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Smart Meter Technology and the Effects on Grocery Retailers

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Smart Meter Technology and the Effects on Grocery Retailers

Senior Honors Thesis by
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Introduction

Grocery shopping. It's something we all do. Some of us enjoy the hunt for bargains or unique foods, some of us consider making a trip to the store for milk a chore, but we all go the grocery store and most of the time, we don't consider how much energy our local grocery store consumes. Stop and think about that. From the moment you enter through the automatic doors, to the checkout belt that propels your groceries across the counter where they are scanned, there is energy generated in every aspect of the process including refrigeration, lighting, heating, and air conditioning.

Last summer I obtained an internship opportunity in Jackson, Michigan, at Consumers Energy's corporate headquarters on the Smart Grid Customer Engagement Team. My role consisted of communicating Smart Grid technologies to customers who were to receive smart meters on their homes. The Smart Grid refers to an electricity delivery technology system that uses computer-based remote control and automation. In the near future, it will be possible for your utility provider to generate data about your energy consumption patterns via smart meters (energy.gov). Utilities and consumers will have access to energy consumption information to make smarter energy choices, allowing them to reduce their energy bill if they choose. As a student in Haworth College of Business, who has pursued a major in Food and Consumer Packaged Goods Marketing, my passion lies in grocery shopping, and just like most grocery shoppers, I am interested in saving money.

Saving money at grocery retail stores does not notably come in the form of energy consumption, but perhaps there is a more efficient way that grocery stores can consume energy with the implementation of smart meters. In theory, if the ripple effect holds true, the retailer may save money by saving energy, enabling customers to save money. Smart meters made their debut in Michigan in August 2012 and will continue to replace old analog meters on Michigan customers' homes and businesses for the next several years. As the transition takes place, grocery store managers may have a new way to monitor their store's energy consumption and have the information to make more conscious and energy efficient decisions.

Literature Review

2.1 The Smart Grid

The current electric grid was conceived over 100 years ago, when electric needs were simple and when most homes and businesses had small energy demands. The grid was designed to deliver electricity to consumers' homes and then bill them once a month. This grid only enabled one-way communication of electricity from the utility provider to customers, which made it hard to adapt to the increasing and ever-changing energy demands of the 21st Century (smartgrid.gov). The Smart Grid is a term referring to an electricity transmission and distribution system that allows for two-way communication dialogue where electricity and information about energy used can be exchanged between the utility and its customers (eere.energy.gov). It is a network of communications, controls, computers, new technologies and tools, including smart meters, working together to make The Grid more efficient and reliable (smartgrid.gov).

Although the Smart Grid applies to both homes and businesses, for this study, the focus is on the business sector, primarily small to mid-sized grocery retailers. The strategic goal of smart meters on businesses is to enable utilities to interact with those businesses directly. Businesses with automation systems that serve electrical appliances such as heat ventilation air conditioning (HVAC) and refrigerators can have the energy consumption of each appliance measured and is available to both the business and their utility provider (Daley, 2009). As smart meters track power consumption hour by hour, the utility gains the ability to create differential pricing, charging more, say, for power that is used to run air conditioning during a summer heat wave when demand is high, and less during more temperate periods or overnight, when fewer appliances are in use. Certain devices that consume large amounts of electric power, such as lighting and refrigeration, will also be able to be adjusted to do much of their work during off-peak times (Daley, 2009).

This technology has the potential to benefit both the utility and its customers; however, utilities face opposition from people who see threats to health, privacy, and the security of the nation's Smart Grid (Edes, 2013). It is important to note that the radio frequency (RF) exposure from a smart meter is significantly lower than what already surrounds consumers every day. For

example, standing roughly three feet from a microwave results in 100 times more RF exposure than a smart meter. Talking on a cell phone results in 50,000 times more RF exposure than a smart meter. As the RF concerns pertain to grocery retailers, the U.S. Food and Drug Administration has stated that available scientific evidence shows no increased health risk due to RF (Gould 2013).

2.2 Grocery Store Layouts, Formats, Appliances

On average, supermarkets in the U.S. use around 50 Kilowatt-hours (kWh) of electricity and 50 cubic feet of natural gas per square foot per year. This is an average annual energy cost of more than \$4 per square foot. For an average-size (50,000 square foot) store, this equates to more than \$200,000 annually in energy costs and refrigeration and lighting account for over 50 percent of total energy use in the average supermarket (energystar.gov). In the grocery retail industry, where the profit margins are so thin, the ability to measure and track energy performance through the use of smart meter technologies could enable supermarket managers to save energy, thus save money.

Nearly everything in a grocery store is strategically located or utilized to encourage customers to spend more time in the store. It begins with the flow of shopper traffic to guide shoppers through the aisles in a consistent pattern, strategically designed with advertisements, specials, and sales to catch the customers' attention. In addition, vendors pay premium slotting fees to establish a visible position on the shelf. Through researching consumer shopping behaviors, strategies are formed to encourage shoppers to buy more.

Research Question

3. If the strategists who design the grocery store layouts took into account energy efficiency, there may be a way to decrease expenses to increase profit margin. Therefore, instead of seeking increased profits through increased sales, the aim is to seek greater profits through decreased costs. This study investigates:

How can smart meter technologies create value for grocery retailers?

Methodology

4.1 Literature Research

The information collected in the “Literature Review” portion of this study was accumulated from online resources. The Western Michigan University Library database, provided credible articles and journals that aided the formation of worthwhile questions for interviews. Other online sources, such as energystar.gov, provided insight to how businesses can be more conscious of energy usage.

