



# Flexible Demand as a Resource

Efficiency, Demand Response, and Electrification

Alex Rathmell

Managing Director, Consultancy - EnergyPro

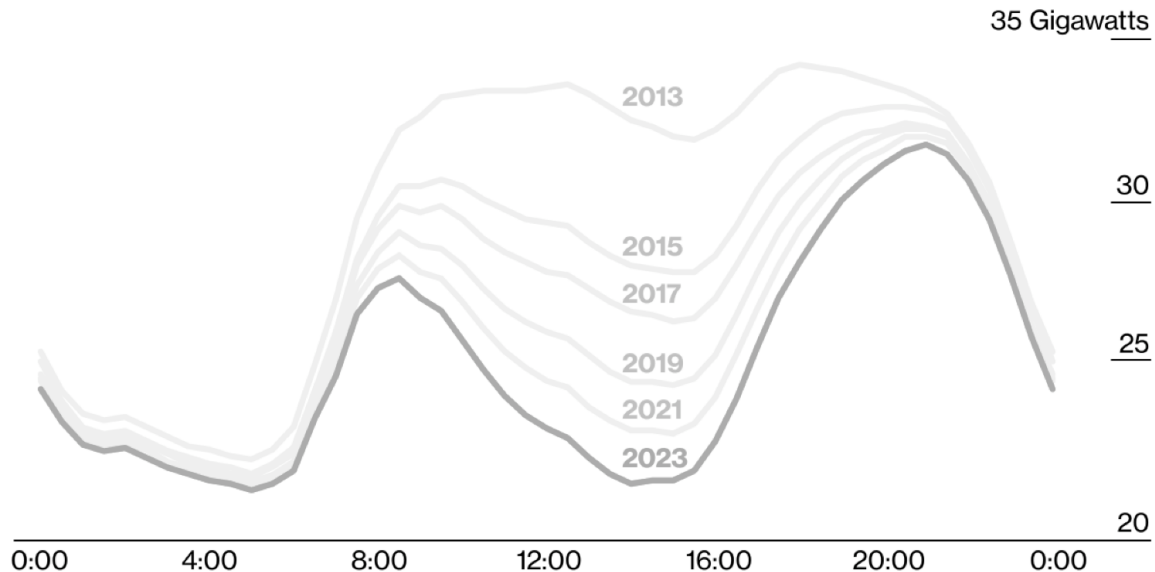
[alex.rathmell@energyproltd.com](mailto:alex.rathmell@energyproltd.com)



