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Product Development at OPOWER

In December 2010, as he paced through OPOWER's offices, Ben Foster glanced at the company's product road map, which covered 16 feet of hallway walls. He smiled as he remembered his decision to affix movable, color-coded tiles that each represented a planned new feature beneath a time line in this highly trafficked area. The road map's prominent, public display had helped foster collaboration between the company's engineering, product management, and sales staffs.

It had been a year since Foster had moved from Silicon Valley to Arlington, Virginia, where OPOWER was headquartered, and he was pleased with how the company's product team and processes were evolving. Based on his experience at other tech companies, Foster had strong views about how to design and scale a product management organization. He had jumped at the opportunity to become vice president of product at OPOWER, a fast-growing software company that helped utilities engage their customers in ways that reduced energy consumption. When Foster arrived, one of the dilemmas facing the startup was how to prioritize product features. OPOWER management was under conflicting pressures: it wanted to build a generalized extensible platform, but also one that it could customize to win big, new accounts, even if this meant accepting the prospect's costly and idiosyncratic product requests.

To address this challenge, Foster had implemented a system that annually provided OPOWER's sales organization with a fixed number of tokens that they could spend to accelerate engineering work on important prospects' feature requests that were not on OPOWER's road map. The system had been in place for a few months and seemed to be working. However, a new request for proposal (RFP) from ABC Power presented a difficult choice.[1] ABC Power would be a flagship deal, worth over $15 million in total revenue, and OPOWER's competitors were vying aggressively for ABC Power's business. However, one feature requested by ABC Power would create software interdependencies that would significantly increase future development costs for many projects across OPOWER's platform.

Foster welcomed the test to the token system and saw the upcoming deliberations over ABC Power's RFP as a natural part of OPOWER's evolution from a scrambling startup to a more professionally managed, process-driven tech company. As he rushed to a videoconference with team members in OPOWER's San Francisco office, he wondered what else he could do to equip OPOWER's product organization to help achieve the company's growth plans over the next two years.

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[1] The name "ABC Power" is disguised, as are the specifics of its RFP.

Background on OPOWER

Harvard College classmates Dan Yates and Alex Laskey founded OPOWER in 2007.[2] Yates, a computer science major, had worked for an Internet startup after graduating in 1999. He subsequently cofounded Edusoft, an educational assessment software company that was sold in 2003 to Houghton Mifflin, a leading publishing company. After exiting Houghton Mifflin in 2005, Yates drove from Alaska to the southern-most point in Argentina. He was distraught by the ecological degradation he observed during the trip and resolved to help improve the environment.

Laskey, who had been working on political campaigns and in advertising, had been out of touch with Yates since college. When the pair reconnected after Yates's transcontinental trip, they discovered a shared interest in environmental policy and decided to pursue a project together. After exploring several options, Yates, while reviewing his own electricity bill, got the idea for generating reports that would provide consumers with better information about their energy consumption. Laskey knew from political polling that consumers aspired to conserve energy but lacked knowledge of how well they were doing and what they could do to improve their performance.

The cofounders transformed their project into OPOWER, with Yates serving as CEO and Laskey as president. The cofounders were introduced to Robert Cialdini, professor emeritus of psychology and marketing at Arizona State University and author of *Influence: The Psychology of Persuasion*, a best-selling book on marketing. Cialdini, who joined OPOWER as chief scientist, had been researching the impact of normative messaging on energy consumption. He had demonstrated that consumers used less energy when they were made aware of peers' conservation efforts.

The OPOWER team applied Cialdini's behavioral science to a pilot program for their first customer, the Sacramento Municipal Utility District (SMUD). OPOWER produced a printed energy report that was mailed in April 2008 to 35,000 SMUD customers. The report included a graphic comparison of the household's energy consumption to two sets of neighbors with similarly sized homes: all neighbors, and those with relatively efficient energy use. The report also included information about actions consumers could take to conserve energy. SMUD customers who received OPOWER reports reduced their energy consumption by 2% to 3%, compared to a control group that received no reports. Utility executives were thrilled with the results, because most other proposals for achieving carbon emission reductions of this magnitude—for example, purchasing wind power or subsidizing compact fluorescent bulbs—were significantly more costly. (See **Exhibit 1** for energy savings from OPOWER solutions.)

Yates and Laskey secured contracts with six more utilities during 2007 and 2008. As the company gained traction, OPOWER raised a $1.5 million series A in 2007 from angel investors, then a $14 million series B in late 2008 led by New Enterprise Associates.

In 2009, state public utility commissions (PUCs), which regulated utilities' rates and capital spending, began showing interest in "smart grid" investments that could drive energy conservation and reduce utilities' operational expenses for meter reading. Smart grid technologies relied on two-way communications to monitor home energy use and control appliances, for example, by turning off air conditioners when consumers were at work. Utilities' past efforts to promote behavioral change by developing and operating their own consumer-facing websites had been largely unsuccessful, so most utilities saw a need to work with outside partners who understood the drivers of consumer

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[2] Portions of this section are adapted from Amy Cuddy and Kyle Doherty, "OPOWER: Increasing Energy Efficiency Through Normative Influence," HBS No. 911-016 (Boston: Harvard Business School Publishing, 2010).

behavior and who could develop software that leveraged smart grid technologies. OPOWER managers believed that smart grid initiatives would provide them with new opportunities to expand their offerings beyond paper reports to include multichannel (e.g., smartphone- and web-browser-based) solutions and customer relationship management (CRM) tools for utilities.

Based on this expanded product vision, OPOWER developed a white-label web application for households to view home energy data, a messaging and alert system for consumers, and a suite of CRM tools used by utility customer service staff. Using these solutions, about 85% of OPOWER customers were able to cut their power consumption by 3.5%. As of late 2010, the company had 170 employees and was serving 45 utilities, for whom it delivered energy reports to 5 million homes. Revenue for 2010 was expected to exceed $35 million, and the company had operated at cash flow breakeven for several quarters. OPOWER raised a $50 million series C in late 2010 from Kleiner Perkins Caulfield & Byers and Accel Partners.

OPOWER's Product

OPOWER's product had three major elements: (1) a series of data inputs, (2) algorithms for processing this data, and (3) a series of outward-facing applications and tools spanning multiple channels. (See **Exhibit 2** for product images.)

