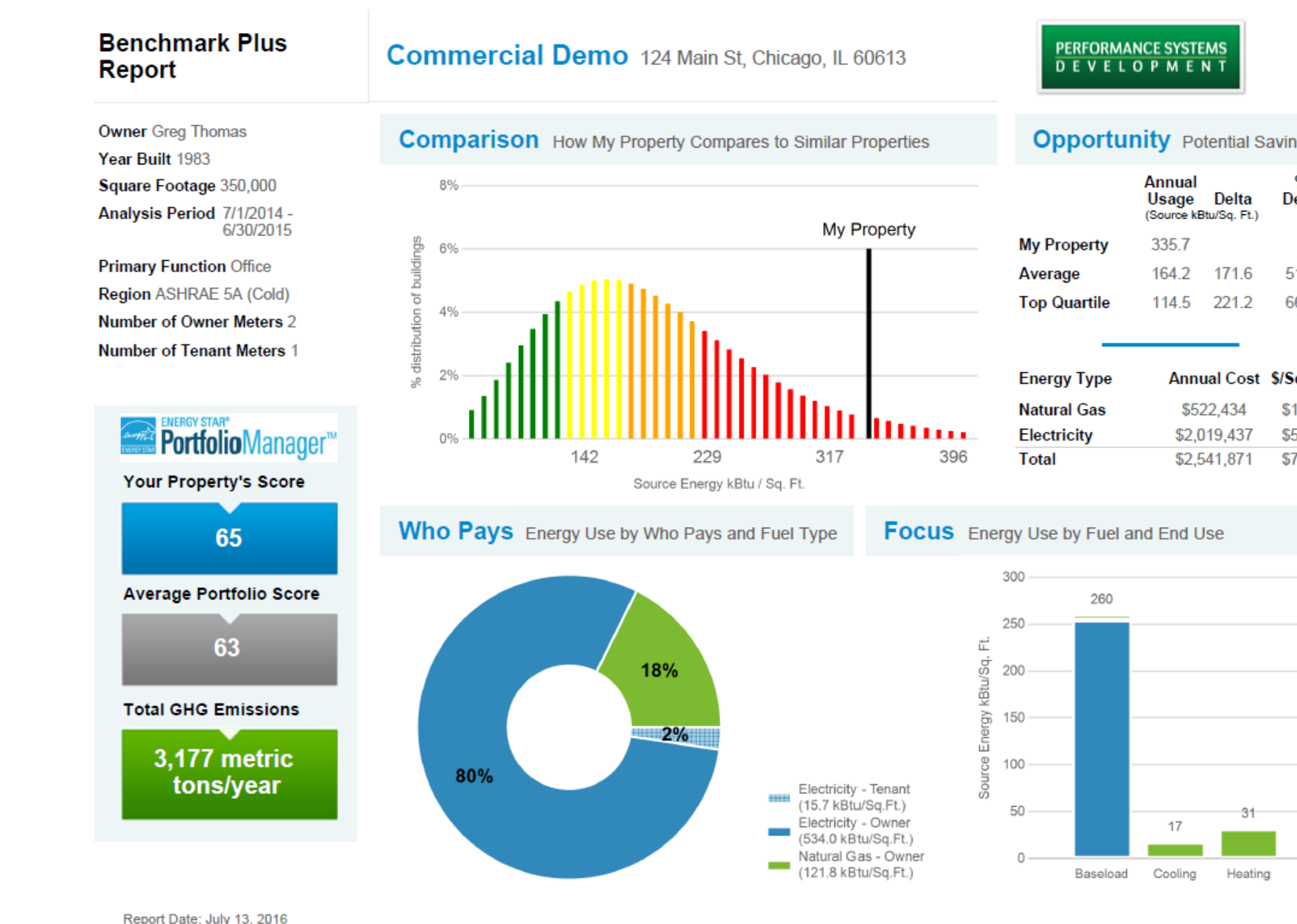
#### Features:

- Aggregation of energy consumption and costs by load type
- Quantification of savings opportunities by load type
- Identification of top consuming loads by load type
- Identification of buildings with greatest increase/decrease compared to weather normalized prior year consumption

### Building Scorecard Report with ESPM

#### Use Case:

- Buildings identified in Portfolio Benchmark Reporting have a Building Scorecard Report run to benchmark their performance