4.2 Interviews

Qualitative research accumulated for this study was done through two face-to-face interviews and one phone interview. The first subject interviewed, Jim Newman*, is the Chief Executive Officer and owner of a local grocery supermarket. The second subject interviewed, Craig Loche*, is the Executive Vice President and Chief Financial Officer of a company that owns and operates extreme value grocery stores. The third subject interviewed, Mike Rhodes*, is a contract Chief Financial Officer who works closely with small grocery retail stores. For each interview, the men were asked a series of questions relating to sustainability, smart meters, and store operations.

Findings

5.1 Jim Newman profile:

For over 16 years, Newman had been the Chief Executive Officer of Fresh Supermarkets. He is an expert in retail operations, inventory management, merchandising, grocery sales, and is responsible for overseeing his chain of his eight Michigan-based grocery stores in all aspects of the business.*

Involved with the grocery retail industry for many years, Newman has experience with energy consumption from a business standpoint. Prior to the introduction of smart meters, Newman worked with Consumers Energy to conserve energy as a way to cut expenses for Fresh Market. Consumers Energy provided monthly reports that showed Fresh Market's energy consumption patterns. Newman admitted that he liked having the data, but it was not actionable information.

“Yeah, you know about maybe eight years ago, we tried something with Consumers where we get a monthly report of when we were using energy, but it was so hard to manage, that we just stopped managing it. But it showed us how much we were using at different times during the day, and how much energy we were using during the peak periods... It was not user friendly. All the information was there and if you had about five hours to figure it out, you could, but it's not worth it. There're other things we need to do. So if there was a report that was very user friendly that we could get to, and that would actually tell us the things we need to know, we could make more substantial changes in how we're using the energy.”

Newman has seized opportunities to save money through energy reductions. In several of his stores, he replaced fluorescent bulbs with LED lighting to cut costs but he sees the opportunity to conserve more energy. The compressors that run the entire refrigeration and lighting in the backroom and basement are two areas that he thinks can be more energy efficient. He suggested using motion sensor lighting in the backroom and basement or using a system for lighting that automatically turns lights on and off by setting a timer.

Newman's concerns about smart meter technologies circled around ease of use and obsolescence more than RF waves or privacy. He said, "As long as it has no danger to the environment or to folks, there is really no reason at this point for me to say, 'No we wouldn't want to do it.'"

Newman's bottom-line about smart meter technologies: "[We wouldn't use smart meters] if it took too much time or if it just became a project in itself for us and it wasn't worth it, but if you made it easy for me to do, I don't see any reason why we wouldn't."

5.2 *Craig Loche Profile:*

For over 20 years, Loche has held the position as Executive Vice President for several food broker corporations, including Save-More. His responsibilities include directing all accounting and financial processes and all human resources, planning and budgeting, IT and retail store operations functions. Prior to the two EVP positions he held, Loche was a corporate controller for a petroleum company and directed all accounting, tax, budgeting, internal control and cash flow processes.*

Similar to Newman, Loche has made adjustments in his grocery stores by switching to more energy efficient lighting, but heat ventilation air conditioning (HVAC) is where he believes improvements can be made. Being a financial expert, Loche's attention to sustainability exists because of the ability to save money. For instance, when asked about how much attention is given to energy consumption in his business, he replied, "We do monitor our usage because in a grocery store environment, as you know, it is one of our most significant costs." In addition, when asked what might make him pay more attention to his retailer's energy consumption, Loche responded, "I think definitely a cost basis. I mean, if we saw the cost going down and usage going down, that would get our attention for sure." Another way that Loche believes smart meter technology would influence his stores' energy consumption is having access to comparative information among other Save-More stores about each store's individual energy usage. He believes that knowing how much energy others are conserving would motivate him to conserve energy in his stores.

Loche explained that his and several other Save-More licensed stores operate with Consumers Energy's gas and electric services. Many of the other Save-More stores purchase their electric services from individual municipalities and Loche believes that Consumers Energy's implementation of smart meter technologies, with the ability to view energy consumption at the appliance level, is a potential market for Consumers Energy.

“Well if Consumers has the ability to report on appliance level, that would be very beneficial; however, if the City of Marshall isn't going to take it to the appliance level, they are just going to give you day part, what the City of Marshall would provide wouldn't be nearly as useful as what Consumers would provide us.”

No concerns cloud the use of smart meters for Loche in his store, but he explained that because his store is licensed, the choice to implement smart meters on his store requires acceptance by higher management.

Loche's bottom-line about smart meter technology: Comparing energy consumption with other stores of the same retail chain would be beneficial and Consumers Energy has the opportunity to reach new markets with the value smart meters provide.

5.3 *Mike Rhodes Profile:*

Mike has been a contract Chief Financial Officer for nearly ten years and works primarily with retail stores, especially mid-size grocery store chains. His main practices include rationalizing expense bases, optimizing treasury operations, evaluating financial records, and assisting in companies' decision making processes using financial statements and analysis.

Rhodes was asked what would compel his grocery store clients to be more conscientious of their energy consumption. He believes that the only way that retailers would call attention to their energy consumption is if there is a problem. He said, “...you compare it to other stores of similar size, and anytime you see anything like that, it jumps out.” Other than suspicious outliers, Rhodes believes the motivation for his clients to be conscious about their energy usage

is the opportunity to save money. With a background in financials, Rhodes knows that the opportunity for businesses to save money motivates; however, he says that the amount of money that can be saved must be worthwhile.

“I’m just going to look at what they’re paying in terms of techniques of reducing [energy consumption]. It might not move the needle enough for them to look at it. It’s all kind of relative. You kind of look at what their spend is, like their spend on utilities. If their spend on utilities is huge, then you may spend a little more time with it. But that is the only way it would be worth spending too much time.”

Rhodes believes cost drives every decision his clients make. When asked about whether his clients take into account sustainability when they evaluate their energy consumption, he said:

“You know, it’s probably me and I’m probably just pessimistic because people say [sustainability is important], and I’m just coming from a financial perspective, but people are only interested in money. So I’ve just never heard, with clients anyways, say that they are real concerned with [sustainability]. They think about money.”

