Q&A Transcript

Energy as an Asset, Not an Expense:

Undeveloped Investment Opportunities

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Question 1

Do you have a mechanism for tying a specific Spark to an energy value? How much energy waste is associated with this Spark?

> **Chris Powell:** When we started this, that question was our biggest obstacle. We looked at multiple types of Sparks that we'd run into and created an order of magnitude savings impact for each of those. For example, you might have 3 or 4 dollar signs for the big savers and 1 dollar sign for the least impactful. For anything beyond 1 dollar sign, we'd do some level of energy analysis to determine the potential energy savings.

> With National Grid's help in development, we use a tool that standardizes that evaluation for all these different measures. By taking our entire list of Sparks that have been created since the

program's implementation, we sorted each one and came up with a standardized approach to easily calculate savings. We document heating and cooling degree days as well as other efficiency information. For example, for all satellite chiller plants, we know what their COPs are. We know what our central heat plan efficiency is. And so, we're able to build that into a model that uses the same tool over and over again. This standardization is critical.

Question 2

Considering that you're already quantifying savings, do you have a sense of the overall magnitude of the savings from SkySpark? What kind of financial justification have you gone through for that and what kind of return on investment are you seeing in the ongoing commissioning?

Chris Powell: SkySpark has become the mechanism that's helped us achieve that 20% rate of return that we're getting, the reason being that a lot of our standard projects are having higher payback. There might be a 10-year payback, or even longer, but the ongoing commissioning has actually allowed for extremely quick payback, savings which we can use to help pay for our overall loans.

The agreement we have here is that Operations has to implement things that are their problems to begin with. So it isn't actually costing us anything when they're out recalibrating a sensor or doing something that normally would be part of their job anyway. But if we say that we need to add controls in a particular system or temperature sensors on discharge of coils, for example, we will actually pay for that.

At the end of the day, in using rough numbers, we've spent maybe $150,000 in the first year or so in the program and we've saved about $375,000 a year. Now, this is the cool part: working with National Grid, we have a strategic energy management program in place with them and it pays us based on savings, not costs. That means that with this $375,000 saved, we receive a half-million dollar rebate from them ($500,000) to do those projects. We're actually paid more than we paid to do the measures. We combine this with our longer term paybacks so that they're actually never paying us more than the original cost because you've got the big capital projects combined with the quick hits. So it's actually a no-brainer from a financial perspective.

Question 3

In terms of selling to the finance office, what were the keys to winning the day in that and what were the biggest hurdles that you faced?

Chris Powell: I would say the biggest hurdle is past performance. Before I got to Brown, the issue was in understanding how to know what the savings were going to be and whether or not they were really going to occur. And so, you have to be confident enough in your own ability to get these savings. If you aren't confident, you aren't going to convince them.

I would also say understanding the transparency in our system and that they're always going to know, at least on a quarterly basis, what we've done and how we're performing. They (the finance office) always know that if they need to ask a question about how we're doing, that data is readily available and transparent to them in our tools.

Question 4

In terms of the way you're running the program and considering that you had mentioned you have outside consultants, how much are you doing in-house versus out-house and what are your guidelines for making those decisions?

Chris Powell: I think we adapted over time. We started out more with a consulting mode when we began this. Although we had facilities engineers who were part of the process, our consultants were driving the projects forward with us.

There was then reorganization and a couple of those facilities engineers' positions were eliminated so I used my savings in the program for the ongoing commissioning piece to actually justify paying for them through my utility budget. So, it's a sweet spot – what can you cover on your own? The rest of it is really covered through the loan process. These guys are actually a normal cost of my doing business every year. It's two energy engineers who are really being paid for by my utility savings piece and then the projects themselves just have to make sense financially, and that's all consultants.

On regular projects that we implement, not ongoing commissioning, our engineers are probably doing 20% of the work. 80% is through consultants which are all incentivized and paid for in many cases by our utility provider, National Grid. But then the ongoing commissioning is really more our people and our operations staff, so there's very little consulting, besides the SQL piece that we use from GreenerU.

Question 5

What is SkySpark costing you on an ongoing basis, what other software did you evaluate, and how did you ultimately settle on SkySpark?

Chris Powell: We looked at several different models from Sometrics and a product from EnerNOC which was more of a shared savings arrangement which we wouldn't have owned. Johnson Controls has their own and there was another product that could be bought and developed. Frankly, we liked the idea of investing in it and being able to keep the savings ourselves so we spent the money to develop them.

SkySpark for us is a no-brainer, as the license fees and costs for the software are really inconsequential. When we started the program, we were probably spending about $2,500 per year with a one-time purchase of about $15,000 which covers a package of future data points that cover the whole campus (GreenerU could explain this further). After that, you pay about $1,500 per year in maintenance fees and software upgrades.

It's a really inexpensive system but the key is for someone internally to identify what the Sparks are that you want to evaluate. We do that here to evaluate these buildings, looking for problems, much like an energy audit. We get into the nitty-gritty of our DDC system and our drawings, looking at our sequence of operations and set points. After you do this for a few buildings like lab buildings, all of the points are relatively the same and the rest of the process is like copying and pasting, just with a different DDC identifier for that particular VAV reheat or that air handler or heat exchanger – or whatever it is you're trying to monitor. You can even monitor preventative maintenance items like differential pressure if your operations staff wants to look at more predictive scheduled maintenance.