Market Development Programs—Addressing Barriers for Emerging Technologies through Scaled Deployments and Strategic Supply Chain Interventions

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ABSTRACT

As state and federal clean energy policy goals continue to advance and low hanging energy efficiency opportunities diminish, utilities and market actors are increasingly reliant on emerging technologies and solutions to 'fill the pipeline' of future savings. Utility emerging technology programs primarily focus on technical viability and independent assessment of manufacturer claims; however, focusing on technical viability alone does not provide a comprehensive strategy to addressing non-technical market and regulatory barriers that inhibit market adoption and constrain the number of products that thrive in the broader market. Market development programs – a subcomponent of market transformation initiatives that focus specifically on bridging the "chasm" for promising new technologies – provide a comprehensive, iterative approach to address non-technical market barriers by simultaneously implementing large scale deployments and developing the capacity of the supply chain. Through these strategic actions, market development programs: 1) build acceptance with early adopters, influential market actors, and policy makers through replicated and well publicized performance; 2) inform viable business model and standardization with program frameworks; 3) develop the workforce and supply chain for the technology; and 4) iteratively refine the customer value proposition. This paper summarizes observations and best practices gleaned from market development efforts in California and New York, and proposes a market development regulatory framework focused on achieving replication and standardization, supply chain development, and public reporting of key performance indicators to engage and animate the market.

Market Development Programs: Filling an Unmet Need in the Technology Commercialization Process

To date, the vast majority of emerging technology (ET) funding has been directed toward independent validation of manufacturer technical claims in order to transition a product into a utility resource acquisition portfolio (Sutter et al. 2015). While an important first step towards product adoption, technical demonstrations do not address the broad range of non-technical market adoption barriers for early stage technologies and business models. Once a field demonstration has been implemented and the manufacturer claims validated, common practice is to add the measure to a resource acquisition program portfolio with minimal focus on their adoption barriers that limit market uptake. The result is that many emerging technologies added into resource acquisition program do not recognize their market potential due to incremental costs, lack of customer awareness or trust in product claims, and underdeveloped supply chains.

The goal of market development phase is to systematically identify and address adoption barriers to create a self-sustaining market. This is fundamentally different than both the technical readiness and resource acquisition phases, and while it represents some of the most important work in animating the market and building consumer confidence, it has traditionally received comparatively little focus or funding.[1] Figure 1 illustrates different intervention approaches commonly used by demand side management (DSM) program administrators.

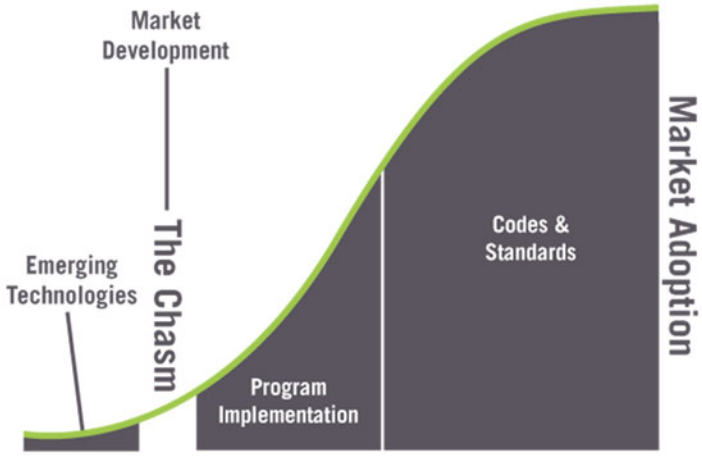

Figure 1: Intervention approaches for different phases of market adoption.