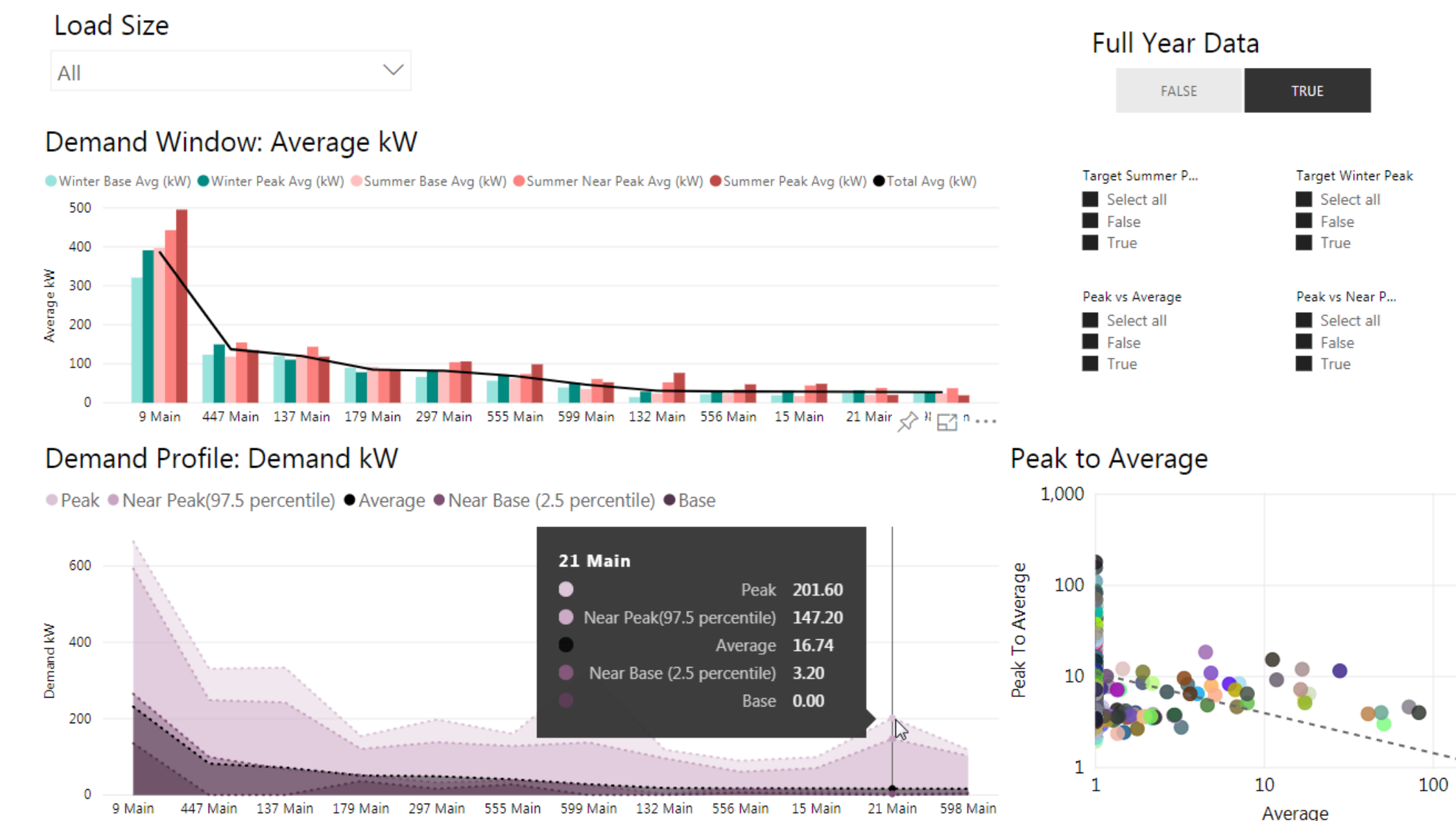
#### Features:

- Includes ENERGY Star Portfolio Manager® Score for benchmarking
- Building energy consumption by load and fuel type

### Building Targeting Report with GBC

#### Use Case:

- Portfolio level reporting that uses interval data load profile and demand window metrics to identify anomalous buildings to target for investigation using Power BI for dynamic exploration [Power BI]



