Defining the Living Pilot, a Symposium of Ideas
Submitted on 10/21/13 to the CPUC, by FirstFuel Software, Inc.

1. Introduction: Advanced Meter Data Analytics' Role in Meeting Peak Load Requirements

Advanced meter data analytics can play a crucial role in helping Edison achieve its "living" pilot goals of meeting growing capacity needs related to the SONGS closure with preferred resources through 2020. Breakthroughs in <u>advanced meter data analytics</u> have greatly increased the impact that such innovative market strategies and technologies can have as both a near- and long-term solution.

While advanced analytics have a longer history of deployment between generation sources and the meter, the past few years have marked a significant growth in analytics that drive "behind the meter" impact and accelerate IDSM solutions. A combination of ubiquitous smart meter/AMI rollouts across California and technology advancements in analyzing high frequency consumption data have driven utilities, government agencies, and property managers to adopt "demand-side" data analytics on a broader scale.

<u>Deploying state-of-the-art advanced analytics in geo-targeted areas for the Living Pilot will provide transformational cost, speed, and scale benefits in achieving Energy Efficiency Peak Load Reductions, Permanent Load Shifts, Real Time Demand Reduction, and Scheduled Load Reduction</u>. For example, utilities and government agencies deploying FirstFuel Analytics to drive IDSM reductions have seen 6-8x increases in the rate of measure identification and adoption, an increase in kWh and KW savings potential per building, and dramatic decreases in building analysis costs. For Edison, these benefits can positively impact the Operational and Planning Attributes necessary to meet LCRs and ensure grid stability and resiliency in south Orange County.

2. Analytics-Enabled Geo-Targeted IDSM

Through the technology advancements discussed above, advanced meter data analytics have shifted from a single-point solution for analyzing building energy consumption to a holistic, end-to-end solution for targeting, identifying, and monitoring the post-action impact of major IDSM opportunities across broad service territories and within geo-targeted load constrained areas. Such approaches can be conducted rapidly and inexpensively without going on-site or installing connected devices.

Advanced analytics now support what FirstFuel often refers to as "<u>a lifecycle of analytics-enabled savings</u>" – a series of sequential steps that helps drive reductions in consumption, peak load, and permanent peak demand. The analytics-enabled lifecycle includes the following steps:

1) **<u>Screen</u>** – Prioritize leading candidate buildings across geo-targeted portfolios
2) **<u>Audit</u>** –Uncover specific reduction opportunities within buildings/businesses
3) **<u>Engage and Implement</u>** – Drive action from customers through insight-driven engagement
4) **<u>Monitor</u>** – Track the energy performance/reduction in buildings across time after implementation

For the Living Pilot, FirstFuel recommends deploying a program that leverages analytics across all of these steps to support the achievement of specific geo-targeted reduction targets. FirstFuel can

provide advanced analytics services directly to Edison or in partnership with others that have an on-the-ground presence and set of capabilities. The following illustrates how FirstFuel's analytics can help drive consumption and demand reductions across this lifecycle.

REMOTE BUILDING ANALYTICS (RBA) PLATFORM

End-to-End Meter Data Analtyics for IDSM

FirstFuel's RBA platform enables end-to-end commercial efficiency from opportunity identification and customer engagement through individual savings realization and ongoing tracking. Leveraging advanced, deep data analytics and delivered through a user-friendly web portal, FirstFuel's products bring proven scale to commercial efficiency.
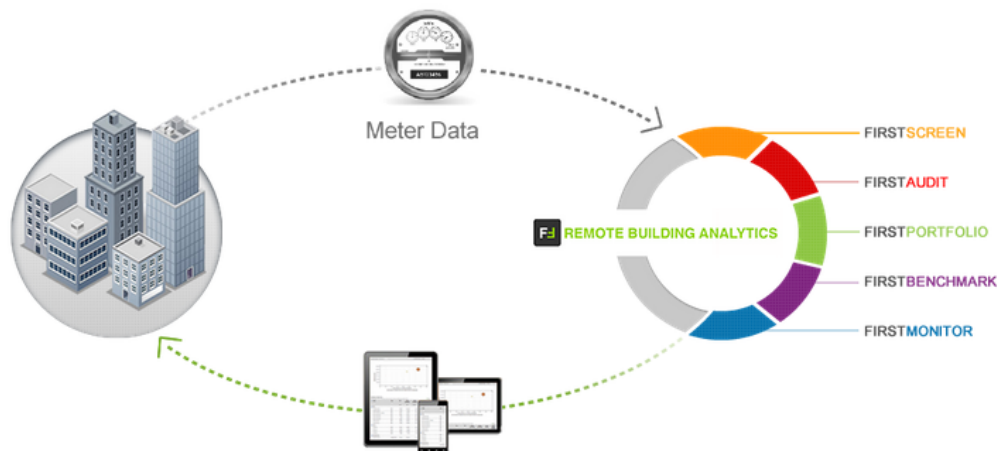
Screen: Prioritizing Geo-Targeted Candidates to Achieve Demand Savings
Through two simple inputs – a year's worth of smart meter consumption data and a building address – for commercial buildings in a geo-targeted territory, FirstFuel's portfolio screening analytics solution ("**FirstScreen**") rapidly provides detailed insight into which buildings, areas and segments offer the most potential for kWh and kW reduction. FirstFuel's screening methodology achieves industry-leading accuracy by analyzing each individual building against a complex set of actual indicators of kWh/KW savings potential and providing each building with an 'overall potential score'.