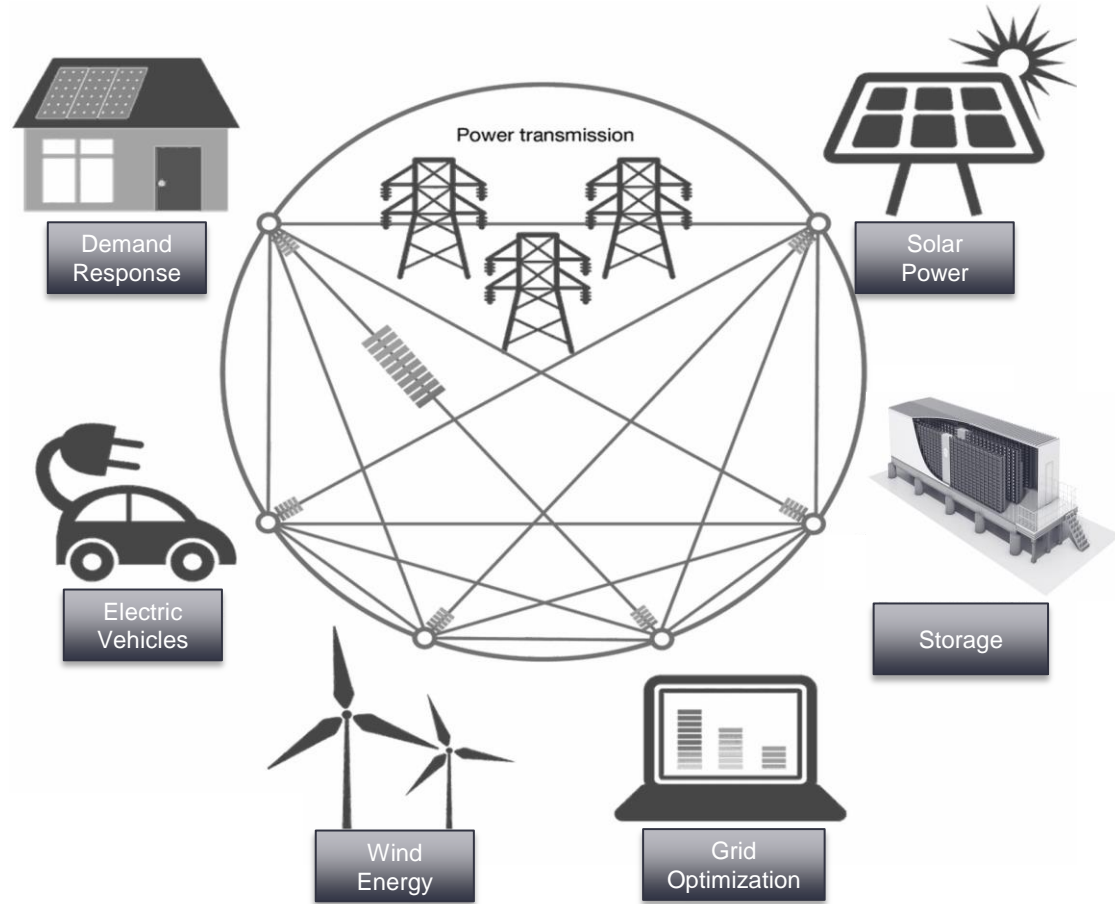
Growing  
renewable  
output means  
new challenges  
for energy  
networks