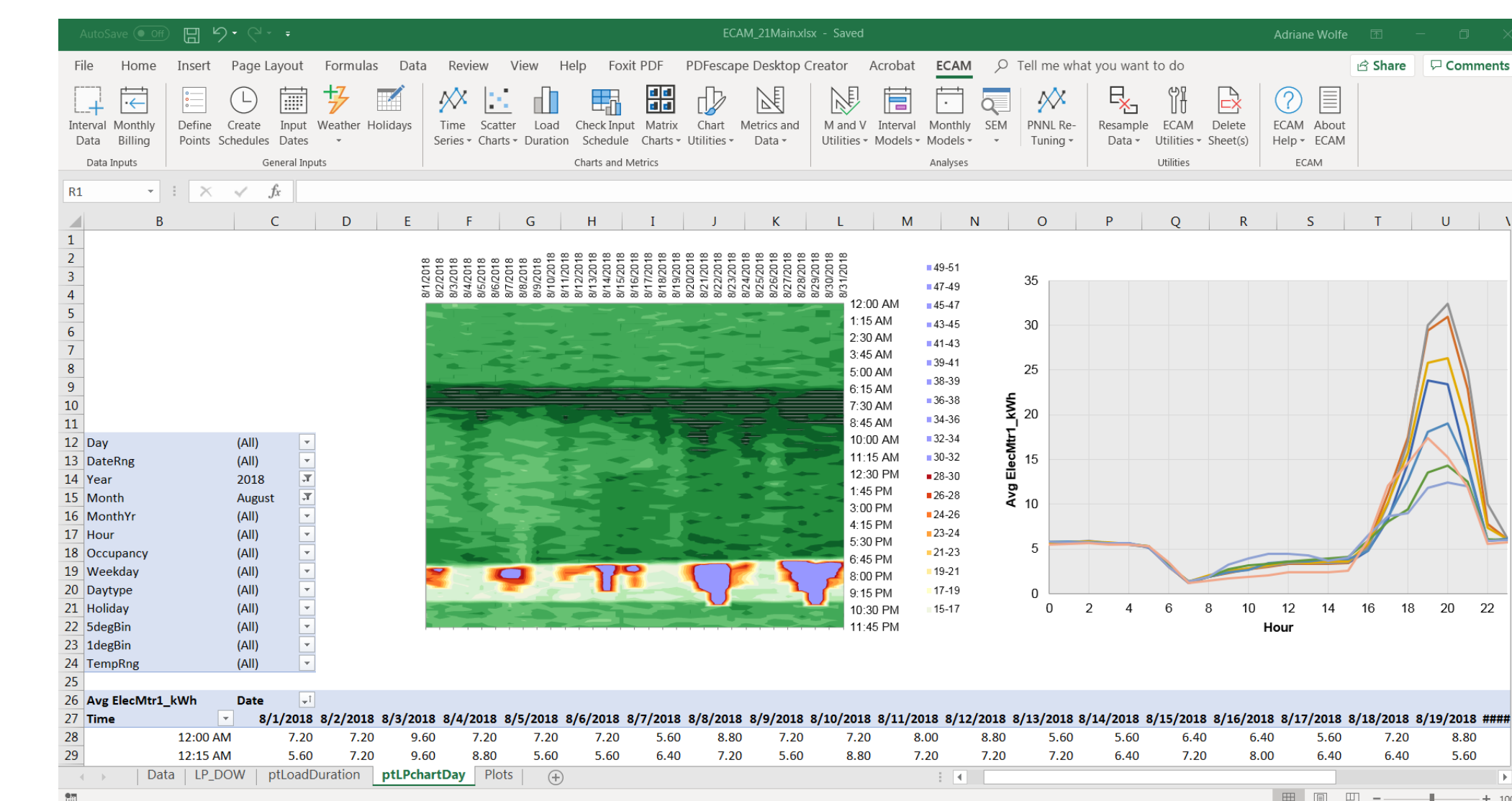
#### Features:

- Aggregation of energy consumption by demand windows
- Load profile and statistical metrics from interval data
- Identification of peaky buildings
- Identification and targeting of buildings with outlier metrics

### ECAM Compatible Report with GBC

#### Use Case:

- Buildings identified in Building Targeting Report have a ECAM Compatible Report run to explore interval data for in-depth analysis using ECAM (Energy Charting & Metrics) which is a free excel based add-on [ECAM]



#### Features:

- Export interval data for all meters on a building
- Export is compatible with ECAM