Through dynamic prioritization using high frequency smart meter consumption data, FirstFuel can provide Edison with "Advanced Customer Geo-targeting" across the areas most affected by the SONGS closure. FirstFuel's ability to perform rapid analysis on thousands of buildings in a consistent and systematic manner will enable Edison to sequence and funnel customers to relevant EE and DR programs at scale. This screening step is critical for Geo-targeting, as a FirstFuel analysis from a 60-million-square-foot subset of commercial buildings in our database found that more than 75 percent of efficiency opportunities came from just 25 percent of commercial businesses (and that these savings did not primarily come from the largest buildings of correlate with EUIs).

Analytics-Enabled Audit: Uncover Specific EE and DSM Opportunities
Once high potential businesses are identified *across* Edison's capacity-constrained areas, FirstFuel remote audits ("**FirstAudit**") pinpoint specific kWh and kW opportunities *within* each building.

FirstAudit combines interval meter data with high-frequency weather and climate data and GIS-mapped building characteristics to provide a consistent, reliable view of a building's energy performance at an end-use level. Specific, high-potential IDSM opportunities in each building are presented to commercial businesses as highly customized, actionable measures rather than generic tips. Numerous third party validation studies have shown that FirstAudit analytics results are comparable to results from onsite audits.

Presented through a customer-specific and user-friendly online portal, FirstAudit results also integrate seamlessly with downstream implementation partners focused on driving customer engagement and conversion. By analyzing high frequency consumption data on 24x7x365 basis, FirstFuel can identify savings that are often missed by on-site audits – which opens up a new, fast-to-implement operational savings. According to extensive FirstFuel analysis, *approximately half of all savings potential in commercial buildings are low/no-cost operational improvements* –measures often missed by traditional on-site audits that lack the insight offered by state-of-the-art analytics

FirstAudit's ability to disaggregate a building's end-use consumption on an hourly basis can radically transform the scale and scope of geo-targeted DR program fit recommendations. For example, by rapidly understanding how air conditioning loads for individual buildings respond to weather for every hour of a summer day across a calendar, FirstAudit insight can steer particular customers towards the most relevant demand reduction and demand response programs. The advantage of this "Analytics-Enhanced DR lead generation and precision targeting" is that it matches customers with best-fit DR programs in a highly cost-effective and scalable manner.

Monitor: Track Energy Performance across Time

Following the remote audit, FirstFuel provides an ongoing assessment of each building's performance relative to its audit baseline (**FirstMonitor**). FirstMonitor analytics accurately model and predict building consumption based on real weather and occupancy information, allowing sophisticated measurement of whole building savings, detection of significant changes in performance, and tracking of operational measure persistence over time.

FirstMonitor surpasses older methods for forecasting future demand and informs users of the impact of a projected demand reduction event. Because it accounts for both occupancy and weather, the FirstFuel demand baselining methodology is superior to current baselining methods for the post event verification of customer compliance. This enables both utilities such as Edison and regulators such as the CPUC to have confidence in the total demand reduction that occurs across its service territory.

FirstMonitor provides accurate, tailored hourly demand forecasts for customers, in turn enabling SCE and regulators with a geo-targeted, building-level "analytics-enabled demand forecasting" capability that helps them prepare for and execute Event-Day Action Plans.

3. Conclusion

Advanced energy analytics solutions can play an integral role in helping Edison meet LCRs and ensure grid stability and resiliency in south Orange County. Deploying advanced analytics of smart meter data can enable many 100s of MWs of reduction to be achieved in a geo-targeted area in a faster, more reliable, and more structured and strategic manner than previously possible. FirstFuel looks forward to continued discussions with the CPUC, Edison, and other stakeholder on at the upcoming CPUC Workshop on November 6 and in the months ahead.