### This Is What Solar Is Doing to Power Markets

U.K. daily power demand



# Fitting flexible demand into distributed energy resource markets



# RESOURCE CURVES

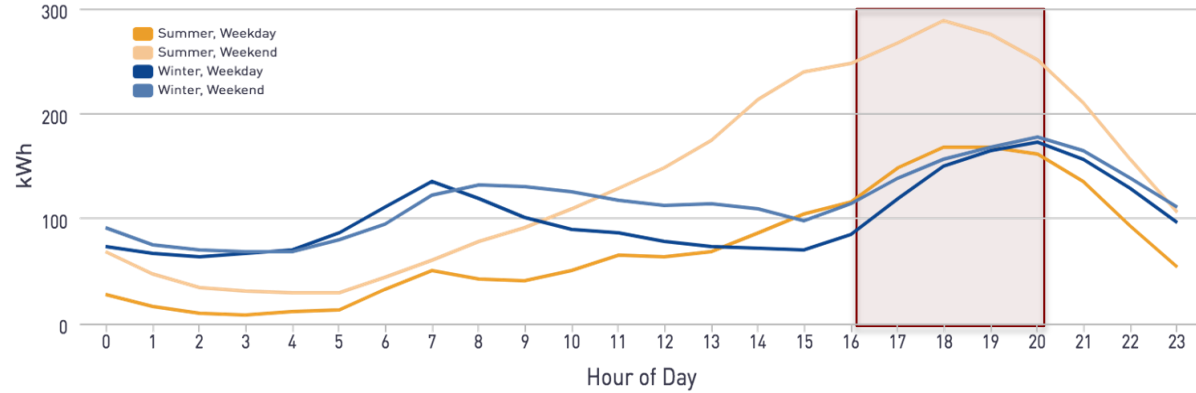
Time and  
locational  
energy savings



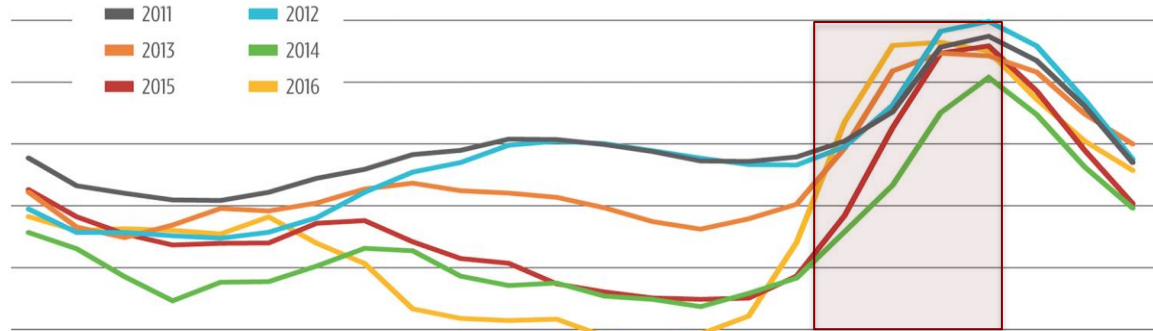
OPEN  METER

## Resource Curve

Resource Curve by Season and Weekend/Weekday



## Duck Curve





- Standard Calculation Methods for Energy Efficiency and Electrification
- Monthly, Daily, and Hourly
- Public 60 Stakeholders Empirical Process
- [www.CalTRACK.org](http://www.CalTRACK.org)

OPEN  METER

- Python CalTRACK Engine
- Open Source [Apache 2.0](https://www.apache.org/licenses/LICENSE-2.0)
- Available Without Restriction
- How It Works: <https://goo.gl/mhny2s>
- Code Repo: <https://goo.gl/qFdW4P>



