



CRE Tech Talks

Episode #13: The Value of Solar: It's not just about cheaper, greener electrons



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Scott: Welcome to the podcast. This is Scott Sidman, your host, senior vice president of Building Engines. Our podcast today is about something that we typically don't talk about.

Is commercial real estate in the United States ready to harness the value of sunlight to provide affordable fixed rate energy to power their offices?

Although in our podcast we've tended to focus on software based commercial real estate technology, it's energy related technology that perhaps has the most potential for the greatest impact on the bottom line, and perhaps solar is ready for prime time and something more owners should consider.

How do you know if your building is a candidate for solar? What's involved, and what the potential savings are. Our guest today is here to help answer those questions. Phil Cavallo is the CEO of Beaumont Solar, a full service provider of renewable energy systems based right here in Massachusetts.

Phil, welcome to the podcast.

Phil: Thanks for inviting me. Great to be here today.

Scott: Terrific. Well, maybe for us to get started, the way we typically do this is if you could tell me a little bit about yourself, your background.



Phil: Sure.

Scott: How you got into this solar and something interesting.

Phil: Interesting way to back into this business, I happen to be a electrical engineer by education. I came to Massachusetts years ago to work for Raytheon.

Raytheon being a Department of Defense company, I quickly realized that there were other things that I wanted to do with my life other than build ship or missile systems for a living.

I took the entrepreneurial route and decided to get into an area called, "CAD/CAM", which also happens to be a couple of companies that were based here in Massachusetts.

One, Applicon, and its competitor, Computer Vision, pretty famous companies of the day, back in the early '80s. I spent a bunch of years in that industry jumping from one company to another that actually went IPO and were very successful.

Then I moved into telecommunications, which also had its heyday, and as everybody knows the .com crisis hit somewhere around the end of 2000 and with that it was time to move on and to get into some other space.

Eventually I ended up deciding that I wanted to build a community-based company. I didn't want to travel the world, and I was managing resources in India and a bunch of other places around the globe.

My wife and I decided that we were going to buy a small little sign company that was very profitable based in the humble city of New Bedford, Massachusetts. Which happens to be one of the top-grossing fishing ports in the state and in the country, which people don't know.

It's about a billion dollar industry in the city of New Bedford. We bought the sign company and about three months after I bought it -- and a lot of people ask me this, "Boy, that was really clairvoyant for you to take a sign company and turn it into solar. Did you know that ahead of time?"

The answer is no, I didn't. I wish I could take claim for that, but I wasn't that much of a genius, but once I got there I realized that we have crane trucks and we have construction crews, and we have people that can put electrical equipment up on the roof of the building. Why don't we just try doing this solar thing?

One of the previous owners who is still with me today, 10 or 11 years later said, "Yeah, well we can give it a shot." The magic ingredient was I was the electrical engineer so I understood how this could be done and certainly a sign company wouldn't have a clue.

A lot of people laughed at me when I first said, "I'm going into the solar industry." Today -- 11 years later -- we've grown our revenue by tenfold, more than tenfold, and the company is very successful. We sold off the sign business three or four years ago.



Scott: Wow. What an amazing story. That's an incredible trajectory for a career path. We also think in the software business about "software pivots," companies starting out doing one thing and then realizing it's not the market they thought they were in and then pivoting and adjusting and growing. That's an amazing pivot.

Phil: Well this is what happened really. I said it was "same skills, different market." When I bought the company I said, "You know, we have 1,800 customers -- this company's been around since 1918 -- and they're loyal customers, great reputation of a company. What else can we sell to them?" That's how we got there.

Scott: Well great. Tell us about Beaumont Solar in its current iteration.

Phil: Well we're a company today of about 70 people. We have a long track record of being in the solar industry as the intro says. We started at about 2007 in the solar business at its infancy in Massachusetts.

It was already rolling pretty good in California, but Massachusetts was just getting off the ground. We were able to start doing off-Broadway performances, which I call residential, and doing sort of some smaller five kilowatt systems.

We said naturally we're going to go into commercial. Now we're a 100% commercial company doing commercial and utility-scale solar power plants.