The lack of (and need for) attention on market development efforts was cited in a recent evaluation of California's Statewide Emerging Technologies Program (ETP), which explicitly called out the need for dedicated market development activities, recommending a two-year, $2 million pilot (5% of total ETP budget) designed specifically to methodically determine all market barriers for a single technology and design and implement tactics to address them (Sutter et al 2015).[2] Similarly, the New York State Energy Research and Development Authority (NYSERDA) has made market development a cornerstone of their work under the Clean Energy Fund and allocated more than $2.7 billion to market development efforts over the next ten years. The discrepancy in the amount of funding allocated market development in New York versus California is in fact more a reflection of the regulatory framework than the actual activities funded. Both states fund technical validation, codes and standards, behavioral research, and other market development activities. However, because market development is a subset of a broader market transformation framework, NYSERDA's approach is more holistic in strategically linking the different phases of adoption within its larger market transformation goals. Table 1 summarizes the differences between technical readiness, market development and resource acquisition activities. While resource acquisition focused on procuring energy savings from top-down programs, market development programs strive to create the right conditions for adoption to occur. Resource acquisition frameworks typically operate within short program cycles and have stringent cost effectiveness goals, limiting their ability to provide the wide range of services needed to reduce non-monetary adoption barriers.

[1] In the cases where significant market development activities do occur, it is often reactive, and suggested after a measure has performed inadequately within a portfolio and the implementation staff are looking to improve performance (Sutter et al. 2015). However, it is difficult to emphasize market development support once products are transitioned into a resource acquisition portfolio because comprehensive market development support negatively impacts portfolio cost-effectiveness.
[2] Pending a successful pilot, the market development activities should be expanded significantly in scope and scale for a wide range of technologies and business models.

Table 1: Comparison of Technical Readiness, Market Development, and Resource Acquisition Models

	Technical Readiness	Market Development	Resource Acquisition
Objective	Demonstrate technical viability	Demonstrate viability at scale, establish market infrastructure and communicate results to the market	Achieve cost-effective energy savings and reduce procurement needs for supply side generation
Scale	<10 installations	10-1,000s installations	1,000+
Supply Chain Development	Not addressed	Prioritized	Not addressed
Value Proposition	Limited opportunity for refinement	Iterative refinement of marketing, distribution, soft cost reduction, pricing, installation, and program design	Assumes mature supply chain and business model

Market development efforts are based upon three key pillars aligned to address adoption barriers in the market:

- **Replication and Standardization:** Implement large-scale deployments to validate performance across customer and building types and encourage and inform standardization of key product features and savings claims.
- **Supply-chain Development:** Provide education and support to develop the sales and service aspects of the market.
- **Information Dissemination:** Build confidence and awareness through transparent reporting of market and program data.

Effectively implemented market development efforts build acceptance with early adopters, influential supply-chain actors, and policy makers that while informing viable program and business models. While transitioning technologies into utility program portfolios to serve resource acquisition goals may be a byproduct of a successful market development intervention, it is not necessarily a direct goal of market development efforts (Keating 2014). This focus on supporting uptake requires market development programs to emphasize and track a diverse set of key performance indicators (KPIs) to assess market maturity and support needs (Table 2).[3] Resource acquisition programs focus primarily on cost-effectiveness metrics and therefore tracking or considering the evolution of the larger market is a secondary priority.

[3] Behavioral-related DSM solutions are an important subset of technologies that are particularly suited for market development efforts. These solutions are proliferating very rapidly and have the potential to achieve significant impacts, but may not always fit into the framework of resource acquisition programs. Dedicated market development programs for behavioral solutions with focused market development KPIs could enable a broader tracking of the technology's maturity over time.

Table 2: Indicative Market Development Key Performance Indicators

Key Performance Indicator Field	Relevance to Market Development
Warranty	Warranties indicate manufacturer confidence and reduce customer risk, contributing to a shift from first year cost-effectiveness and simple payback to lifecycle benefits.
Efficacy	Significant variation between forecast, vendor-reported, and metered energy savings provide reduce customer confidence in manufacturer claims.
Cost	Project costs per unit or kWh/kW reduced should decrease over time as technologies achieve scale and production and soft costs in the supply chain diminish.
Features	Standardization around certain product features improves consumer experience and confidence; it is important for programs to not "over specify" as that can limit innovation and healthy market competition.
Availability	The number of manufacturers, qualifying products, distributors stocking and selling products, and companies installing/servicing a technology indicate the level of product and supply chain maturity.
Awareness	The understanding and valuation of integrated value streams (including energy efficiency, demand response, demand charge management, and NEBs) across different customer segments indicates market demand.
Expansiveness	Awareness and reliable performance across customer segments and building types validates the market potential and justifies continued funding for market development activities to help realize the potential.