Data inputs included:

- Monthly customer energy usage data provided by utilities

- Real-time energy usage data when smart meters were present

- Household and demographic data (e.g., square footage from town records; neighborhood income and educational levels from census data)

- Weather records

The company's algorithms processed this data and presented information and recommendations through:

- Printed energy reports

- A web portal, which provided consumers with historic energy use data, tools for analyzing bills and for performing "what if" scenarios, personalized recommendations, and so on

- Consumer messaging via e-mail and SMS (e.g., high-bill alerts for consumers with smart meters)

- A dashboard for utility customer service representatives (CSRs) to manage inbound questions from consumers resulting from OPOWER reports

Customer Profile and Competitive Dynamics

Before 2009, when OPOWER's product line was limited to printed reports, selling tasks were fairly straightforward. OPOWER staff called on a utility's energy efficiency unit, which typically had a large, PUC-mandated budget to spend on conservation projects. This unit did not normally need to closely coordinate its procurement decisions with other utility functions. Since OPOWER's reports were significantly more cost effective than other conservation solutions, the company quickly penetrated many accounts.

OPOWER also focused its sales efforts on state regulators, who had significant influence over utilities' decisions to pursue conservation projects. Regulators were particularly supportive of OPOWER's approach, because it had proved effective in promoting conservation across a range of socioeconomic groups, unlike other solutions—such as home insulation subsidies—that were disproportionately adopted by more affluent consumers.

Once OPOWER began to offer smart grid solutions, its selling tasks became more complex. Smart grid solutions were scrutinized closely by a range of utility functions, not only due to their very high cost, but also because some regulators were skeptical of smart meters' promised benefits to rate payers. OPOWER's sales staff now had to deal with multiple influencers at prospective customers in a long-cycle, consultative, multilevel process. At utilities, managers from several functions—including information technology, operations, regulatory relations, marketing, and corporate communications—typically were involved in adoption decisions for smart grid solutions. The higher cost of smart grid solutions and the involvement of multiple utility functions increased the likelihood of requests for custom features.

When OPOWER's product line was limited to printed reports, the company confronted few rivals. However, with smart grid solutions, OPOWER faced vigorous competition ranging from software startups (e.g., eMeter, Efficiency 2.0, Tendril) to smart grid integrators such as Silver Spring Networks. OPOWER management was cognizant of the risk that late entrants into its market could quickly catch up by copying OPOWER's smart moves and avoiding its mistakes.

OPOWER's business model was straightforward: utilities paid a fee per household served by OPOWER, which varied depending on the range of products and features offered.

Early Approaches to Product Development

Like many startups, OPOWER's early product reflected the vision and intuition of the company's founders. As a repeat software entrepreneur, Yates led product definition and strategy through the first two years of the company's life. However, as the company grew and its feature set became more complex, the informal product management processes employed by Yates and his team started showing some strain. Yates said, "In retrospect, we should have added our first senior product leader when our company grew to about 10 people. In my experience, 15 people is a difficult number for any organizational unit. It's too many to remain flat, so you have to add processes and hierarchy."

By 2009, when OPOWER had 35 to 40 employees in total, its product and engineering functions had head count of about 20. The product development process was still loosely structured and relied on what Yates called a "heroic project manager" who set priorities and assigned work to engineers, designers, and product managers. Yates recalled, "She kept track of everything in her head. It worked well for a while, but as the product became more complex and as she was pulled away constantly to help with utility RFPs, things started to unravel."

OPOWER's product road map had evolved largely in response to requests from prospective and existing customers. The team scrambled to deliver requested features and had little time to develop its own vision for the product. "Extreme fluidity is not necessarily faster," remarked Yates. Another cost of a reactive product development approach was "technical debt" that was introduced into OPOWER's software. (In software development, technical debt refers to the consequences of hasty architectural design and coding.) Due to the rapid pace and reactive mode of early development efforts at OPOWER, some software components that could have been built as modules were written in a more haphazard manner, making it more difficult and costly to layer new features and

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functionality into the software. Laskey said, "We were very good at sales from the start, so we accrued lots of technical debt. We would chase three big deals at the same time and win them all. Because we didn't have a focused road map, we would build new stuff independently for all three clients, stretching our engineering staff and creating inefficiencies."

Professionalizing Product Development

By late 2009, the cofounders recognized that OPOWER needed a senior product leader who would professionalize the company's product development process. Yates remarked:

Software products differ in the extent to which their value is above the hood, for example, in an elegant, easy-to-use interface, or below the hood, for example, in sophisticated algorithms. Think of the difference between a Lamborghini and Formula 1 car. With a Lamborghini, the value is mostly above the hood. A Formula 1 car isn't much to look at, but there's real value below the hood. It takes different skills to manage these different types of software products. When you have significant nontechnical elements in customers' buying decisions, as we do with utilities' customization requests and with our behavioral comparison story, you need product managers who can serve internally as the voice of the customer.

Laskey added, "We wanted a product leader with both consumer and enterprise software skills. It's hard to find both sets of skills in the same person, but Ben [Foster] fit the bill."

Foster joined OPOWER as vice president of product management in January 2010. He previously had held the same position at Adchemy, a digital marketing solution provider, and had been a senior product manager at eBay. (See **Exhibit 3** for management bios.)

Transition to Agile Development Methods

One of the most important experiences Foster had at Adchemy was transitioning a product team to agile software development methods. With agile methods, requirements and solutions evolved in an iterative and incremental manner through collaboration between cross-functional teams. Accustomed to a waterfall-based deployment process at eBay, Foster had experienced at Adchemy both the challenges of leading a transition to agile development and the speed and quality benefits that agile methods could deliver.

One month before Foster joined OPOWER, the company had hired Jeff Barrett as vice president of engineering. Barrett previously had been managing director at Vanno, a company that tracked corporate reputations, and director of engineering at Finaplex, which provided software solutions for financial services firms. Foster and Barrett shared a similar vision for how to create a high-performing product and engineering organization. They both believed that a crucial step would be a transition to agile methods.

The move to agile was not easy. Barrett remarked "The transition requires more discipline for everyone involved, regardless of whether it's a startup or a large company." Added Foster: "Agile is about trust. Engineering commits to get things done, and we agree to not make prioritization changes late in a scrum cycle. Every once in a while we renege, and every once in a while engineering fails to deliver, but for the most part it works smoothly, and that builds trust."