# LF Energy Foundation

OPEN  METER



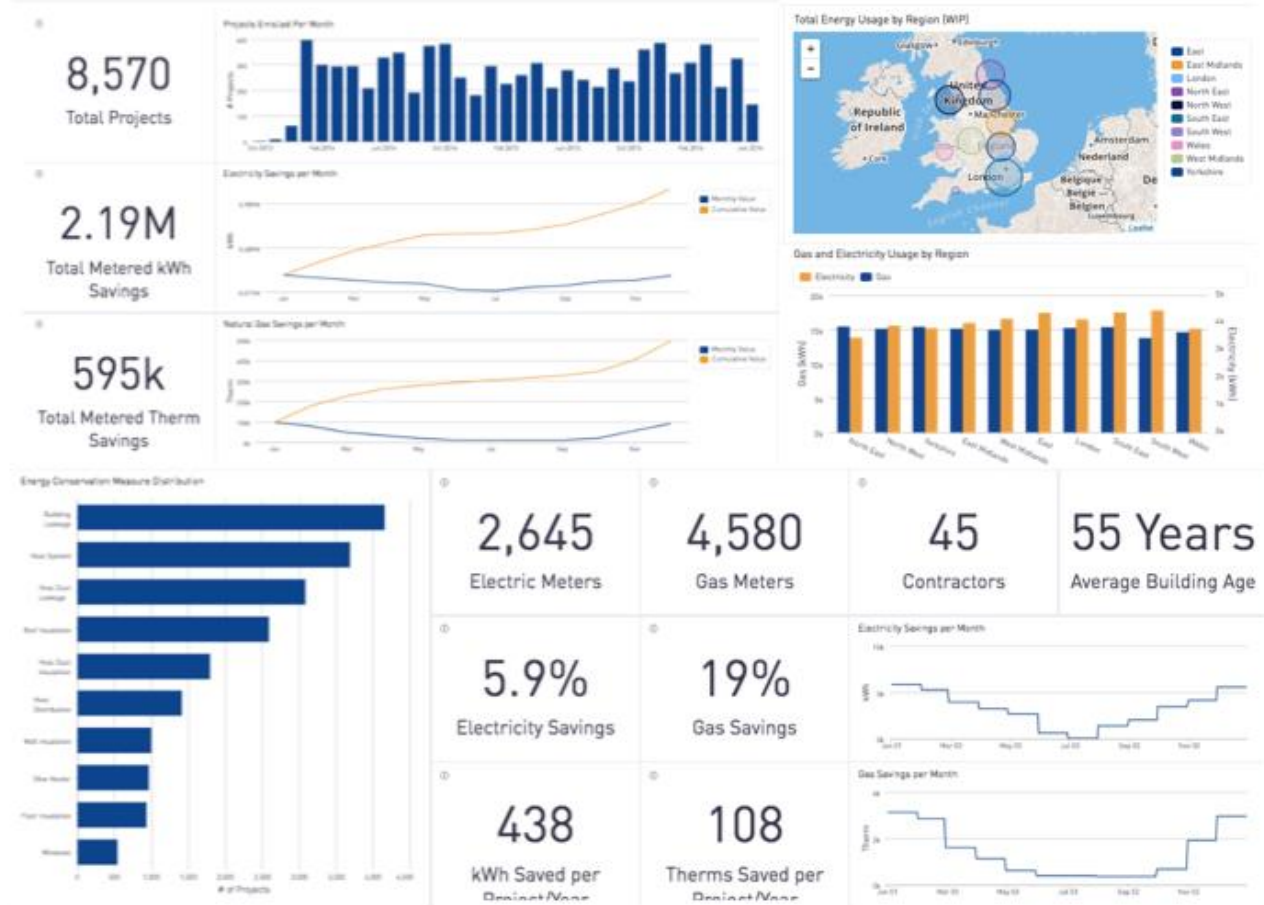
CALTRACK

 THE **LINUX** FOUNDATION

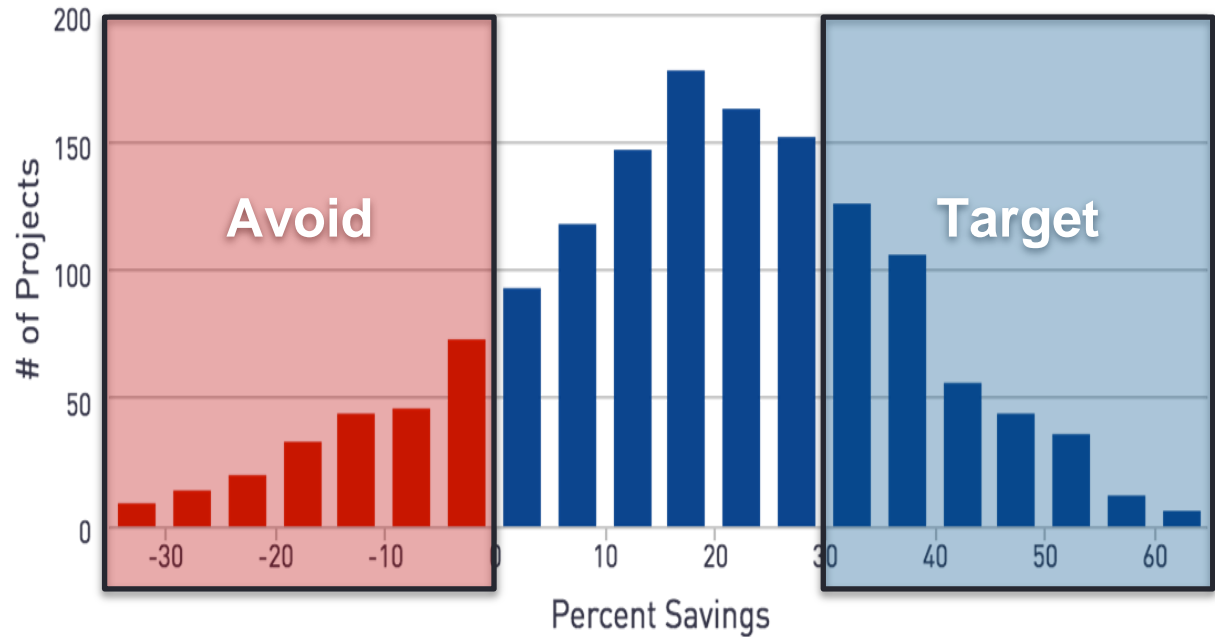
# Track efficiency projects and performance