## 4: Programmatic Action

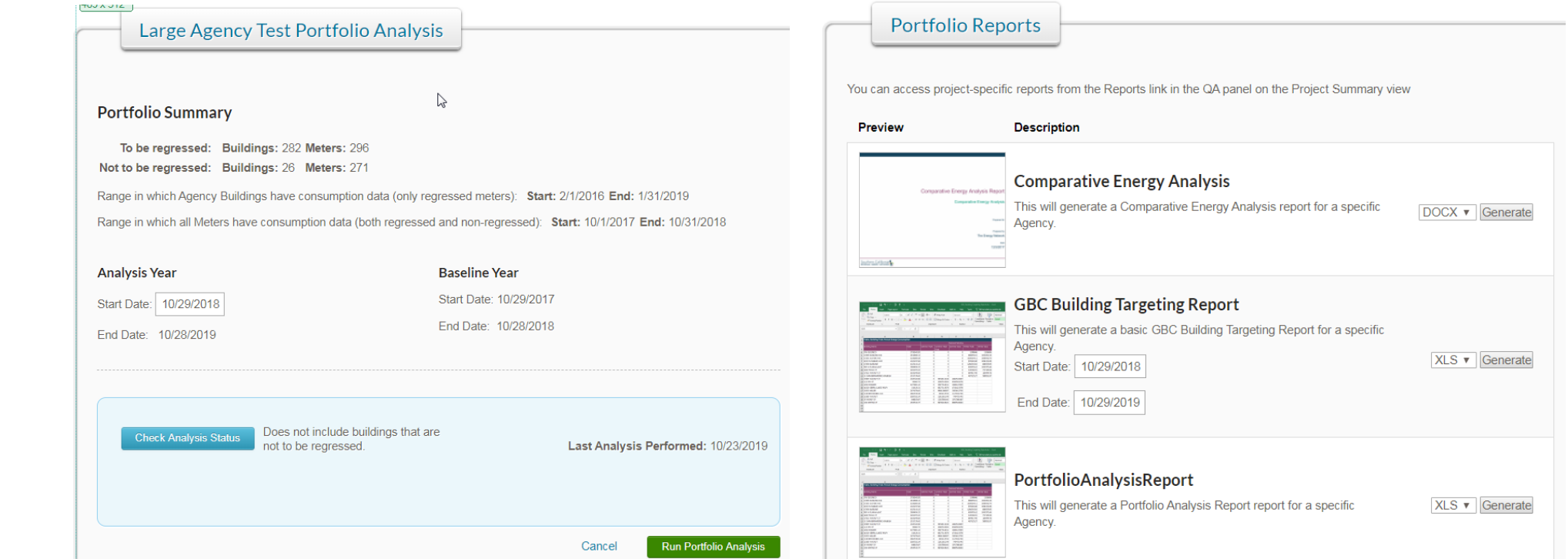
SoCalREN with The Energy Coalition provides programmatic service to public agencies in Southern California. To date, SoCalREN has provided portfolio reports to nearly 50 public agencies in Southern California with over 700 eligible agencies.

#### Coordinate data access:

- Agency's shared ESPM records via ESPM
- Agency's GBC authorization to Southern California Edison
- Agency's spreadsheet upload from Southern California Edison
- Agency's monthly natural gas consumption from SoCalGas

#### Quality control & reporting:

- Data quality control leveraging Compass's automated data quality and reporting
- Trigger weather normalization and reporting time periods leveraging Compass User Interface



#### Communicating report results:

- Reviewing report results with the Agency to identify next steps
- Identify agency assets for further analysis, audits and savings

#### Program Participation:

- Buildings or loads identified are targeted for participation in SoCalREN and IOU program / intervention participation

## 5: Future Work

With over 700 eligible agencies, continuous improvement of automation and analytics that translate performance metrics into actionable information is key to scaling delivery and creating impact. SoCalREN is in the process of refining portfolio-level interval data analysis to provide greater insights into each building's performance, and to identify opportunities for energy savings, NMEC and DER adoption. Since benchmarking metrics for non-buildings are less defined, further analysis is warranted to find reliable and easily scaled solutions to reducing GHGs in public agencies for all load types.

## 6: Conclusions

Nearly 50 public agencies have benefited from portfolio reports generated by the solution and communicated by the SoCalREN staff. The scalable, heavily automated, integrated, and standardized solution has enabled scale, both in the number of agencies served and in the size of meters and buildings per agency. The solution has processed over 28,000 meters and is in the processes of scaling up adoption of GBC for analysis of interval readings. Reports and communications are provided by SoCalREN to create interpersonal engagement in translating the information into action.

## Acknowledgement

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## References

- [ESPM] ENERGY STAR Portfolio Manager®, Dept. of Energy, Available: <https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager>
- [GBC] Green Button Connect, Green Button Alliance, Available: <http://www.greenbuttondata.org/>
- [ECAM] Energy Charting & Metrics, SBW Consulting, Available: <https://www.sbwconsulting.com/ecam/>
- [Salesforce] Salesforce.com, Available: <https://www.salesforce.com/>