Foster and Barrett implemented a scrum process in which overlapping five-week development cycles, called "iterations," resulted in a new software release every three weeks. Each scrum team

included a product manager who served as "product owner," developers, and a quality assurance member. The company maintained a widely used wiki to track tasks and issues and to facilitate collaboration on new features. Foster noted, "When you are small and everyone works in the same room, you overhear discussions about features. You need the same transparency as you scale. Our wiki provides this transparency."

Product Development Organization

In late 2010, OPOWER had eight product managers (PMs), three of whom worked in the company's San Francisco office. Product managers had matrixed responsibilities: each PM worked on one or more products (e.g., printed reports, CSR tools, core algorithms) and on one or more initiatives (e.g., international opportunities, products for smaller customers). Senior PMs also worked with colleagues in sales on one or more client teams responding to RFPs. Finally, half of the PMs operated as product owners, working with one of OPOWER's four scrum teams. Barrett commented, "Scrum teams align closely, but not exactly, with product areas. We plan to expand engineering to staff 11 scrum teams by the end of next year. We try to hire PMs six months ahead of engineers to ensure that we have product specs ready to go." (**Exhibit 4** depicts this matrixed structure.) Foster explained the rationale for the matrixed product management structure:[3]

In organizing product management, you typically must choose between two basic approaches: you can structure around product components or around initiatives. Both approaches have advantages and drawbacks. Structuring around components has the benefit of clear ownership and long-term continuity of your knowledge base. However, development can get fragmented with this approach. You end up not focusing on users' problems in a creative and comprehensive way. Structuring around initiatives can solve this problem, and can make it easier to pivot and experiment. However, initiatives are sometimes transient, and it also can become difficult to maintain existing product components when those components have multiple owners. Our matrix tries to capture the best of both approaches.

By the nature of the position, PMs deal with multiple internal constituencies: engineering, sales, operations, and senior management. Each constituent can't be expected to talk to multiple PMs, so we use the matrix to make sure that constituents each have a single point of contact for product issues. For example, the lead sales rep on a client team only needs to talk to one PM to sort out how to deal with custom requests that relate to several different products.

The matrix requires intensive coordination and communication within the product management team. We achieve that during a 90-minute daily calendar block. It begins with a quick stand-up meeting about new issues—everyone is *literally* required to stand—and is followed by a reserved time period during which smaller groups can immediately address issues. Working with multiple constituencies also requires our PMs to have diverse skills, so we hire well-rounded individuals, preferably those with the business acumen acquired from a top-tier MBA program.

The structure is working well now, but I don't see it as permanent. Our product and our strategy are very dynamic, and as a result our organizational structure must remain flexible.

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[3] This quote from Foster and some others that follow are adapted from Rob Go, "Product Leadership Series: Creating a Great Product Process at OPOWER," May 25, 2010, http://www.robgo.org/post/631398831/product-leadership-series-creating-a-great-product, accessed February 6, 2011.

Product Development Processes

In addition to the daily product management meeting mentioned above, OPOWER relied on a series of product planning events:

- High-level product plans with a two-year horizon were developed annually; these plans addressed the question, "What *could* we build?"

- A product road map spanning 12 to 18 months and revised quarterly specified when specific features *should* be built.

- Every few weeks, "wave" planning specified what features would be released in the next three to four iterations, and objectives for each iteration were planned at its outset. These indicated what *would* be built.

- Finally, at the end of each iteration, and throughout each iteration, the scrum team reviewed what *was* actually built.

To secure feedback on existing and proposed features, OPOWER's product management team relied on frequent consumer surveys and usability testing. PMs also regularly attended key sales meetings to hear prospective clients' concerns and answer their questions. Foster commented on the reliability of consumer research in understanding product requirements:

> Consumers never tell us that normative messaging has a big impact on their behavior. They focus on information like their energy usage history. But we know from A/B testing that if you take their usage history away but retain the normative messaging, energy use still declines. The reverse is not true, which suggests that we have to carefully filter what we hear from consumers.

> This reminds me of a story about developing a new portable stereo, which may be apocryphal. A novice product manager ran a series of focus groups in which customers indicated strong interest in a new line of brightly colored stereos, rather than the standard black. The product head said, "Okay. Run another focus group, and at the end, tell the participants that as a present, they can take home a stereo. Let them choose any color." As the legend goes, despite the consumers' stated preference for bright colors, all of them chose a black one—and the product line was canceled.

Product Development Metrics

In conceiving product development metrics for OPOWER, Foster drew on his experience at eBay, where he was exposed to the strengths and potential weaknesses of a very data-driven approach to product management. He said:

> At eBay, the product and engineering teams were both closely monitored against quantified metrics. However, the metrics were different for each team, which created problems. For example, engineering was expected to limit the number of software bugs reported in a given period. An obsession with this metric meant that engineering teams were very reluctant to identify bugs toward the end of a period, even if fixing the bug would have meaningful business impact. On the flip side, product managers were not responsible for the number of bugs. Furthermore, the fact that eBay had a long road map and laborious feature approval process meant that PMs had an incentive to classify feature changes as bugs in order to prioritize them. This led to conflict between product and engineering.

To avoid this pitfall, Foster and Barrett implemented common metrics for OPOWER's product management and engineering groups. The metrics included both direct measures of quality and productivity like the number of bugs and the percent of road map features delivered on time, and also market-driven metrics like the percentage of utility RFPs won (the target: 75%). Although one group might not have a direct impact on a particular metric, it had an incentive to support its colleagues' efforts.

A second pitfall that Foster sought to avoid was the illusion that everything could be measured quantitatively. Like many companies, eBay had relied on NPV analysis to approve new product features. Foster remarked:

> This works some of the time, but many product enhancements can't be measured in this way. And, at eBay, we'd often pad the numbers to get products prioritized. Ultimately, you get the results that you manage towards. At eBay, that led to products with the minimal level of quality required to meet our metrics, which included lines of code in production, product requirement documents delivered per quarter, number of bugs, and so forth. These metrics were good at motivating a predictable and high level of output, but not for delivering elegantly designed solutions.