Rhodes added that using smart meters as a marketing tool to promote being a sustainable retailer would not be effective. He said, “Utilities are just not a very sexy thing. People don’t think about it. What difference does it make?”

Rhodes’ bottom-line about smart meter technology: Customers are not interested in their retailer conserving energy and retailers are only interested in saving energy unless it will save them significant amounts of money.

Recommendations

6.1 Recommendations for Utilities

The first hesitation for businesses in introducing smart meters is the cost to implement. Though Consumers Energy is exchanging analog meters with smart meters free of charge, costs come emerge in different forms. For example, the flow of electricity must be halted for the meter exchange to occur. Even a brief power outage in a grocery store can cause damage to frozen and refrigerated foods; therefore Consumers Energy must be cautious to not create costs when implementing smart meters.

Consumers Energy must understand that the most important feature that the smart meters must have is ease of use. Simplicity is critical if Consumers Energy wants their customers to pay attention to energy usage and even more important if they want their customers to act upon the data. These people are business professionals, not specialists in the energy field, and at this point, it is not worth it for them to hire someone to scrutinize energy consumption. Data needs to be condensed, simplified, and made easy to read for any manager to glance at the data, and make an improvement within a few clicks of a mouse.

The next suggestion for Consumers Energy focuses on the essence of the commercial customers. Smart meters are going to be implemented on businesses and the reason people start businesses is to make money. Through the interviews, it is clear that every decision made within a business considers money; therefore, it would be wise for Consumers Energy to make their meters measure in dollars and cents instead of kilowatts per hour. The Chief Financial Officer of a company is more likely to respond to energy consumption if it is in terms of money.

Lastly, businesses like benchmarks. Smart meters would enable Consumers Energy to provide an “Industry Average” that would allow retailers to see how they compare to their competition or how they compare licensee to licensee. Mostly, it would simply attract attention to energy consumption.

6.2 Recommendation for Grocery Retailers

After analyzing the interviews, cost is a primary concern for grocery stores and sustainability is not. Smart meters will allow for more frequent data to which supermarkets will

pay more attention from a cost/control perspective rather than sustainability. The introduction of smart meters on a grocery store may provide great ways to save energy but, prior to implementing smart meters there are ways that retailers can be more energy efficient.

One way to cut energy costs without incurring large costs includes taking advantage of skylights or other natural daylight sources to reduce lighting during daytime hours. Setting back the thermostat in the evenings and other times when a building is unoccupied, and adjusting the temperature for seasonal changes are other ways. Installing occupancy sensors to reduce lighting and plug loads in storage rooms, back offices, and other vacant or low traffic areas may be expensive to install, but could eventually pay off in energy and cost savings.

Limitations

7.1 Inability to Test Meters

As with any research, there are limitations. The largest drawback present in this study was the inability to actually test smart meters on businesses. Initially, I wanted to replace several grocery stores' analog meters with smart meters and track the energy consumption change over several months; however, Consumers Energy does not have the ability to replace meters at any location at any time, so I was unable to test pilot meters at grocery stores. If analog meters were to have been replaced with smart meters at a few grocery retailers, I would have liked to see how the grocery store management would have reacted to smart meter implementation. Since that was not possible, I settled for interviewing management at grocery stores.

7.2 Few Interviews

Interviewing top management was insightful, but this is where the next limitation derived. It would have been more accurate to have a greater sample size because more interviews would have provided a more well-rounded understanding of different types of grocery stores and how they could conserve energy differently. For example, there may have been discrepancies between how a high-end boutique grocery retailer, such as Whole Foods or Spartan's D&W Fresh Market, chooses to save energy versus a limited assortment grocery retailer, such as Save-A-Lot or Aldi.

7.3 Website Unavailability

Another limitation occurred in the "Literature Review" portion of this study. Several journals or websites I attempted to open were unavailable. Perhaps there may have been more valuable information that I could not access. Overall, the information gathered provided decent insight as to how retailers might utilize smart meters to conserve energy, but there was potential for greater volumes of information.

Conclusion

8. Grocery retailers have been taking steps to become more energy efficient to generate more cost savings. If utilities want the commercial segment of their customers to continually be conscious of energy consumption, smart meters must provide simple, worthwhile, and actionable information. The commercial sector of Consumers Energy customers are business professionals who run their businesses to make a profit and most business choices come down to value. Value often is viewed as, but is not limited to money. Time is valuable and time that it takes to read charts and make energy adjustments is not viewed by top management as worthwhile unless it is simple to accomplish and generates a great enough impact. Put simply, business owners do not necessarily think about energy; they think about money so utilities must communicate the cost savings that are associated with smart meter technologies.

From these conclusions, another question arose during this study. I began to understand that smart meters can be of benefit to retailers, but the meters must be catered to business operations. Instead of relying on grocery stores to better manage their energy consumption, Consumers Energy must provide an easy way to do so if they want businesses to be conscious of their energy usage. If utility providers take into account the observations in this study, smart meter technology in grocery retailers could save significant energy and money.

Appendix

Interview with Jim Newman, April 4, 2013

J – I'm Jim Newman. I'm the president and CEO of Plumbs supermarkets. We have eight supermarkets in west Michigan and kind of oversee everything. The marketing, the operations, I oversee every part of the business at Plumbs.

T – Tom James*, I'm the Deli/Bakery Director responsible for all of the operations and everything to do with deli and bakery.

C – Do you have much experience or familiarity with energy consumption?

J – Well yeah, I've worked with the people from Consumers Power. We also purchase our power from an outside third party and we also work with Ventura Energy on energy savings, along with Consumers.

C – What's the third party used for?