Large office buildings, large warehouses, big green fields, and a large project that we've built, 20,000 panels on 31 acres providing power to the town of Lakeville and the Silver Lake Regional School District.

Very exciting business for us to be in.

Scott: How many projects have you done all together?

Phil: Our total number of projects around 200 and about 35 megawatts total installed at this point in time.

Scott: Terrific. Let's jump and talk about solar in the commercial real estate space and doing that for the long term.

Phil: Exciting.

Scott: It sounds like there's a lot going on there.

Phil: It is. It's interesting, Scott, as it relates to your business because, when you think about managing resources in a property, you think about office equipment and inventory. You think about your infrastructure and how you're managing that property. You also think about energy.

When you start thinking about energy and you go, "OK, this building has a footprint of 400,000 square feet," for example, a building of that size, in terms of footprint not overall square footage



of the building itself, that has a pretty significant power consumption ratio. We look at that and say, "Well, you know, we could probably put three or four megawatts on a roof of that size."

That would generate somewhere around five million kilowatt hours a year, which is a sizable piece. When you're thinking about managing facility managing, its energy consumption, you're actually producing the energy at the source of the load. It's the most efficient way to manage a property.

That way you're not paying the wires' fees. You're not paying the generation fees for some coal plant or some nuke plant or some other gas-fired power plant to generate the power with a fossil fuel, and then ship it across the wires to get to your facility. You're generating right there.

Scott: It seems to make a lot of sense. What are the misconceptions or what are the things you're fighting right in this space of it?

Phil: General misconception is, "Oh, not on my roof." We get major accounts that call us and say, "Hey, we're very interested in solar, but we're really afraid of putting solar on our roof."

The answer is, first of all, one is, "We're worried about snow load. We're worried about wind load. We're worried about the age of the roof." Then they're worried about fire.

We can take those and segment those out, if you like, to get to what the real issues are. The bottom line is we just completed a 2.2 megawatt system on a facility here in Southeastern Massachusetts for Martignetti Companies, which is a very large regional distributor of fine wines and liquors.

It's 2.2 megawatts. We ended up with four pounds per square foot of collateral load. They designed the building for eight pounds per square foot of collateral load.

We happened to get in the project a little bit late. It was a brand new building. We said, "Well, gee, you don't really have to beef up the steel that much in this building in order to accommodate solar."

Solar, today, has wind deflectors on it. It has low profile. When you look at a design in a monolithic way, it has a lot less wind drag, which means that you don't need as much weight to hold it down on the roof.

It's non-penetrating. It's non-intrusive solar so that you're placing it on the roof and you have sacrificial layers underneath of the solar to protect the roof material. Four pounds per square foot is not a lot of weight spread across a very large area.

Scott: Do you find there's a different conversation or perhaps an easier conversation for new construction or what you get in the new construction phase versus the built environment?

Phil: Most of the design that we do is retrofitting existing, but new design, fantastic, because you can specify everything right up front, the type of roof material, the structure, even where the rooftop units are going to go, the air conditioning and the heating, etc., that are on the roof, which can be an obstruction, and gas pipes and things of that nature.



Scott: Is there also resistance based on the capital outlay? The perceived capital outlay that a company has to go to?

Phil: The thing that's interesting about it is, yes, generally, that's true. When the CFOs and the CPAs look at it and they go, "Well, we will never get a return on investment that is equal to at/or greater than what solar is providing today."

Especially in aggressive solar states like New York state, Massachusetts, Rhode Island. Places that have typically high power values and decent incentives to do solar. They look at it and go, "Gee, I'm going to get a 33 percent rate of return on this. This is unbelievable."

The capital and the value of the capital outlay and the cost of the alternative uses of capital, seem to really weigh in favor of solar, once the analysis is done.

Scott: That seems to make a lot of sense. Typically when you engage a customer, when they're thinking about starting a conversation with solar, is it because they've done that kind of thinking analysis on their own? Or is that you bringing that to them?

Phil: We bring that to the table. I'm glad you brought up capital. The other option, which is very poorly understood in the industry, in general, is that we can bring a third party to the table, who will own and operate the system. Then you can buy the solar power from that third party at a discount over a 20 or 25 year period.