Foster was flexible in the way he utilized metrics at OPOWER, and he included some subjective metrics. For example, the product management organization was evaluated on how effectively it worked with the sales team; a regular survey was used to measure sales reps' satisfaction with their product counterparts. Other metrics were more objective but had less rigid targets. For example, the product team tracked the percentage of features built over a six-month period that had been on the product road map at the beginning of the period. Foster commented, "The target is 75%. If we go much higher than 75%, it means we probably aren't nimble enough to adapt to the evolving market. If we go much lower than 75%, it means that we are devoting too much effort to custom requests. Or worse, our product vision is delusional and we don't understand our customers' problems."

Foster noted that his team had not yet articulated expectations about how new features should drive reductions in consumers' energy use. He said, "We do need to do this, but since I arrived a year ago, we've been scrambling to deliver work that was already sold. We wouldn't have changed our product development priorities if we'd put energy efficiency metrics in place." Barrett added:

> I like the idea of energy efficiency metrics, because this would close the agile development feedback loop. With agile, engineers are able to show they've met commitments by delivering features on time. Product owners should be able to show that the features they asked for had the intended impact for clients. That builds trust.

The Token System

Maintaining a product road map was difficult for OPOWER due to ongoing pressure to develop custom solutions for its large and diverse customers. Most utility RFPs were competitive and involved large, long-term contracts. Many utilities had idiosyncratic needs related to the geographies they served (e.g., warm vs. cold climates), demographics (e.g., high vs. low income; bilingual consumers), plant condition (e.g., use of smart meters), and regulation (e.g., consumer choice among power providers). Furthermore, some utilities had misguided perceptions about what features were necessary for a successful conservation program.

As OPOWER matured, its sales force increasingly encountered competition from entrants who were willing to build customized solutions. This led to tension between OPOWER's sales and product teams. Sales had an incentive to promise as much functionality as possible to win bids; the product team tried to maintain discipline and deliver a product that was optimized for all customers over the long term.

Foster worked with Jeremy Kirsch, senior vice president of client solutions, to find a system to resolve this tension. Kirsch—a Sloan MBA with extensive startup experience—knew that coping with pressure for customization was a central challenge for enterprise software companies. Kirsch said, "Our engineering resources are constrained, so it's critical to correctly prioritize engineering efforts and to be wary about accruing technical debt in order win a bid." At the same time, Foster was aware that neither he nor individual product managers were equipped to fully understand the importance of a particular feature to a prospective customer, the importance of that customer to the overall sales effort, and whether adding a customer feature might help future sales with other prospects. Consequently, he and Kirsch determined that it made sense to push decisions about custom features to the sales team, which was better able to evaluate these trade-offs.

Foster and Kirsch designed a solution with three types of feature requests in mind and color-coded the three types in visual depictions of OPOWER's product road map:

1. "Blue" features were already on the road map and could be completed in time to meet the customer's requirements, with no major changes in development priorities.

2. "Green" features were on the road map—or should have been—but needed to be accelerated in order to meet a specific customer's needs. Put another way, a blue feature would be turned green if delivering it earlier than originally planned in response to a new customer's RFP would require a significant change to OPOWER's road map.

3. "Yellow" features were not on the road map and probably would be added only in response to a specific customer's request.

The system specified the percentage of annual engineering capacity—negotiated by OPOWER's top management team, and probably in the range of 15% for 2011—that would be allocated to yellow features or to green features that needed to be accelerated (relative to the original road map) by at least one calendar quarter. This capacity would be divided into a certain number of scrum cycles, and an equivalent number of tokens would be granted to the sales organization. Over the course of the year, sales could "spend" the tokens as it saw fit on yellow and green features.

Specifically, when an RFP was received from a utility, the product team would analyze the RFP and categorize requests features as blue, green, or yellow. Then, product managers and engineers would scope the green and yellow features to estimate the number of scrum cycles needed to complete them. Sales would decide whether or not to redeem tokens for yellow and green features, or try to win the RFP without the requested custom features.

Barrett commented on constraints in engineering capacity:

> The token system begs the question, why not just hire more engineers so we can build more custom features? But you can only hire and integrate new developers at a certain pace. Also, due to interdependencies in our code base and the resulting need for developers to talk to each other, you can't simply double the number of engineers and double output. Every time you

add a feature, you make the next feature more difficult to develop, because the new feature must take the old one into account.

Kirsch commented:

> No system is trouble free. We can see already that sales will argue about product's development time estimates. Product will try to classify borderline features as yellow rather than green, to get sales to pay for them. But we think this system works better for us than alternatives. With an ROI system, people just make up numbers. And with a charge-back system, the NPV of any given feature is typically much greater than the fully loaded cost of the engineers required to build it, so you don't set priorities very well.

Laskey reflected on the relationship between product management and sales: "To have a strong product management function, you have to have strong salespeople. Salespeople need the confidence and experience to know that they can and should push back on clients who demand special solutions. If salespeople are just chasing demand, your road map ends up all over the place."

The ABC Power RFP

Foster and Kirsch had devised the token system in mid-2010. The system had worked well so far, but at yearend, OPOWER received an RFP from ABC Power that would truly put the token system to the test.

The total value of the ABC Power contract exceeded $15 million over a three-year period, which would make ABC Power OPOWER's largest customer by a significant measure. Furthermore, ABC Power was seen by other utilities and by state PUCs as a leader in the innovative use of technology in a region with progressive regulation. Hence, it seemed likely that success with ABC Power would spur other utilities to adopt OPOWER's solutions.

ABC Power had stressed to OPOWER's sales team that an important requirement was support for consumers who had multiple energy meters. Multiple meters might be present when a building had been originally built for two families but now housed just one. Despite the fact that this condition applied to only 0.1% of ABC Power's customers, the utility was adamant about providing a solution for this "edge case," since it believed it to be an obligation to the PUC. OPOWER's sales team, in turn, was eager to win the ABC Power bid.

From a product development perspective, supporting this requirement was a potential nightmare. The underlying data model for OPOWER's product would become much more complicated, because many existing features would have to be rewritten to account for multiple meter owners. To cover the anticipated engineering investment, the sales organization would have to spend half of its token budget for 2011.

Furthermore, supporting multiple meter owners would effectively impose a "tax" on future development efforts. Barrett and Foster estimated that the revised data structure would increase the cost of building most future products by 20%. Foster said, "Of course, it is difficult to scope this future cost accurately, since we don't know what we'll build. But we are sure that the impact would be significant."