J – They are able to buy power from Consumers at a lower rate because there's a government stipulation. That's how we get our power and we get it cheaper than purchasing it from Consumers.

C – Okay. How interested are you in sustainability and to what extent do you pay attention to your retailers' energy consumption?

J – Well we pay real close attention to our energy consumption because we have to pay the bills. And to the extent that we can afford to make the energy changes we are, because we understand the importance of everything being around thirty years from now. And so we do everything we possibly can to cut our energy consumption down. And Consumers makes a big deal about that with us, also. So they work pretty closely with us about it. Next Monday they're coming out to talk about windmills and different things.

C – So are you familiar with why Consumers Energy wants customers to cut back on energy consumption?

J – Not completely.

C – Okay and I didn't either. Well what Consumers Energy is doing over the next 6 or 7 years, they are going to be implementing smart meters on residential homes and businesses to basically, replace the old mechanical meters that are on our homes right now. So everything, all the data will be exact, will be sent automatically to Consumers Energy so they can record your energy consumption more precisely instead of having a meter reader come out and estimate your energy consumption. Right and Consumers Energy is interested in customers decreasing their energy consumption, which sounds odd, but when so many people are demanding energy consumption at the same time, so at peak load times, and it gets to the point where CE can't support the demand, CE has to purchase energy from the free market, which is really expensive. So CE would like to decrease those peak demand times and try to even that out over the day because the cost per kilowatt per hour is high during peak demand times and low during off-peak demand times. So customers can use smart meters to be more informed about, or educated about when they are using energy and how much it is costing them. So do you have any questions about that?

J – Uh, no, not at this time.

C – Okay, well what about sustainability? How important is that to you?

J – Um, that's real important to us from both personal, but also I think our customers are expecting us to do something along those lines. You know, they I think are getting to expect more and more, especially in energy, waste, and all those kind of things that we do our share of keeping things going for a long time.

C – What might make you pay more attention to your retailers' energy consumption?

J – What would make us?

C – Maybe something that would alert you when you're using so much energy, maybe something that could let you see how much your kilowatts per hour is costing you?

J – Yeah, you know about maybe eight years ago, we tried something with Consumers where we get a monthly report of when we were using energy, but it was so hard to manage, that we just stopped managing it. But it showed us how much we were using at different times during the day, and how much energy we were using during the peak periods and stuff and back then we

did things with our compressors and stuff to make sure things did go on defrost during the peak energy times, that the bailers, we didn't want to use the bailers as much if we could wait until I think it was 5:00pm or something.

C – What are bailers?

J – The cardboard crusher things. Anything that would use a lot of electric, we tried to not do during the peak times.

C – What about those reports was hard?

J – Um, to go to try to find them and then try to dissect them.

C – Was this on paper?

J – No, it was on my computer. I'd dial in to Consumers.

C – But the way it was presented was not user friendly?

J – It was not user friendly. All the information was there and if you had about 5 hours to figure it out, you could but it's not worth it. There're other things we need to do. So if there was a report that was very user friendly that we could get to, and that would actually tell us the things we need to know, we could make more substantial changes in how we're using the energy.

C – If you knew how much it costs for energy and the cost savings, would increase your attention to energy consumption?

J – Absolutely.

C – How?

J – Well we wouldn't manage it if we knew we were paying 10 cents per kilowatt hour during this time and 5 cents there, I mean I know what we pay for energy on a monthly basis. But not on a daily basis and not on an hourly basis.

C – Would you want to know?

J – If it could reduce our costs, absolutely.

C – If it's significant enough?

J - Uh huh.

C – So like at what point is it worth it?

J – Right, and I don't know what that point is but you know, I would imagine it would be pretty significant.

C – What kind of lighting ambiance does your retailer use and how do you achieve it?

J – In a couple of our stores we put a bunch of LED lighting in our perimeter. We just took out the fluorescent bulbs and put the LED lighting in which is supposed to cut half of our costs. We completely revamped two of our stores to... They used to have mercury vapor and now we went with the energy efficient lamps and relamped the whole two stores. And of course we've changed from the energy saving ballasts in all of our ceiling lights and now the next step will be to go to our all our frozen food cases and put the LED lighting in versus what we have, we had to do it in steps.

C – Are you getting assistance to fund those things?

J – Yes, from Consumers.

C – What are some areas you believe your retailers could use less energy or become more energy efficient?

J – Less energy...boy it would be hard to say, um, like in our bakeries, we've taken out a lot of the equipment. We just do thaw and bakes and we don't use mixers or sheeters. There's a lot of energy, our equipment used to take a lot of energy to use, so a lot of that is already gone. Boy I don't know, probably the lighting in the stores, the lighting in the back rooms, when can they be on and off? Our biggest use of course is probably our compressors that run all of our refrigeration. Is there a better way to run that equipment than what we're doing? Like take everything off the defrost cycles during the peak hours because the on and off would really suck energy, so we've done that. We have a lot of motion sensors to turn lights on and off, like in a lot of our backrooms and basements.

C – I've seen at a few retailers that the frozen food aisles have sensor lighting. What do you think of that?

J – I think it's a good idea. I was down in Florida and saw that for the first time. As you walk down the aisles, the lights go on. So if no one is there, it doesn't have to be lit.

C – Would you want to see how you compare to other retailers in the food industry for energy consumption?

J – Absolutely, because it is a benchmark for us. You know, right now, I couldn't tell you if we're doing good, bad, or whatever. So if there were other things we could benchmark against. We could know, like, hey look, we're in the top 20% or maybe we're in the bottom 20%. So what are the top 80% doing that we're not doing so that we can get better.

C – Would a competition among retailers to save energy motivate you to adjust your stores' energy efficiency?

J – Money would be the driving factor of that, I mean as far as competition. Our biggest goal would be to save energy. Period. Whether there is competition or not.