Examples of Market Development

Due to the limited funding for comprehensive market development approach, to date most market development activities have been piecemeal in nature and combined with utility resource acquisition activities.[4] The following examples of how various program have utilized one or more of the market development pillars to accelerate broader adoption of technologies in the market.

How Replicated Performance Builds Confidence

In 2010, the California Energy Commission administered the Energy Technology Assistance Program (ETAP) with funding from the American Recovery and Reinvestment Act (ARRA). The program sought to scale adoption of wireless HVAC controls, wireless lighting controls, and bi-level lighting at public sector sites throughout California. Although each

[4] One important exception is the Northwest Energy Efficiency Alliance, a Regional Energy Efficiency Organization who mission and market interventions strategies are centered around a market transformation framework.

technology had been proven at a small scale, these products were all in the early stages of market adoption. Awareness of the energy savings potential and NEBs was low within the contractor, customer, program administrator and policy maker audiences.

As shown in Table 3, in addition to ETAP's energy savings goals, it had significant market development that went beyond energy savings and peak demand reduction. ETAP provided a full suite of market development services including: 1) Financial incentives to reduce the high first cost of these emerging technologies, which could be layered on top of utility incentives; 2) Contractor trainings on selling and installing HVAC and lighting controls; 3) Project design, specification, and management support, including procurement and bid specification development for public sector agencies; 4) Outreach and trainings for facility managers to inform them on energy savings opportunities; 5) Development of eight case studies for three technologies across a range of education and local government customers; and 6) Rigorous energy monitoring and savings validation of program savings.

Table 3: Summary of ETAP's Goals and Accomplishments. Source: Energy Solutions 2012.

Program Activity	**Goal**	**Achieved**	**Percent of Goal Achieved**
RESOURCE ACQUISITION	**Annual Energy Savings**		
	Electricity (kWh)	23,035,547	175%
	Nat. Gas (therms)	948,018	2,049%
	Peak Power Reduction (kW)	1,346	106%
INFORMATION DISSEMINATION	**Case Studies**	8	114%
	Website	1	100%
	Other Materials		
	Brochure	1	100%
	Application	1	100%
	Fact Sheets	3	NA
WORKFORCE DEVELOPMENT	**Technology Seminars**		
	# Seminars	6	100%
	# Participants	229	380%
	Electricians Trained	40	100%
	HVAC Installers Trained	26	130%
	Interns Trained	4	100%

At the onset of the program, California's Database for Energy Efficiency Resources (DEER) assumed that bi-level fixtures in parking garages operated in low power mode 15% of the time. However, the program's data-logging of more than 45 projects installed through ETAP found that fixtures with integrated occupancy sensors operate in the low-power mode on average of 66% of the time, indicating that actual energy savings was four times than DEER credited. This led the California Investor Owned Utilities (IOU) to re-examine DEER's savings estimations for bi-level fixtures and align their savings claims closer to what was actually achieved in the field. In addition, large-scale metering data provided customers with a validated range of energy savings across parking garages, increasing customer confidence in their investment and savings calculations.

How Strategic Supply Chain Engagement Accelerates Uptake

In 2010, Pacific Gas and Electric (PG&E) Company sponsored the launch of the LED Accelerator Program (LEDA), a market development program that promoted the highest performing and best quality LED lighting products. Using tiered product specifications and incentives, LEDA engaged strategically with the market to leverage the buying power of large commercial customers to stimulate manufacturers to produce and sell best-in-class LED products.[5] At the same time, LEDA developed the capacity of the supply chain to accelerate adoption beyond the program's direct reach.