Foster puzzled over how to proceed. Should he factor the potential future expense into the token cost for this feature? Or should the company assume that this functionality—required now by a sophisticated, leading-edge customer—would later become a necessity for all utilities, and simply

absorb the cost? If OPOWER would eventually support multiple meter owners for many utilities, it made sense to do so now, because rewriting features to accommodate a revised data structure would be more costly than building the same features from scratch with the revised data structure already in place.

Finally, what precedent would the ABC Power decision set for the company in managing the constant tension between a strong product vision and responding nimbly to customer demands? Foster had seen successes and failures in coping with customer demands in his past positions, but now it was time to test the process that he himself had designed to handle this challenge.

Conclusion

In December 2010, as Foster evaluated options for the ABC Power bid, cofounders Yates and Laskey reflected on how OPOWER's product development organization had evolved:

Yates: Our engineering teams are really starting to crank. It's almost scary to think about how fast they'll be able to go next year after we've paid down more of our technical debt and we can focus on the future. But what should we do with the increased capacity that we'll have in engineering? Should we devote more manpower to building custom features, in effect, giving sales more tokens to spend? Or, should we step up our spending on longer-range strategic initiatives—blue features that are now further out on our road map?

Laskey: As we think about how to allocate resources, we should keep in mind that, increasingly, we can afford to be more selective in responding to utilities' requests. It's more often the case that we can sell features that we've already built, as opposed to building custom features in response to one customer's request. Our teams are road-mapping now with this in mind.

Yates: We started this company to shut down power plants and reduce carbon emissions. We're starting to achieve that goal, but we've just scratched the surface. Our penetration could really increase over the next 12 months.

Laskey: With $50 million in funding from Kleiner and Accel, we have the resources to accelerate. And it looks like we've now got the product development organization in place to realize our mission.

Exhibit 1   OPOWER Energy Savings

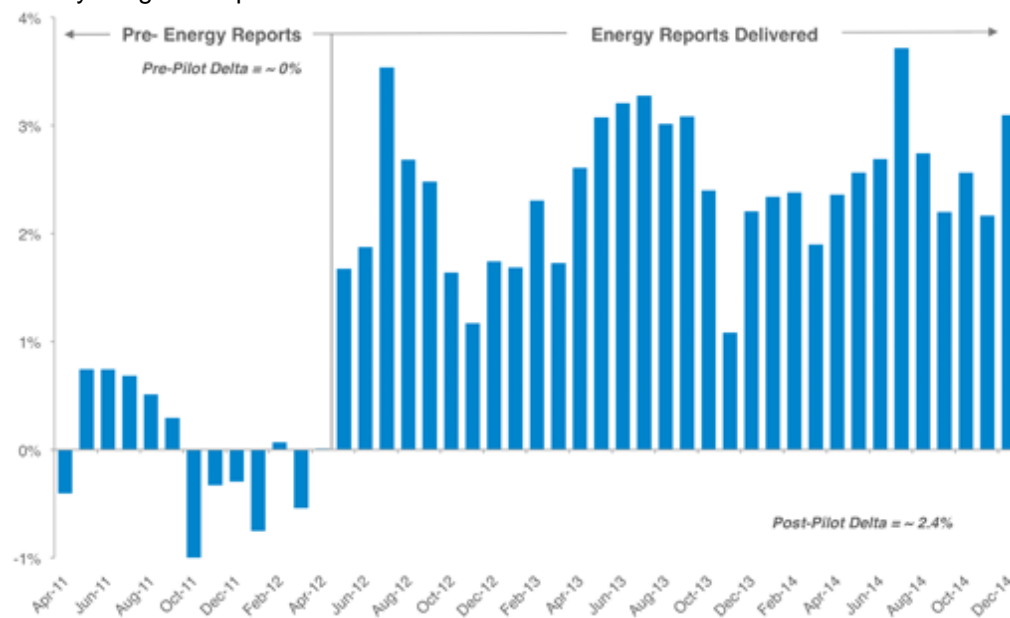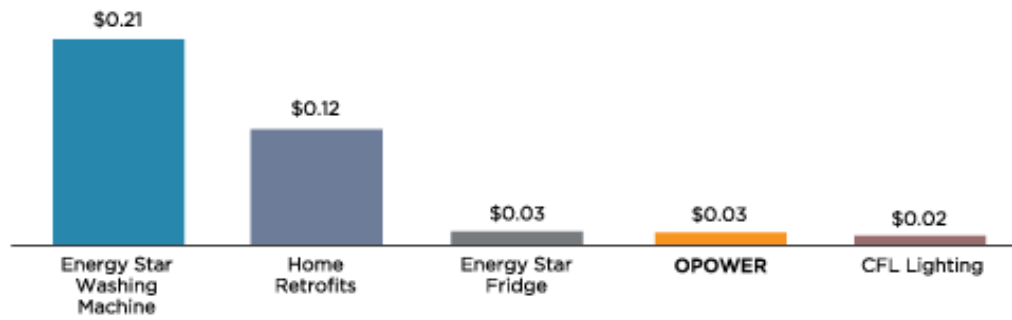Program Savings over Time
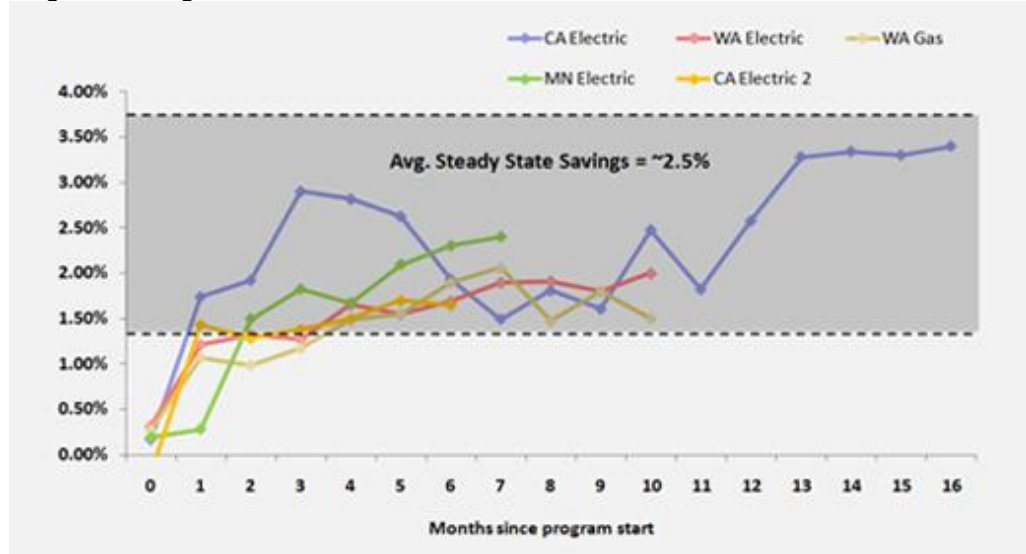
Monthly Program Impact