C – Save energy or save money?

J – Well if I'm saving energy, I'm saving money, but if you're saving energy, not only the cost of the energy, but you're not running equipment that the wear and tear on equipment, that, I mean there's a whole bunch of things that play into it besides just the electric that you're paying for so if bulbs aren't on, they have a longer shelf life. If equipment is running that shouldn't be running, it wears out faster. So there are a lot of different things I think you can look at. A competition, I don't know. It would be nice to be in competition of there's a nice prize or something, but that wouldn't be the driving factor doing what we would want to do. I think it would be better if we had a competition between our stores. Let each store compete against each other. Let the customer know what's going on so they know we are doing stuff to save energy and that kind of thing. But I think probably within our own company would be a stronger motivator than us against a Meijer or Walmart.

C – Do you think customers would react to using sustainability as a promotional tool?

J – I think there is a group out there that would but for the most part, probably not right now, because I think a lot of them are not educated enough about what is going on. I mean, in our area you could talk about it and not too many folks would know what you're talking about so they would need more education. So if you did that, we would have to educate our customers as to what we're doing and why we're doing that.

C – So going back to a smart meter, which could provide more specific data, how specific would you want energy consumption data?

J – Maybe if we knew what equipment or appliances were using the most energy like a top to bottom kind of thing. But also, I would probably want to know some kind of report that told me hourly what we were using and where're the peak times, because we know what equipment is running during that time so how do we get the energy down maybe at peak times and shove some of those tasks that have to be done, into off peak times, or what are we doing and why are we doing it? Maybe we're just doing it and wasting energy so if I could have something that says the electronic oven uses this; compressors use this. But now I can look and go by store, what are we actually using and that we can sit down with a store director and say, "Hey look. This is what we have we've got to get the energy consumption down during this time, these hours and get some of it to off peak. How do we do it?" So that gives us something we can do a plan of action on instead of just guessing.

C – So you would want two lists. One would be like time of day energy consumption, and the other list would be overall?

J – The second would be by appliance. Like what does this use? So when we look at it, we can say let's move this thing to this time and I don't have to worry about all this other stuff because this will do it.

C – So when you tried doing this data report a couple of years ago with Consumers Energy, did they have data listed like that for you, or what was it like?

J – It was total company and it kind of charted it...off peak times, on peak times. And it wasn't, I mean really unless I was an IT person, which I'm not, you had to do a lot of drilling down for it and it just wasn't worth doing after all. You just kind of said okay, let's try and make these

changes and say forget the reports because we don't have time to spend five hours a week on it, so let's just try to make as many changes as we can and go from there. Like right now, we monitor our electric bills because we made some changes with the lighting and made the big change with the ceiling lights at Newaygo and our Muskegon Heights store, we looked at it and went, "Okay, look how much it lowered our electric bill compared to a year ago," that kind of thing. But there was no specific measurement.

C – When you said you didn't really have five hours a week to spend on the data, how much time would you be willing to put in?

J – The least amount of time as possible. We do some stuff with Dashboards, I'd like to be able to look at it and see just the key indicators by store and evaluate what happened at each store, you know what did we do? What is our goal? What is our budget? This is how we did and this is how we compared to what we said we wanted to do.

C – What would hold you back from using this technology?

J – I don't know anything, other than there has been some talk about concerns. But I can see nothing other than if I didn't see a benefit to it. If it took too much time or if it just became a project in itself for us and it wasn't worth it, but if you made it easy for me to do, I don't see any reason why we wouldn't in the business. Now I'm not sure about personal, you know, I've got to do more reading about it but from a business standpoint, I don't see why we wouldn't.

C – So, the last question is what are your concerns?

J – I really don't have any concerns from a business point of view other than one of the points they [in the articles I read] made, and I don't know, was that they are going to install all of these smart meters now but they are going to be obsolete in a couple years, so those would just be questions that we would want to know before investing into the technology. There is some stuff in there that says people are going to lose their jobs because meter readers won't have anything to read any longer, but those things always come with change, with progress. So but you know as long as it has no danger to the environment or to folks, there is really no reason at this point for me to say, "No we wouldn't want to do it."

During later conversation...

C – Are there any areas in the store that you can think of, maybe like deli or bakery?

J – Lighting. We are open in some of our stores 24 hours, but you don't need all the lights on. Right now we have to manually go and turn some of them off. Alright, how often do you think that happens? Probably never because they are so busy stocking, but if you had a timer that went off where you could automate things, we would be more efficient. I think it really would help, but you can't use the cardboard bailer from this time to this time so save the cardboard. Well the thing is still on, some plug, so somebody might—you know—because you can't be the energy police, but if there was a way to automatically shut that off, so between those times it didn't work, then you will surely get the energy savings then. So yeah, the more different controls, yeah we put a control in my office, it's a simple thing before. Now I have different temperatures at night, it goes up in the summertime at night and starts cooling down at 8 o'clock in the morning.

Interview with Craig Loche, April 4, 2013

Cara – Are you familiar at all with the Smart Meter Technology?

Craig – I've heard of the Smart Meter Technology, yes.

Ca – Well what Consumers Energy is doing over the next 6 or 7 years, they are going to be implementing smart meters on residential homes and businesses to basically, replace the old mechanical meters that are on our homes right now. So everything, all the data will be exact, will be sent automatically to Consumers Energy so they can record your energy consumption more precisely instead of having a meter reader come out and estimate your energy consumption.