When the program launched in 2010, ENERGY STAR was just finalizing their LED specifications, very few manufacturers active in the market, and the incremental product costs were substantial. By 2012, several more manufacturers were active in the market, hundreds of products were listed with ENERGY STAR, and project costs for projects implemented through LEDA had fallen more than 50% since 2010. As a result, PG&E created two midstream pilot incentive programs for LED replacement lamps: a midstream distributor pilot, which provided incentives to distributors for LED lamps, and a direct install model. The distributor pilot was intended to test the feasibility of scaling LED adoption in the broader market, while the direct install tested acceptance in small business and hard to reach customer demographics. During the trial, the distributor channel sold 66% of LED lamps incentivized under both pilot in half the time and at twice the cost-effectiveness as the direct install; however, the direct install was successful in reaching customer demographics not typically serviced by distributors (Lande and Barker 2013). The results of these pilots informed PG&E's broader program strategy, and LED lamps were transitioned to the distributor lighting program in the following year. Transitioning LED lamps into the midstream program model had tremendous results: in program year 2014, PG&E's distributor lighting program processed 147,800 LED lamps in 2014 and 300,000 in 2015, a 15x increase from the number of LED lamps sold in 2010. However, without LEDA's initial engagement with key market actors, the transition towards scale would have been significantly less successful.

[5] LEDA's strategic interventions led to mass adoption of high-performing LED products as key retailers participating in the LEDA program rolled out the LEDA specification to other areas of the country. From 2010-12, one key LEDA retailer was responsible for 2% of all ENERGY STAR LED PAR lamp purchases nationwide. These large scale procurements instituted manufacturer bidding wars and created steep declines in product price over time.

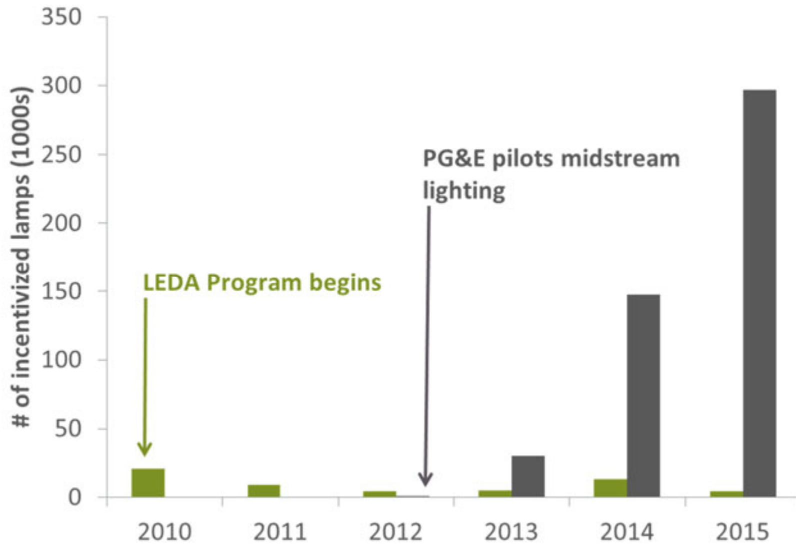

Figure 2: LEDA created the necessary LED market conditions from 2010-2012 for other programs with greater volume to gain traction in later years

How Program Reporting Accelerates a Market

The California Solar Initiative (CSI) played a major role in driving the early adoption of residential solar photovoltaic (PV) systems in California. CSI was a legislatively-mandated market transformation program and remains the largest dedicated clean energy market transformation initiative implemented in the United States. As a market transformation effort, CSI employed volumetric incentive reductions by slowly decreasing project incentive amounts as the number of installations reached defined milestones. The incentive reductions were offset by decreasing costs from competition amongst the new market actor entrants selling and installing residential solar systems, decrease in panel and soft costs, streamlining and standardizing interconnection and permitting processes, and other economies of scale.