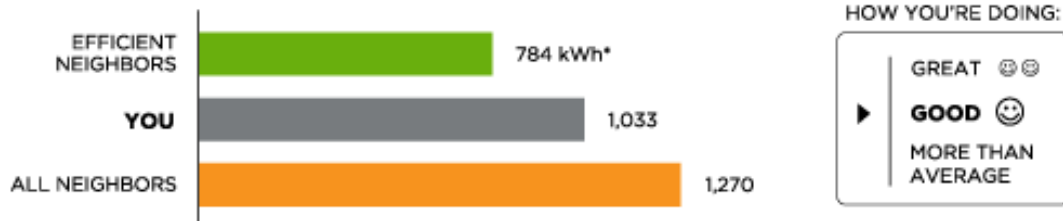**Exhibit 1** (continued)

Lifetime Cost Effectiveness

Source: Company.

Exhibit 2   OPOWER Products

Normative Messaging Approach
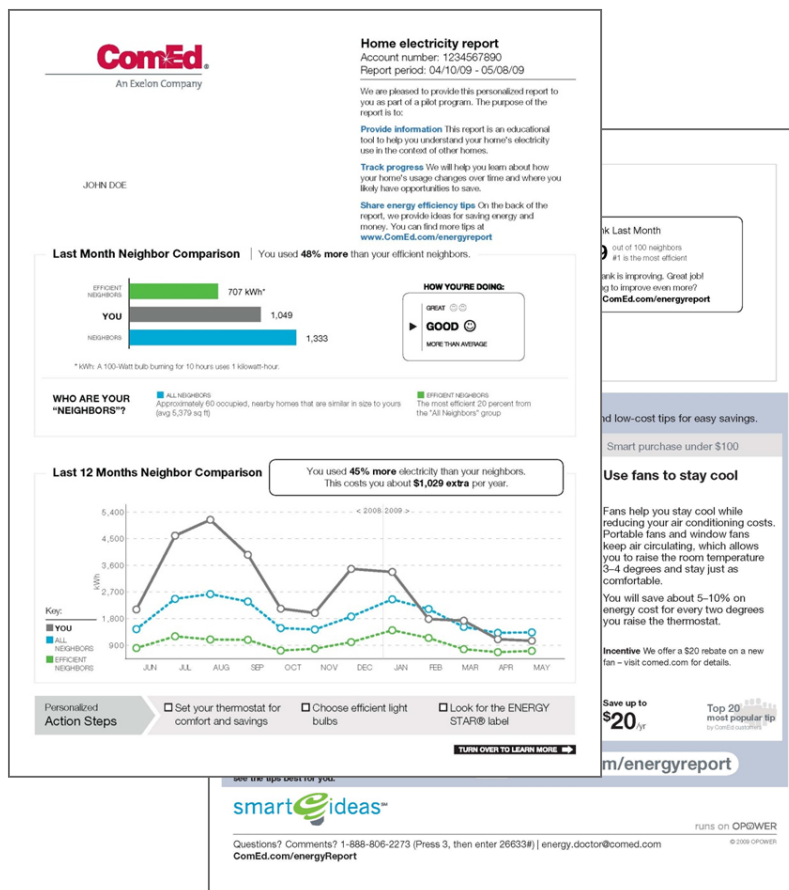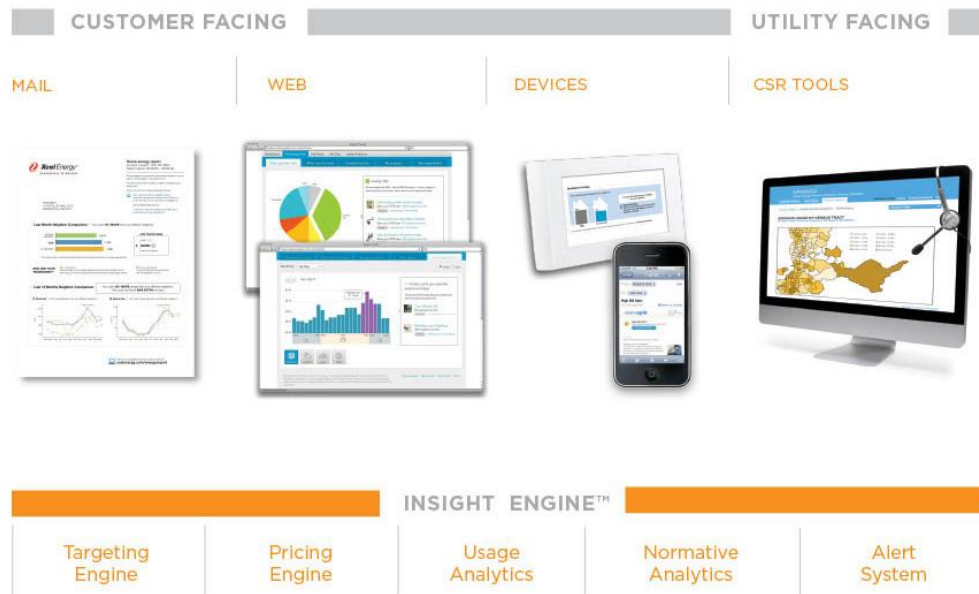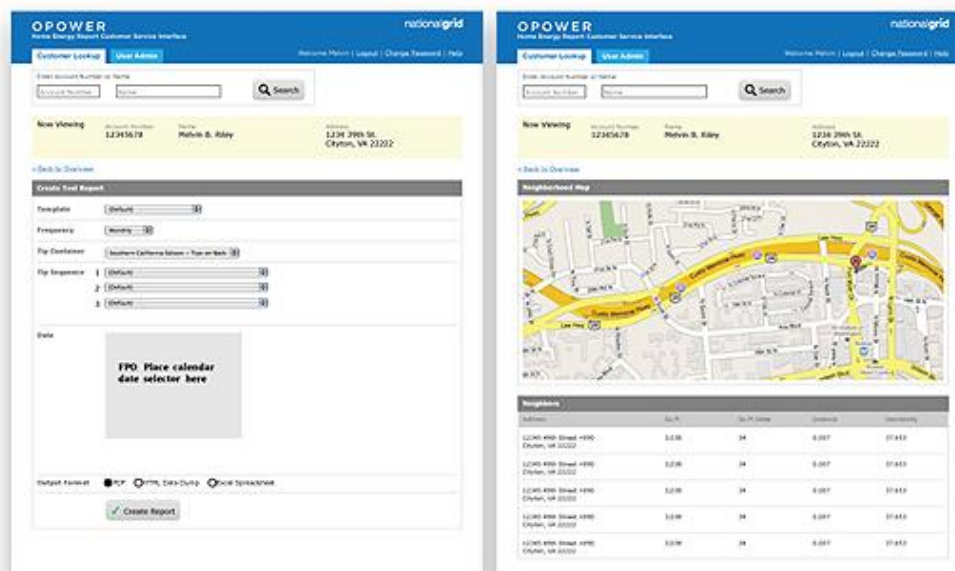