Cr – Yeah, it goes further than that, in that in half hour increments it will give you the option to choose so they can plan better, they can utilize the smart grid better, and my understanding is that some of the technology associated with smart meters will give utilities or homeowners/business owners, the ability to increase or decrease their consumption from remote locations

Ca – Right and Consumers Energy is interested in customers decreasing their energy consumption, which sounds odd, but when so many people are demanding energy consumption at the same time, so at peak load times, and it gets to the point where CE can't support the demand, CE has to purchase energy from the free market, which is really expensive. So CE would like to decrease those peak demand times and try to even that out over the day because the cost per kilowatt per hour is high during peak demand times and low during off-peak demand times. So customers can use smart meters to be more informed about, or educated about when they are using energy and how much it is costing them. So do you have any questions about that?

Cr – No, I'm good. I would just offer that eventually, it's my opinion that eventually we will be billed, both as business consumers and individual consumers; we will be billed at different rates for peak load and off load.

Ca – Yes. Okay.

Cr – That’s just my opinion. Currently we’re already doing that, businesses will hire to get peak demand incentives then non-peak. This will be more precise. So go ahead.

Ca – Okay, thank you. So how interested are you in sustainability? And to what extent do you pay attention to your retailer’s energy consumption?

Cr – You know, we really have not embarked on anything from a sustainability perspective. We do monitor our usage because in a grocery store environment, as you know, it is one of our most significant costs. Now we are doing things, Cara, we’re doing things systematically throughout stores to decrease, like going to cede lighting versus T12, ECM motors in our cases, where LED lights are appropriate we are doing those. So from sustainability on that portion, those are the kind of things we are doing to keep our load and energy consumption down.

Ca – But why is that? More so for price? Or for sustainability?

Cr – Price.

Ca – What might make you pay more attention to your retailer’s energy consumption?

Cr – In terms of sustainability perspective?

Ca – Just any perspective. If you knew maybe...how much you could save, or like cost savings, would that increase your attention to energy consumption? Or maybe competitors’ cost savings and where you fall in that?

Cr – I think definitely a cost basis, I mean if we saw the cost going down and usage going down, that would get our attention for sure.

Ca – So if you knew how much is costs for energy and you knew your cost savings, that would increase your attention? Because currently, right now, do you have anything besides a monthly bill that indicates how much energy you’re using?

Cr – No, we don’t. But I think with the smart meter technology, when it gets to the point where we can have more frequent information, we would pay more attention to that from a cost/control perspective, rather than sustainability.

Ca – Okay, how detailed would you want that information? Would you want it by appliance, would you want it by groups of appliances or equipment?

Cr – You know, I would say if we could have it by appliance, that would be the optimum.

Ca – It wouldn't be too much data?

Cr – No. Well, okay, let's define appliance, we're talking a business setting, we're talking a grocery store, if we could distinguish between the types of refrigerated cases we have in the store, that would be advantageous to us. If we knew what our 60 ft frozen coffin consumption was versus our meat case consumption, versus our produce case consumption, versus our back room freezer, that's information that would be very useful to us in order to control our energy costs. When I'm talking appliances, I'm not thinking about things like the microwave in the break room.

Ca – No, okay, that's not what I meant either. I meant like your meat slicer in your deli.

Cr – We operate Save-More stores so we don't operate delis. We don't have bakeries.

Ca – Okay. Um, what are some areas you believe your retailer could use less energy or become more energy efficient?

Cr – HVAC always comes into play.

Ca – What does that stand for?

Cr – Heat Ventilation Air Conditioning. So that would be the rooftop units and the units that run the heat throughout the store and the cooling. I think that's a pretty big consumption area.

Ca – You said you've made some changes to your lighting in the stores. Can you tell me more about that?

Cr – Yeah, we've switched from the old standard heat balice to an all-electronic balice. And T lighting, which has a longer life as well as the balice does not pull the energy as the old style did, where it had to warm up their engines to start, so they (the new balices) start quicker, so they don't take the demand that that heat balice did. It does a couple things. It actually reduces the heat load from the lights and the balice in the store.

Ca – How long ago did you guys do that?

Cr – We've been doing it systematically for the last 5 years, I think, something like that.

Ca – What initiated it, that change?

Cr – Well one is energy consumption. And two is the fact that the government, about 7 years ago, announced that T8 lighting or T12 lighting would be obsolete and the old ballast would be obsolete by like 2015, 2014, something like that, and you couldn't get those products to relamp your store or fix lighting that was out.

Ca – So did you get any government funding to change those?

Cr – In some cases we did. In some cases we chose to do it on our own because in some cases it was less expensive for us to do it than get the funding.

Ca – As it relates to other retailers, would you want to see how you compare to other retailers in the industry in terms of energy consumption?

Cr – We would want to see how we compare to other Save-More licenses. Our total square footage in a Save-More store is about 18,000 square feet. It's a small footprint. You take a supercenter that's 80-100 thousand square feet, knowing what their consumption at a Meijer or a Wal-Mart Supercenter wouldn't mean anything to use because we're so different.

Ca – Would a competition among retailers to save energy motivate you to adjust your store's energy efficiency? But maybe you want a competition among Save-More stores?

Cr – We would want a competition among, with similar types of stores, yes. And that could include Aldi.

Ca – How do you think customers would react to a competition among Save-More stores? You know how United Way will do the thermostat-like competition measurements? Do you think customers would be interested or how do you think they would react to sustainability as a promotional tool?

Cr – See the type of customer that we try and attract to a Save-More store are low-income households and they don't care what we're doing as long as we give them a good quality product

at a price that they can afford when their food stamps and public assistance come out. I don't think they care; not our customer.

Loren – I would agree with that. They are not looking for those kinds of things, only if it would relate to them getting lower prices. But I don't think they put the 2 and 2 together right.

Ca – Would you consider doing that from a promotional standpoint to make lower prices?

Cr – We would consider that, yes. But you see here, again, we are different. Save-More licenses are different than other grocery retailers out there.

Ca – Why?