In addition to the incentives and industry trends, public reporting served a critical role in developing the market. This required a comprehensive data strategy from the program's inception to create the underlying structures and data requirements in order to convey transparent and reliable information to the broader market. As part of the contractual agreement to receive an incentive, all contractors were required to submit data including project cost,[6] system size, ownership model, installer, and system manufacturer, which was published to the CSI website, www.californiasolarstatistics.ca.gov. These public reporting requirements created the largest and most reliable source of publically available solar project data in the world. Making project data public for each installation receiving a CSI incentive enabled a wide variety of analysis and activity throughout the market ecosystem: policy makers could assess program trends and milestones, contractors and customers could compare system costs based on size, location, and ownership model to ensure their bids were competitive, and the finance sector could analyze industry data to inform investment strategy in the solar markets.[7] While CSI has largely sunset as

[6] To ensure the accuracy of project cost filings, contractors were required to submit actual contract information.
[7] The financial services industry was one of the most frequent user groups to download CSI program data (behind policy makers) because, as the largest repository of solar data in the world, it was valuable for industry speculation.

an incentive program, it continues to serve as an important public reporting resource by publishing interconnection data from systems which participated in the CSI program.

Figure 3: Average Installed Cost of PV System in California Solar Initiative Program ($ per Watt), based on 142,488 applications in the CSI database (CSI 2016).

How to Address Each Market Development Pillar through Large-Scale Demonstrations

NYSERDA's DSM efforts have historically been a hybrid of RD&D, market development and resource acquisition. Based on this experience, NYSERDA's ET program managers noticed that many promising technologies often struggled to achieve scale following a successful technology demonstration. As a result, in 2013 NYSERDA launched the Emerging Technology Accelerated Commercialization (ETAC) program to offer a more holistic approach to product commercialization by including multiple types of market support: energy performance validations, focused demonstrations, and large-scale demonstrations. While energy performance validation and focused demonstration offerings were more aligned with the traditional ET approach that vetted technical readiness; they deliberately incorporated market development metrics, such as barrier identification and strategies to overcome them.

NYSERDA's ETAC program is currently funding two large-scale demonstrations of HVAC control technologies: 1) a 300-unit deployment of Transformative Wave's Advanced Rooftop Unit Controllers and eIQ platform, and 2) a 25-site deployment of BuildingIQ's Predictive Energy Optimization platform. These demonstrations seek to provide a more holistic approach to market development by incorporating all three pillars and a broad set of market development objectives (Table 4).

Table 4: Example Objectives in NYSERDA ETAC Large-scale Demonstrations

Market Development Strategy	Deployment Objectives
Demonstrate Broad Market Application	Install projects across a variety of building and equipment types
Develop the Supply Chain	1) Increase the number of providers selling, installing and servicing the technology 2) Train providers on New York rate structures, DR programs, and how to promote an integrated EE and DR value propositions
Quantify Energy and NEBs	Conduct measurement and verification of projects portfolio to validate forecasted energy and non-energy benefits
Integrate Multiple Value Streams	Identify and quantify energy efficiency, DR, demand charge savings, and NEB value streams
Build Consumer Awareness and Confidence	1) Publish case studies across multiple facility types. 2) Publish savings and results on interactive public dashboard. 3) Host building tours and webinars on project outcomes

Building on the experience from ETAC, NYSERDA will expand and integrate market development efforts under the Clean Energy Fund. NYSERDA is currently identifying and prioritizing specific market segments that have an optimal combination of opportunity and need. Once the market opportunity is characterized, specific research projects and intervention strategies will be developed to demonstrate and validate energy benefits, NEBs and business models, and reduce market friction and soft costs. One specific area of interest is Real-time Energy Management: there is an emerging class of new software-based technologies that achieve energy savings based on data analytics and controls and while have the potential to save significant energy and create tremendous business value, they face significant adoption barriers because they are very different than traditional, hardware based efficiency measures. Their product features, savings strategies, and business model are new to both customers and utilities, and although this new class of software products is expected to gain widespread adoption within the DSM industry, there has been very little standardization to date. Thus, there is a market development opportunity to create standardization and clarity around savings validation and product features and capabilities, including non-energy benefits.