You're not even using your working capital or a line of credit to pay for the system and go through it. Now, it's always more beneficial if you have the tax appetite to own it yourself. If you really have the tax appetite for it, it's always more beneficial to go that way.

If you don't or if you happen to be a nonprofit or some other situation, then a third party owns it and then you just get the benefit of cheap power. Lock in your power rates, which is a big concern for folks, is locking the power rates in so they don't have this escalating variable that they don't have control of.

Scott: Why don't we stick with the financial model a little bit and talk about, I know there's subsidies that are available, textbook kind of a tax implications as well. Some of the other drivers there.

Phil: The federal tax implications are that purchasing a system, immediately once the system is turned on, it's available for a 30 percent investment tax credit. It's a million dollar system. There's actually going to be relieved one for one \$300,000 on your federal tax returns.

In addition to that, you will also get what's called a five-year modified accelerated cost recovery schedule, which is a depreciation schedule, with a 50 percent bonus in place up front. That's good through 2020. That same million dollar system would then have a basis of \$850,000, 50 percent of which you can take as depreciation in year one.

Scott: Wow.



Phil: It's very accelerated in terms of you looking at the cash flow and saying, "All right, if I have a tax liability and I can take advantage of depreciation also from a capital equipment purchase," it really starts to accelerate.

Scott: It almost sounds too good to be true.

[laughter]

Scott: Reducing your carbon for third ride, you've got this tax basis...

Phil: Lower cost of power.

Scott: ...low cost of power and that's the biggest expense item, right?

Phil: If you think about it Scott, if you pay for this system in three years or four years, after that, the next 21 years, you have free power. For 21 years.

Scott: Right, which is pretty incredible.

Phil: With no escalator on.

Scott: I would think also, from a leasing perspective, these days where tenants have a lot more social awareness and social consciousness that feeds into their leasing decisions that this would also help in terms of selling space these days.

Phil: It certainly would. If you were a building owner and you were leasing out office space, and you said, "Hey, our building is 100 percent renewable and it's powered by this power plant that we have, etc." I would think that socially conscious companies would say, "Hey, I want to be in that space there."

Scott: Absolutely. Yeah, I know. It sounds great. Let's talk about the physical components right over project, and what goes into what you do, and all the factors that you have to consider.

Phil: The physical components, if you think about it, everybody today can imagine a solar panel and can imagine maybe some racking and inverters and things of that nature. The major components to put together a project and make it viable, certainly, we'd have to do an analysis of the structure itself.

If there isn't instructional drawings available, then we would go in and do an analysis of how the frame was built for the building. Whether it can support and calculate what that collateral load capacity is for the roof. Then age of a roof. Does it need a new roof or doesn't it need a new roof?

Now we work with roofing companies. This is another bizarre thing, but as a third party, they will come in and replace the roof for free. Then own the system on top of that roof and warranty the whole thing for 25 years. There are some really aggressive programs out there and customers are shocked by that.



Scott: It would seem I would never have expected that. Maybe it's just the concept of the roofing company being progressive.

Phil: Think about an aggressive commercial real estate owner that wants to purchase property and then says, "Ah, well, it's got a bad roof. I don't really want that building." Now you come along and say, "Well, if you do solar, you could get that roof done and get solar to boot." It really changes the equation.

Scott: That's pretty compelling. Absolutely. I know this is probably a hard question to answer. For a typical project timeline, beginning to end to commissioning and going live.

Phil: A typical project might get built in 90 days.

Scott: That's pretty fast.

Phil: A hundred and twenty days. Something like that. The permitting process and the analysis of it, I'd say some of it is around 60 days.

Scott: Another thought I have, just thinking about our own customer base and the variety of both products and organizations we serve. Is there an ideal customer profile for you, both from a fiscal building perspective and the organization?

Phil: Yeah, we do have some bullseyes as you might call them. One would be a, certainly, a customer that owns the building. Obviously you need that. If you're a tenant in a building and you've got roof rights, then that could work too.

Typically, the building would consume the power that would be generated on the roof, most all of it. We don't really want to be exporting power. As I said earlier in the conversation, we want to be able to generate the power at the source of the load.