Home Energy Report

Exhibit 2 (continued)

Multichannel Product Line

CSR Tools

Source: Company.

Exhibit 3   Management Team

Daniel Yates, CEO, Founder

As CEO, Yates is responsible for the vision, strategy, and leadership of OPOWER. Before this venture, Dan was founder and CEO of Edusoft, an educational software company that provided assessment platforms to U.S. public school districts. Dan sold the 150-person, $20M revenue company to Boston-based publisher Houghton Mifflin in 2004.

After his departure from Houghton Mifflin, Dan embarked on a yearlong adventure with his wife, driving from the Arctic Sea in Alaska to the southern tip of South America. Over the course of this trip, Dan became aware of the shocking degradation of the environment, and he subsequently resolved to dedicate his life to sustaining what's left of our beautiful natural world.

In 2009, Dan was named a "Tech Titan" by *Washingtonian* magazine and was a finalist for the Ernst and Young 2009 Entrepreneur of the Year award.

Dan received his B.A. in Computer Science, summa cum laude, Phi Beta Kappa, from Harvard University.

Alex Laskey, President, Founder

As President and Founder, Alex is OPOWER's public face, responsible for engaging utility and government partners in OPOWER's vision and products. He is highly sought-after as a speaker at energy-related conferences throughout the country and abroad. In his role as OPOWER's President, Alex was invited to the White House to meet with President Obama and discuss innovation and job creation in the green economy.

Prior to OPOWER, Alex enjoyed a career in politics and policy serving as a campaign manager, strategist, and public opinion analyst for several candidates nationwide. Alex provided strategic consulting on several statewide ballot measures for The Nature Conservancy, The Trust for Public Land, and The League of Conservation Voters. Alex has worked for the White House and on a presidential campaign.

Before turning to politics and policy, Alex produced the award-winning feature film, *Assisted Living*, and worked as the director of new business and strategy for The Romann Group, a New York–based advertising agency.

Alex received his B.A. in History of Science from Harvard University.

Jeremy Kirsch, SVP of Client Solutions

Jeremy has been leading high-performance teams, working with customers and partners, and building businesses for over 12 years. Prior to joining OPOWER, Jeremy was an executive in the Viisage Secure Credentialing business at L-1 Identity Solutions (NYSE:ID). While at Viisage, Jeremy held a series of positions including VP Sales and Business Development and VP Marketing and Strategy. Jeremy's team was critical in the division's rapid growth from $67 million to more than $100 million in annual revenue through expanded direct sales.

Jeremy has also held a leadership role at Art Technology Group (NASD: ARTG) and was a founder of InvestTree.com. Both companies developed Jeremy's experience in bringing new products and services to the market. Earlier in his career, Jeremy was a Special Operations Officer in the U.S. Navy, where he served as a member of elite Mobile Diving and Salvage Unit Two. He completed his naval service with the rank of Lieutenant.

Jeremy received his B.A. in Economics from Stanford University and his M.B.A. from the MIT Sloan School of Management.

Roderick Morris, SVP of Consumer Marketing and Operations

Roderick leads the teams who create energy savings results for OPOWER's client base through targeted marketing campaigns and general management of client operations. He is responsible for managing all consumer marketing and analytics on OPOWER's patent-pending customer engagement platform, as well as the program management and technology operations accountable for the core P&L of the company.

Prior to OPOWER, Roderick was VP, Marketing at Vovici, a leading Software-as-a-Service (SaaS) provider of customer feedback management solutions, where he led marketing, product management, public relations, and analyst relations, quintupling organic search traffic and doubling new business pipeline. Earlier at Vovici, he managed the renewal sales team, the professional services organization, the customer support team, and customer training programs, achieving major increases in customer renewal rates, satisfaction, and profitability. Prior to joining Vovici, Roderick was the general manager for LexisNexis US Business Information Solutions. This included $150M of P&L responsibility for online research, text analytics, and SaaS products serving sales, marketing, and corporate knowledge professionals. Earlier at LexisNexis, he managed businesses in information services, e-discovery, and corporate legal SaaS solutions. At LexisNexis, Roderick built

multiple high-growth businesses and consistently raised growth rates and renewal rates materially for the P&Ls he managed. Previously, he worked for Bain & Company, Microsoft, Simmons & Company, and Corporate Executive Board.

Roderick earned an MBA from the Stanford University Graduate School of Business and is a graduate of the University of Texas at Austin

Jeff Barrett, VP of Engineering

Jeff Barrett has over fifteen years of technology leadership experience including key roles within start-up, turnaround, and established environments. As OPOWER's VP of Engineering, Jeff Barrett manages the technical vision and delivery of OPOWER's core Software as a Service (SaaS) product.

Prior to joining OPOWER, Jeff was the Technical Director at Vanno, The Company Reputation Index. While there he worked closely with the two founders to turn a product vision into a polished, production SaaS that tracked 5,500 companies across 25 aspects of corporate reputation. Previously, he was Director of Engineering at Finaplex (acquired by Broadridge), where he was responsible for the delivery of a suite of SaaS Wealth Management applications. While at Finaplex he managed a large, multi-national team delivering solutions to clients like The Royal Bank of Canada and First Union.