A Market Development Program Vision

Right now, there is a convergence of industry trends and regulatory activity providing a tremendous opportunity to shape the future of DSM. At a regulatory level, two of the three largest state economies in the United States – California and New York – are embarking on landmark shifts to ten-year regulatory cycles, representing $10+ billion dollars of clean energy investment. Within the industry, the emergence of device level telemetry, whole building metering, advanced analytical capabilities, and intelligent building control technologies is creating a disruptive opportunity to forecast and measure DSM on a time and locational basis and drive a multitude of non-energy value streams for different customer types. Efforts to standardize energy efficiency measurement and verification, such as the Investor Confidence Project and Open EE Meter, aim to increase the level of standardization and confidence in DSM measures (Golden 2015). Moreover, the growing number of technologies that can actively manage demand using dynamic inputs such as weather, occupancy and price signals is increasing the confidence in DSM as a non-wires alternative to procuring new generating resources.

Utilities and grid operators are increasingly relying on targeted DSM and the strategic use of distributed energy resources to defer or offset costly infrastructure investments. Southern California Edison's all-source request for offers (RFO) to replace the San Onofre Nuclear Generating Station, ConEdison's use of DSM to defer an upgrade to its Brownsville substation in Queens, and Bonneville Power Administration RFO for measures that will help alleviate transmission congestion in southwestern Washington and northwest Oregon are just a few examples of utilities looking to DSM as the cost-effective alternative to supply-side procurement.

As utilities conceptualize, develop and deploy proven models for DSM procurement, resource acquisition will be managed by the supply side of the utility, where distributed energy resources, including energy efficiency, demand response, and load shifting services can be contracted from third parties the same way as generation and capacity procurement. Utility demand side management programs can shift their focus from resource acquisition toward market development efforts that aim to increase market uptake so that the supply-side of the utility can ultimately include increasingly high levels of DSM in their long term procurement plans (LTPP).

Treating resource acquisition more like a supply side resource has the potential to reduce the contention around free-ridership in utility programs: with better methods of conducting project M&V, many resource acquisition programs can function more as a contracted, supply side service. In market development programs, free ridership is less of a concern because the assumption is that all initiatives do not operate in a vacuum, but are part of a much broader market which is composed of many actors. Rather than focusing on attribution of savings and demand reduction, the market development approach uses strategies to eliminate barriers to adoption and KPIs to track how the market is maturing and whether continued intervention is needed.

Perhaps the greatest challenge for market development programs is sending a consistent signal to market actors by standardizing requirements across utility and regulatory boundaries. Existing regulatory frameworks must evolve focus to harmonize where feasible to shift the paradigm toward market transformation.[8] While some elements of market transformation efforts may vary by region according to specific needs or interests, utilities and regulatory commissions should prioritize DSM funding and focus on the key pillars of market development:

Pillar 1: Replication and Standardization

A multi-region market development program need not standardize around incentive levels, logic models and supply-chain intervention strategies; those aspects of the programs should be reflective of the local market and regulatory forces. However, other program aspects

[8] The Consortium for Energy Efficiency's (CEE) ET Collaborative has recognized the value and complexity of sharing information and standardizing around key methods pertaining to ET planning, strategy and evaluation. It is not be feasible or desirable to standardize all product features and market influences, and through the ET Collaborative CEE has organized focus groups to determine what can be harmonized across participants, and what needs to remain program administrator-specific.

such as baseline definitions, M&V methodologies, product features, and data reporting are all clear opportunities where standardizing program approaches can avoid creating unnecessary market barriers and create consistency for market actors. As projects are implemented and data becomes available, program standards can be modified and industry organizations should initiate standard-setting processes for key product features that should become ubiquitous. Three key important areas of program standardization and focus include:

- **Developing a Project Pipeline Strategy:** Early stage technologies typically do not have a well-developed network of trade allies and initial work should focus on developing a project pipeline of sufficient size and variation that is representative of the broader market opportunity. Ideally the customers are large organizations capable of replicating successful projects through phased deployments, implementing a smaller scale project initially followed by larger projects once the technology demonstrates as expected. Program implementation staff should work closely with buyers to support their procurement efforts, including review of vendor RFPs and bids, and characterization of the complete product value proposition. The early projects attract midstream supply-chain actors, additional customers, and become the first of many case studies. As the scale of the deployment grows and project data becomes more robust, the specific need for active customer engagement and recruiting should diminish as the value proposition is clarified and more fully supported through monitoring data.