Cr – By that I mean that we, the licensees, purchase our groceries from Save-More. Part of our licensing agreement, similar to McDonald's and Burger King and other franchises have is they tell you what you are going to charge for your groceries. So if Alliance in our non-retail stores did something to drive down energy costs, our customers are not going to see lower prices because of the initiatives that Alliance took. Save-More would have to take those initiatives. They would have to reduce their energy costs to incur more product costs and then they would be the ones who have to do the promotion. Contrast that to an Aldi, to a Meijer, to a Spartan Store – not a Spartan Store, that's not a good example because a lot of those are licensees, but a Kroger, a Wal-Mart Super Center they could do these initiatives, drive their costs down, lower their prices, and then promote that to the public. Understand the contrast?

Ca – Yes.

Cr – Okay, I mean we don't control what we sell it for.

Ca – Okay, I did not understand that initially. This is good. And you guys have such a unique target market, that, correct me if I'm wrong, but it's probably a less educated, especially on a topic like sustainability, seeking price over anything else.

Cr – Yes. That's right.

Ca – Well as a final question, what would hold you back from using this technology in the store?

Cr – Cost to implement. See here again, we are, the Save-More business model is a very simple one. There are not a lot of frills. You're not going to see lobster tanks in our store. We operate on a much lower gross margin and thus a much lower operating cost structure than what a super center, or a Meijer, or a Kroger or even a Spartan affiliate would operate under. Whereas we're operating with gross margins of say 19-20%, those other retailers are probably pushing 40%. They have to cover all the costs of all the things that they do. You know, similarly, you take an organization, Wal-Mart, Meijer, Kroger, they're a much bigger organization than Alliance is with our nine retail stores, and so they can afford to invest a lot more money into these types of initiatives, than Alliance with its nine retail stores could. So you know, the investment would certainly be of something that any Save-More operator would have to weigh very heavily with the return on that investment.

Ca – What if this was something Consumers Energy would cover the cost on? That they would implement the smart meter and the technology to back it so that you would get the data about your energy consumption without costs relating?

Cr – I mean certainly I think that would be obviously more interesting to us at this point because energy is of the forefront now and obviously everybody's watching it, so that initiative I think would be positive and would be something that. We'd certainly take a look at it at that point. Of our nine stores, we've only got Consumers in three or four. In some it's only Consumers gas. It's not electric. A lot of it is DTE or individual municipalities so we might have like a Hillsdale would be Consumers Energy and then we have quite a few that are DTE and then we have Ohio, Cleveland Energy and a couple there. So, Consumers would not, on the electrical side of things, affect the majority of our stores. Very few it would affect. If the other organizations were to roll out similar technology, that would be of interest to us. In order for it to be useful, in some fashion, the various utilities, there would have to be a standardization of some sort in the reporting format.

Ca – What do you mean? What sort of reports do you mean?

Cr – Well if Consumers has the ability to report on appliance level, that would be very beneficial, however, if the city of Marshall isn't going to take it to the appliance level, they are

just going to give you day part, what the City of Marshall would provide wouldn't be nearly as useful as what Consumers would provide us.

Ca – Is City of Marshall an independent municipality?

Cr – Yes. They have their own electric power generation capacity.

Ca – Do you know where they generate that from?

Cr – Some of it they generate from the City of Marshall. They have their own generators. And they get a good portion of it from the agency, the Michigan South Central Power Agency in Litchfield Michigan. There's a huge electric generating plant in Litchfield and when they hit load, as Consumers does, the City of Marshall has to go to the market. And the reason that I am somewhat informed on this is because Coldwater is the same way, where our company is located, we have our own power generating and I'm on the board of directors of the utility here so that's how I have some insight into some of this stuff. But the point that I was working towards is that all of the various power generating utilities, all of the companies using smart meters have to have similar technology in that they would either all have to drill down to the appliance level to be beneficial for us, otherwise the comparison wouldn't be good at all.

Ca – Well do you have any more questions for me? That's all I have at this point.

Interview with Mike Rhodes, April 9, 2013

M – Name is Mike Rhodes. I'm a contract CFO so I serve a couple of different industries, but I primarily work with retail. I've worked with a lot of grocery store chains. And I've been doing this for about 10 years. And then most of my clients are in the middle market sized companies, so they may have sales anywhere from 10 million to, probably the biggest one is 180 million. So a lot of times as a contract CFO, I go in on a part time bases, situations where they have a controller but they need some more skill sets to supplement the controller's skill sets. And then sometimes it's project-type work.

C – What would retailers want to know that could help them save money or even out energy consumption demand?

M – Well I work with a lot of smaller sized retailers, so the larger ones would have it down cold, but for the ones that I tend to work with, they would primarily just look at the rate that they're paying and I think that now with deregulation you can go out and purchase, you know, pool, so I think a lot of times, owners will look at what they spend per metric, or whatever their measure is, and then they go out in a pool and purchase at a lower rate. Like it would be something where someone has a lot of buying power, they get on their plan. But then they also have like these third party organization that they go to. There are some firms, like there's one in Traverse City and they way the operate is they look at ways that a company can reduce spending and then they get a percentage of the savings. So they don't sell anything themselves, but they'll help direct you to purchase this through them, purchase this through them. I'm pretty sure you can do it with gas, I don't know if you can do it with electric, too. I've actually got one small client in Ohio where I've got their utility bills and I'm going to check with somebody whatever the metric is, just to see if any opportunities are there.

C – How interested are you in sustainability and to what extent to you pay attention to the energy consumption of the retailers you service?

M – In terms of sustainability, to be honest, not much. I just really look at, for clients, if it looks as though there's any opportunity... I don't have enough background to look at say the utility savings from using different types of refrigerator or freezer cases or things like that. There are lots of tricks where, people are familiar with them, I'm not, but where you, there are ways, I'm

trying to remember one thing I heard once. Part of your charge can be based on your peak usage, so there are things people will do to manage to that because like if they know when the peak usage is, they try to manage so that the peak usage is lower.