If the load matches the generation and we can line that up on a daily basis, that's the most efficient system. If you think about it, you come into the office in the morning and maybe the building's not using that much power, but as the day goes on, and the sun goes up and it's hot, air conditioners kick in and other systems kick in during the day and that's when the solar is at its maximum and then it tails off towards the end of the day.

Scott: When you get started, who do you typically work with in your client organizations? Who does it begin with?

Phil: Well, generally you would talk to ownership. You would start there. You would start with the CEO, with the owner of the business and say, "Is there an interest?", etc., is there a financial app type to do something like that? Philosophically are we in alignment in terms of renewable energy goals or whatever your lead certification goals are, or just financial goals.

Then from there, you would go to branch to a finance person, who would handle all of the analysis of the tax and depreciation, and cost of capital. You branch to the facilities person that's matched in the facility that says, "Yeah we have ... here are our power bills, and this is how this building operates, and typically this is the way the building is built", etc.



Scott: Interesting. My ignorant question of the day, which will be the first of many as I work through the day, but we're in Massachusetts, so historically we just don't think about solar in the northeast and in this region, although I did see a solar...

Phil: We're not in the North Pole.

Scott: We are not, but we're heading into some gray days, right?

Phil: You might even make a case for solar in the North Pole. I don't know. Did you see that movie, "Mars", with Matt Damon?

Scott: Oh, with Matt Damon? Sure, a great movie.

Phil: He was hugging those solar panels.

Scott: Right.

Phil: Right? Because those made his life existence possible on Mars, and I just love that. I really love that part of it, was that it was so portable and that it generated the power for his batteries and he was able to move and breathe and live.

If you think about Massachusetts, we have what's called a 14 percent capacity factor in this state, which is a fairly high amount of sunlight on an annual basis, which generates significant return.

A system today, if we had a one megawatt system, here in Massachusetts that would generate 1.2 million kilowatt hours a year typically, maybe 1.3 or more depending upon tilt, but ample sun, ample sun to be able to generate power that is economically viable for any business.

If you look at Germany, which is a much higher latitude, they were doing up to seven gigawatts a year in a country that's much, much smaller than we are.

Scott: That's really interesting. I think that's probably a common misconception, right?

Phil: Oh, it is.

Scott: Is that solar only works in the southwest or...

Phil: Where you have 300 days of sun.

Scott: ...of sunshine.

Phil: No, we've seen and it's not a question anymore. Initially ten years ago it was a question, but today everybody kind of understands, you have simulators, 30-year weather data, and we say, "This is exactly what you're going to get."

If you go back historically and look at our customers, they are getting what we projected they were going to get in terms of power generation.

Scott: Wow, that's great.



Phil: Rain or shine or snow. What do you do about the snow? Leave it on the panels.

Scott: You do?

Phil: Just leave it.

Scott: You just leave it there?

Phil: Don't touch it and you know, it's New England, the weather's going to change, right?

Scott: Yeah, exactly.

Phil: It snows one day and then the sun comes out the next day and the panels heat up and the snow melts.

Scott: You don't want your facilities guy going out there with a shovel?

Phil: You really don't.

Scott: Yeah, taking off the panels. Are there any situations where it doesn't work? Is there anything either...?

[crosstalk]

Phil: Well, a lot of times it won't work if the customer doesn't have a tax appetite, or their credit rating is such that they wouldn't be a quality off-taker, investment grid off-taker, then you're not going to get a third party to finance the system for that customer.

Scott: Understood, so they're generally financial in nature, the risks associated, or it's an old building.

Phil: If the building is just not suitable, which you see this in residential all the time. There are people that are running around putting panels on buildings that you just look at them and you shake your head and go, "Why did they do that?" It's facing east or it's got trees in front of it and you shouldn't put panels there. You shouldn't do that.

Scott: That makes sense. I imagine there's other people out there doing this, right? Doing this in your space? Tell us a little bit about your secret sauce. What makes you unique?

Phil: Well there are 300 companies in the state of Massachusetts alone that are "Solar Companies" doing a variety of different things. Our company being around one of the longest in the state, we're unique for a couple of reasons.