Jeff holds a B.S. in Computer Science from Georgia Institute of Technology.

Wellford Dillard, VP of Finance

Wellford provides strategic management of OPOWER's finance, recruiting, HR, and operations groups. Before this position, Wellford served as the Chief Financial Officer of Acumen Solutions, where his leadership played a significant role in driving organic revenue growth of more than 120%. Prior to joining Acumen Solutions, Wellford served as the Chief Financial Officer at TMA Resources, the leading provider of association management software to the nonprofit sector. Earlier still, Wellford was a VP at WWC Capital Group, where he provided merger and acquisition advisory and equity placement services to software and IT services firms. Wellford's career began as a financial analyst at Ernst & Young and an equity research associate at Friedman, Billings, Ramsey Group.

Wellford received his B.A. from the University of Memphis and his M.B.A. from the University of Maryland. He currently serves on the Board of Directors for the School for Ethics and Global Leadership in Washington, D.C.

Ben Foster, VP of Product

Ben manages the creation, design, and delivery of OPOWER's products, ensuring that the company continues to build the industry's leading suite of energy information services. He is responsible for managing the company's products from a variety of perspectives, including features and functionality, user experience, and overall roadmap.

Prior to OPOWER, Ben was Vice President of Product Management for Adchemy, a leader in digital advertising technology. There he was responsible for the company's entire product suite supporting lead generation and Software-as-a-Service (SaaS) offerings. Ben defined the company's product strategy and roadmap, collaborating with engineering and research teams to construct the industry's first end-to-end modular online ad optimization platform. Before joining Adchemy Ben led dozens of consumer-oriented product management efforts spanning disciplines of marketing, merchandising, search, structured data, and technology integration. He has also held various product management positions at companies such as eBay, Webvan, ThoughtWorks, and Barra.

Ben was a top scholar at the University of California at Berkeley, from which he holds a B.A degree in Statistics.

Ogi Kavazovic, VP of Marketing and Strategy

Ogi Kavazovic is responsible for developing and coordinating the company's overall marketing approach. He works closely with the sales and product teams to help refine the company's strategic positioning.

Prior to joining OPOWER, Ogi was a senior management consultant at Katzenbach Partners, where he had extensive experience in corporate strategy development for clients in the utility sector, including working with one of the nation's leading competitive utilities to develop a Smart Energy business plan.

Ogi started his career as a software engineer, developing risk and asset management systems for major financial institutions like Goldman Sachs and JP Morgan. Ogi was also one of the lead architects of a "smart field" data management platform for Schlumberger Information Systems, the foundation of which are incorporated into Smart Grid data management systems today.

Ogi received his B.A. and M.S. degrees in Computer Science from Harvard University.

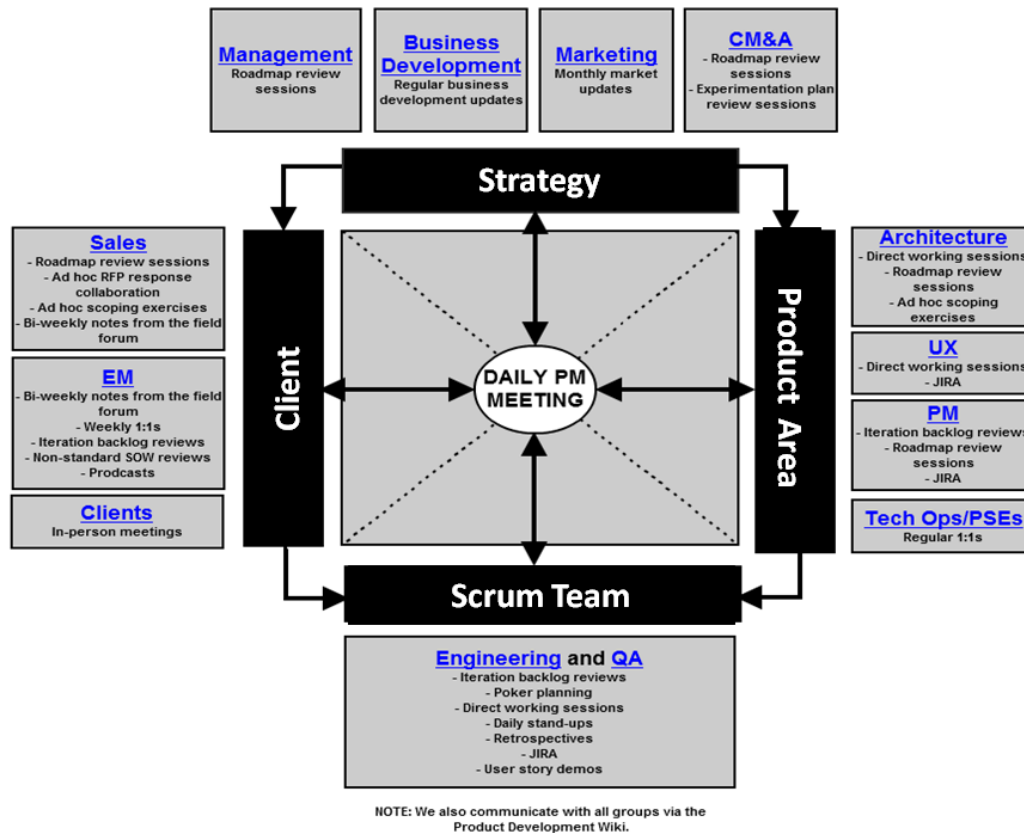**Michael Sachse, VP of Regulatory Affairs and General Counsel**

Michael Sachse is the primary liaison for OPOWER and public partners. Michael represents OPOWER in front of public utilities commissions, governors, mayors, and state legislators, and also oversees OPOWER's legal work. Michael's efforts have been instrumental in developing public-private partnerships for OPOWER, including helping our utility partners use stimulus funding for their efficiency programs.

Prior to joining OPOWER, Michael was a litigator at leading New York law firm Patterson Belknap Webb & Tyler and law clerk to Chief Judge Edward Korman in the Eastern District of New York. In 2008, Michael served as Communications Director for the campaign of now Congressman Jim Himes.

Michael received his B.A. in History, summa cum laude, Phi Beta Kappa, from Amherst College and his law degree from Harvard Law School.

Source: Company.

Exhibit 4   Matrixed Product Management Organization

Source: Company.