C – That’s true because during peak usage times, the cost per kilowatt per hour is significantly more than off peak demand times.

M – Right.

C – Well in the realm of sustainability, do you think it is important?

M – You know, it’s probably me and I’m probably just pessimistic because people say that, and I’m just coming from a financial perspective, but people are only interested in money. So I’ve just never heard, with clients anyways, say that they are real concerned with that. They think about money.

C – What might make you pay more attention to your retail clients’ energy consumption?

M – If there’s a problem, if they say there’s a problem, or if I can see a relative aberration in what they’re paying. And normally what I would do in those circumstances, it would be pretty basic. Again, I’d look at the rate they’re paying or I’d find a consulting firm that can evaluate it all and recommend options for them.

C – So would it be safe to say that if you knew how much it costs for their energy and how much they could save...er, tell me what your next step would be.

M – Well if it’s something that I can see aberration in what they’re paying and so it would be in relationship to other expense items on a relative basis, like a percentage of sales, where you can drill down to uh, like if you’ve got the size of a store, square feet, you look at their utility usage and you compare it to other stores of similar size, anytime you see anything like that it jumps out.

C – How often do you deal with clients buying new equipment or lighting or cases, and with that, is there anything involved with energy consumption, when buying new appliances?

M – They do. Right now, since the grocery retail store chains, it's a real small margin business, so the biggest thing they look at is the cost. There are some that spend a little more time, like some will change lighting so it's more efficient, but in terms of when they actually like purchase new cases or new mechanical pieces, they are basically interested in cost.

C – When do you get to see if your recommendations are really rewarding?

M – A lot of times it's hard because people are so busy. It's really a gut feel. So say like with Jim Newman, he would know if there are any sort of cap backs, he would know does it make a difference if you go with this versus that. People are so busy that in terms of following up, it may not happen.

C – For some of your clients, what are some areas you believe they could use less energy or become more energy efficient?

M – And again, I'm a little ignorant in this area. But say for this one client I have, this small caster manufacturer in Ohio and I'm just going to look at what they're paying in terms of techniques of reducing that, it doesn't move the needle enough for them to look at it. It's all kind of relative. You kind of look at what their spend is, like their spend on utilities. If their spend on utilities is huge, then you may spend a little more time with it. But that is the only way it would be worth spending too much time. So a company like that, with sales about \$10 million per year, and then with a lot of the grocery chains, they may be from \$50 million in sales to \$170 million, at least the ones that I've worked with.

C – Well I guess you're kind of special because you can compare how other retailers in the food industry use energy consumption. Do you ever use those findings and make recommendations to other retailers? Or is that confidential?

M – If it's something where I see client information and then I'm at another client and that client is not a competitor of theirs, and I don't reference the initial client by name, if I use it as my own benchmark, you know, like say, "You have an opportunity here," people don't have a problem with that. But they would if you're working with someone who is a direct competitor, then I wouldn't feel right about it. But on the utilities side, I'm just not too well versed with it.

C – Do your clients ever inquire about other clients about ways they may be saving energy? If so, do you ever see motivation to compete to lower energy consumption.

M – I’ve never had anyone ask me about utility usage, but it would be one thing where a client would expect me to look through the different expense categories and outline and delve into it a little bit more. But on the utility front, not too much.

C – Do you or would you like to be able to see a broken down energy consumption report by appliance to see where energy is being used?

M – I don’t and I wouldn’t really care to because for me to do something, it would really have to move the needle for the client and I don’t have particular expertise in that and there are too many other areas where you can save more money. It’s basically like something where you focus like is something an outlier? Are they an outlier? If they’re not an outlier, then I don’t mess with it anymore.

C – I was curious because in the low margin grocery industry, there’s probably not a lot of needle moving.

M – Sometimes, you know sometimes, there is because with a lot of changing. I know with Plumb’s when they changed their provider or their source for utilities, they did experience dollar savings. So there really are savings out there and it is a big area for people. You know, you look at health care house bills and manufacturing plants, it is a big thing to move the needle for companies. Like for me I just know when it’s time to ask somebody else, “Hey you need to take a look at it,” because I, myself, wouldn’t normally look at it. But I’d need to know if it’s an outlier.

C – How do you think customers would react to sustainability as a promotional tool?

M – From what I’ve seen, if something would help, they’ll promote anything, but just with clients I’ve got, with sustainability on the utility front, it wouldn’t get them traction of anyone. Well if it’s something say for Whole Foods and they say they have specific energy sustainability plan, they might be the exception. But for the most part, they would stick with things that are more visible like paper usage, and shopping bags and things like that. They would only do things that are visible. And even like, and my perspective may not be right, but even with

sustainability, Whole Foods wouldn't do anything with it because it comes down to money, unless they get a lot of good publicity from it. I just don't think they'd get very much bang for their buck.

C – Why?

M – Utilities are kind of boring. If you've got something that is literally going to go in a dump if you don't do it, something a little more tangible, but once you start getting in the realm of...where it crosses the line, like maybe with coal usage. I don't know. Utilities are just not a very sexy thing. People don't think about it. What difference does it make? But I just don't know how much mileage you'd get out of energy/sustainability. The vast majority of firms that I've seen, they're only concerned with money. It's just the way it is.

C – So the last question is, which you've kind of already answered is, what would hold you back from using this technology?

M – It doesn't move the needle. I don't have a lot of expertise with it. And if it's not something that materially benefits the client, I won't even focus on it, because it wouldn't be a high impact. But with smart meters, they could be helpful, you know for retailers, if they could isolate by equipment what the energy usage is, because then that would be helpful. Right now the retailer would get one figure for their energy usage. I think people probably would take a look at it because then they could find older equipment that is being energy hogs. So people probably would.

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