- **Developing an M&V Strategy:** One of the greatest adoption barriers to DSM is the lack of standardization among measuring savings claims which creates significant customer risk and skepticism in manufacturer or contractor assertions. Standardizing savings claims through agreed upon measurement protocols can help serve as the basis for treating energy efficiency as a resource (Golden 2015). Moreover, standardizing M&V strategies can help improve the accuracy between forecast, vendor reported savings, and savings measured at the meter.

- **Developing a Data Collection Strategy**: To support the M&V strategy and the tracking of relevant program KPIs, program administrators should develop a comprehensive data strategy in the early stages of the program and communicate it to technology vendors. Market development initiatives require frequent adjustment based on market maturity, and so KPIs (such as those outlined in Table 2) should be monitored to inform initiative and reporting efforts. This is particularly true for NEBs, which are likely to evolve into a major aspect of the customer value proposition over time.

Pillar 2: Supply Chain Development

In a purely resource acquisition program, implementers often focus on financial incentives as the primary tool to achieve increased adoption in the market. In a market development program, implementers work to increase adoption by working with supply-chain actors to build their technical and sales capacities in addition to providing financial incentives. Programs should offer both technical and sales training to the distribution, installation and commissioning supply-chain actors. Many emerging clean energy technologies offer additional value streams and selling points beyond energy efficiency, including real-time demand management, grid services, and a wealth of customer-specific non-energy benefits (NEBs). Looking forward, it is conceivable that the business value of the analytics and information derived from these devices will surpass the value of energy savings, and therefore it is important that market actors understand the evolving value proposition and how it can be leveraged to create customer value. Training efforts can focus on identifying and communicating these multiple value streams into attractive sales propositions that are specific to the customer. The wide range of energy services and benefits means that installers and vendors must ensure facility managers are properly trained on how to operate, maintain, and derive value from their new system.[9]

Pillar 3: Information Dissemination

Traditional DSM program reporting has a significant lag time and its evaluations serve a limited set of audiences, mainly policy makers and program administrators. In a market development program, project performance and evaluation should be designed to engage and provide insights to a broad range of market actors and interested parties, including building owners, contractors, technology vendors, investors, utilities, independent system operators, and public agencies. This is particularly true to emerging technologies with embedded reporting capabilities where the wealth of reporting data generated by sensors and controls can provide more timely and accurate data to reduce project risks, boost confidence from customers, midstream actors, and the finance industry in project savings, and change how DSM portfolio administrators implement and evaluate programs (Burmester, Borocz, and Barnacle 2014). This overarching reporting framework is presented in Figure 4.

[9] Maintaining customer engagement is a critical aspect of success for the new wave of software-based product offerings which provide data analytics and insight. To this end, these companies often have ‘customer success’ managers to ensure that their customers are deriving the full benefit of the software systems.