## REAL-TIME METERED ENERGY EFFICIENCY

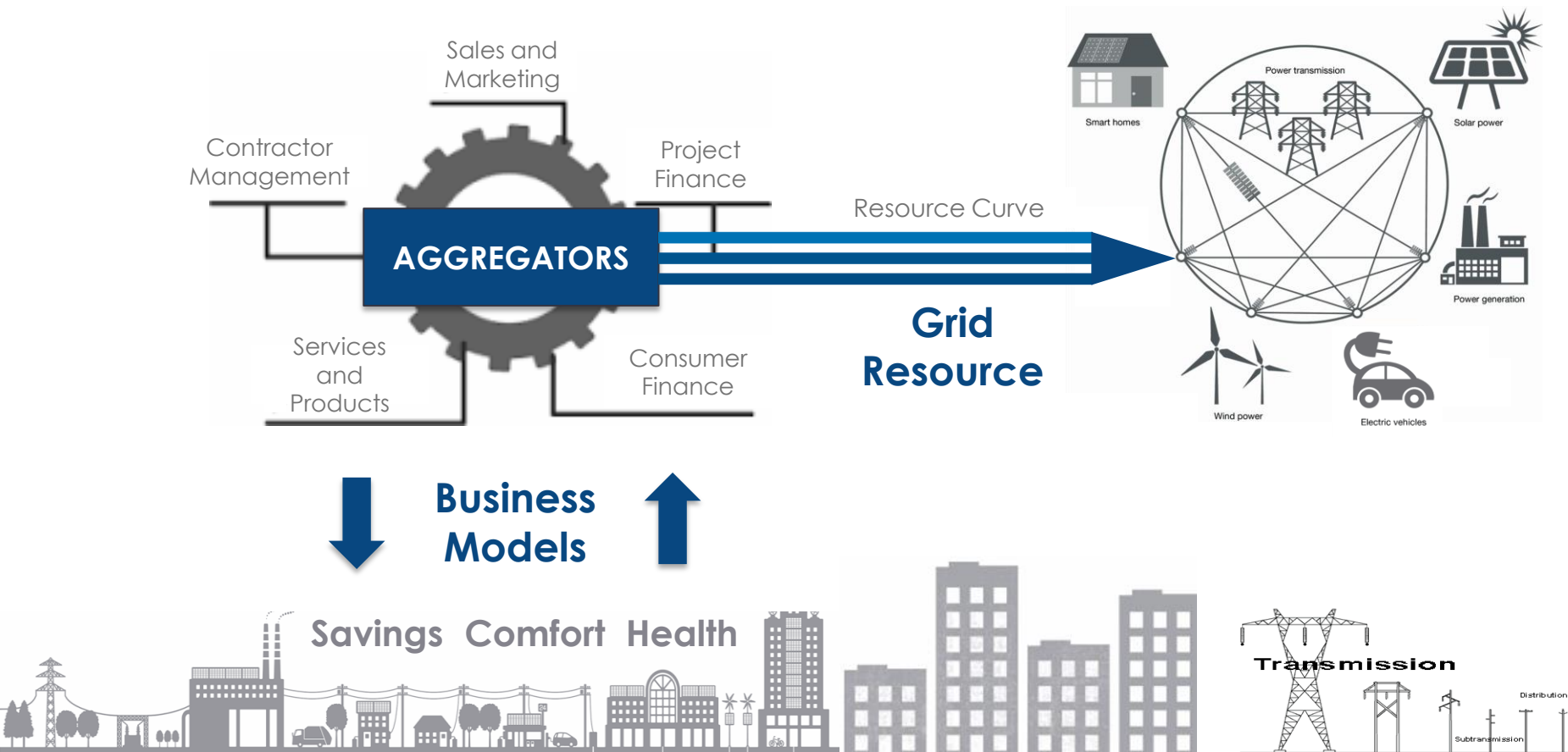


# Target and qualify customers





# Align incentives with Pay-for-Performance



# Roadmap to flexible demand markets

EE Meter Your Savings


Programmatic P4P

Market P4P with Aggregators

Resource Curve

EE Procurement

# Getting started: 'back casting' savings from existing programmes

  
Department for  