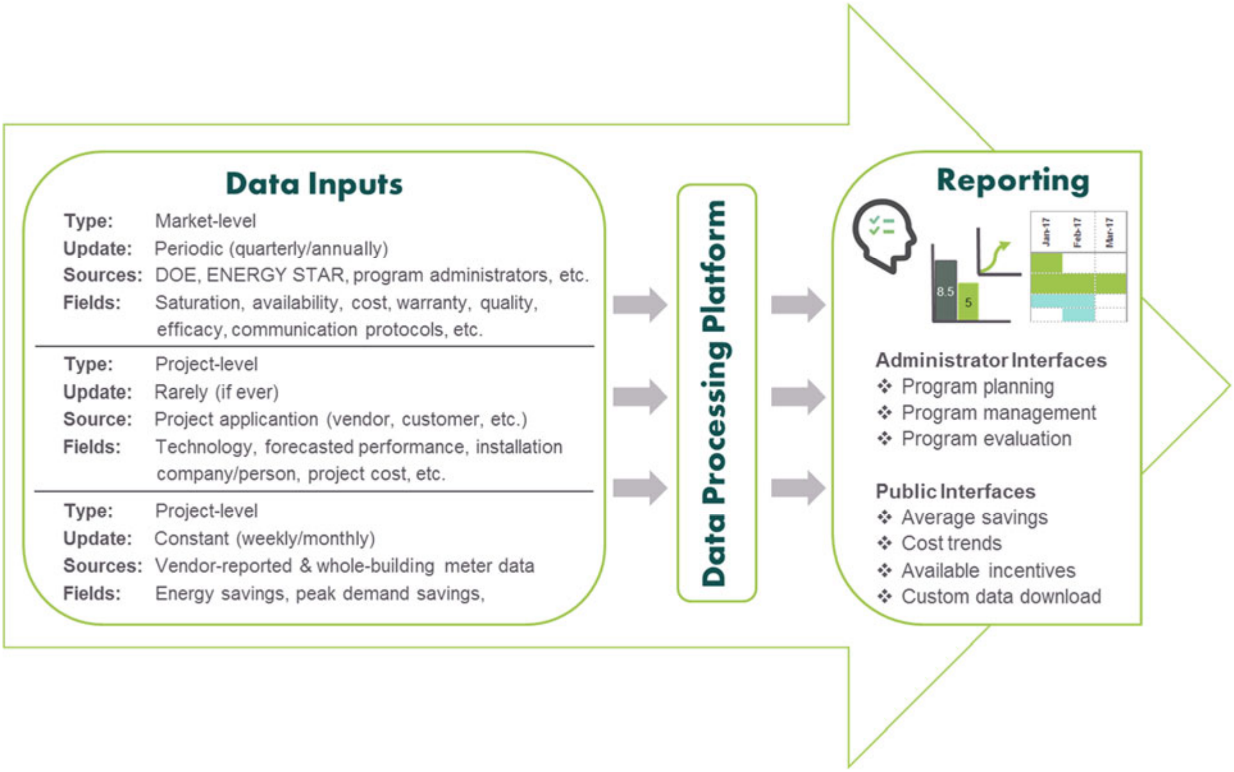

Figure 4: Illustration of Program Data Evaluation and Reporting Platform

There are three types of data that should be captured, analyzed and reported on: market data, application data, and meter data, each of which has unique reporting requirements and offer different levels of insight. Market data provides insight into industry trends and is sourced from third-party sources such as DOE, ENERGY STAR, emerging technology studies, behavioral studies, and market characterization and saturation studies. Application data is building or customer specific, and provides insight into technology uptake and supply chain development over time: number of installations, average project cost, number of contractors installing the technology, etc. Meter data is also customer specific, but focuses on savings validation at both a project and portfolio level. The ability to collect and correlate vendor reported and whole building meter data is a new advancement that can assist in accurately quantifying energy benefits resulting from software-enabled devices, build confidence in vendor claims, and facilitate interoperability as harmonized communication standards are developed. A fourth class of data which should be reported where possible is non-energy benefits, which can provide quantification of building operations at site or aggregate level (e.g. on average, the HVAC controls systems triggers a critical maintenance alert five times month, number of reduced hot/cold calls, etc.).[10]

Requirements to Achieving the Market Development Program Vision

Meeting aggressive greenhouse gas reduction and state and federal clean energy targets will require a level of scale far beyond the current range of DSM activities currently being

[10] While there is significant potential in driving DSM technologies, defining the value of NEBs is still in the early stages. NYSERDA is actively engaging customers and end users to better define NEBs and their customer value proposition.

implemented within the United States. It is clear that the level of scale cannot be achieved through resource acquisition efforts alone, and that market development efforts will be required to create technology standardization and reduce adoption barriers for emerging technologies and business models. While market development initiatives can play a critical role in the clean energy transition, they require sustained investment with clear market transformation objectives which are not currently present in most regulatory environments. Going forward, market development activities should be an integral component of utility and regulatory DSM strategy, eventually replacing resource acquisition altogether as resource acquisition becomes a procurable resource contracted by the supply side of the utility. This large-scale market development activities will require a paradigm shift for the DSM industry toward a market transformation regulatory framework; however they will serve as a critical step towards achieving aggressive energy savings goals and unlocking DSM as a resource in the market.

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