Business, Energy  
& Industrial Strategy  
alex.rathmell@energyproltd.com  
Sign out

Telemetry

Portfolio Summary

Portfolio Comparison


Savings Risk Profiling

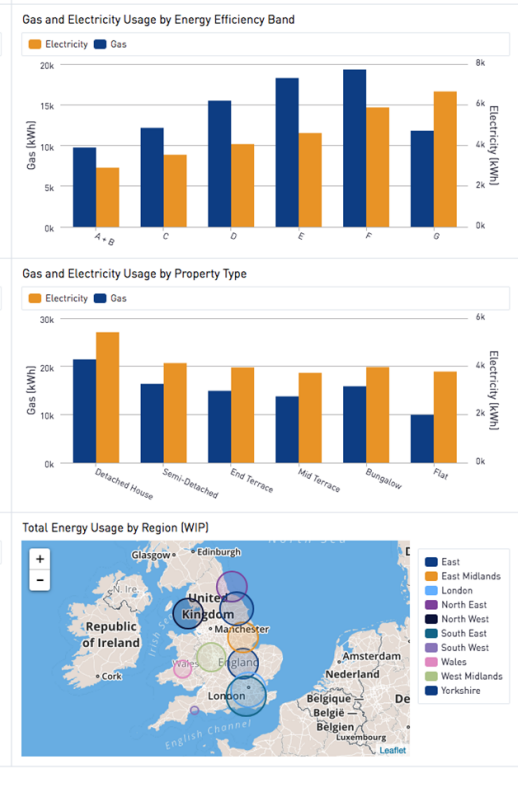
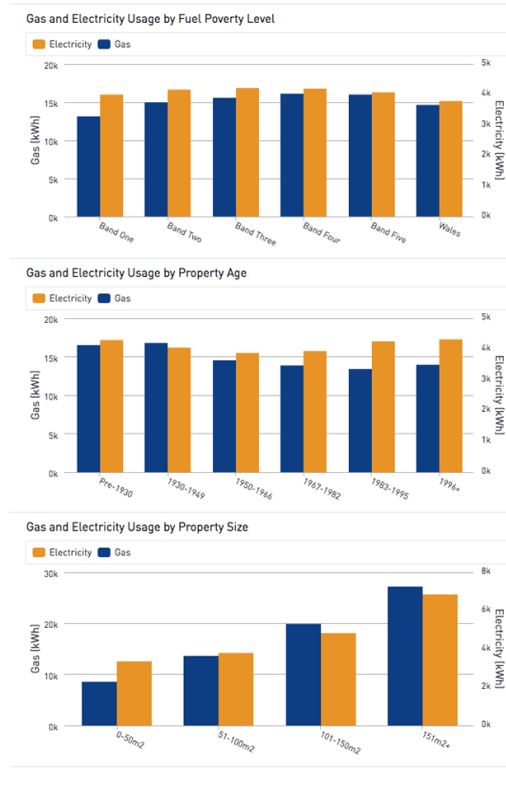
Demo - Portfolio Telemetry

Demo - Contractor Overview

Data

Data Upload

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