Our business model is I own the company outright. I don't have debt and equity financing. We aren't chasing a pot of gold at the end of the rainbow where some venture capitalist would dictate that we have to have an exit in a certain amount of months or a certain amount of years or on a quarterly basis we have to run.



As a result, our behavior is quite a bit different. We're a real company and we're real people and we say, "OK, we're going to fund our expansion from the profits on our bottom line from our balance sheet." That's how we've been successful.

The other part of it is that we're vertically integrated. We do all our design in-house. We do our engineering in-house, and we install with our own install crews all in-house.

Consequently you get this continuous feed-back loop, and it's sort of continuous engineering, when you think about it, and you say, "Oh, we made a mistake on this project because we did X, Y, Z. Well, we don't do that again on the next one." That feedback loop is very, very important.

When I look at our competitors and I say, "Well, what do they do that we don't do?" Well, you know, you can give them a check in the box, they will develop a project.

They will find a customer and develop a project, but then when it comes to engineering they might say, "OK, well we don't really want to spend that much, we'll just use a cookie cutter design instead of a unique design for that specific building or that specific property."

The third thing is they're going to sub-contractors to do all their build for them. Then when you have that then you have a random control over the end product, and one of our partners came to us recently and said, "I don't want to get caught with Joe Storm Door sub-contractor and that's who I'm working with at the end of the day."

I want to be able to say to the company I contracted with, "OK, where's my project and where's it going, and how is it going?" Accountability, responsible business model in the industry, and certainly a very strong track record.

Scott: That's great. Where do you see growth opportunities from a product and market perspective for you?

Phil: Growth Opportunities. This is such a wonderful market. You can apply solar just about anywhere. We look at it and say, just in our little footprint here in this corner of New England, we're in Mass, Rhode Island, expanding into Connecticut, and expanding into New Jersey, New York State, and looking at projects in California, Texas and Maryland.

We look at it and say, "The world is our oyster, but the United States is really the pearl." We definitely want to take advantage of that as much as we possibly can.

Scott: That's great, so you're not limited geographically?

Phil: No we are not. We're not, and that's another wonderful part about doing solar, is that you can go where your customers are.

We have a customer that has a location that happens to be in New Bedford, but they have four other locations in four other states in the United States and they need solar for all of their properties. We can go and implement that for them.



Scott: Well as a software company and a technology company, I'm interested to know, do you use software and technology?

Phil: Of course we do.

Scott: What kind of things do you do?

Phil: One of the fun things about solar is that you can use software to monitor your system on an hourly basis. You want to see what the production is, and if you're a facilities manager and you're worried about demand charges and how you're timing, turning things on and turning things off, and how much KW of amperage that you're pulling into your building is going to affect your bill at the end of the day.

You can use a software platform that we provide. It's a third party software platform, but we provide with the system, and you can go online and you can see anything that you want to see. You can look at volts, you can look at amps, you can look at total power, power factors and things of that nature.

Very interesting in terms of how you manage that and how your generation works, so timing your load with the generation is a very interesting concept.

Then the next piece that comes along is now the storage industry, which everybody knows that Tesla bought Solar City and this is a big deal. What's happening there is that Tesla is not a car company, they're really a battery company.

They're taking that battery technology and saying, "Hey, we want to marry that together with the solar company, the solar operation and do it on a residential scale and maybe on a commercial scale, we'll see what they do.

We look at it and say, from a software and facilities management standpoint, "Hey, I generate power. I can store it in a battery."

Then on off-peak hours I can pull power off the grid and manage from a software standpoint, manage it that way. Then during on-peak hours, let's say the sun's not shining and we flip the battery on, and power the building with the battery and I'm not paying these peak rates for the power.

There's some really interesting software applications that are going to come out and that currently aren't commercially available yet, but this is all going to get developed.

Scott: Is that part of your service as well? Helping your customer do that?

Phil: Absolutely. We're totally turn-key, and we try and stay abreast of the industry and really be on the leading edge of what's happening.

Scott: That's great, so you have a company out there building owner management, when they start thinking about this, how do they start the process? What should they think about first?



Phil: The first thing they should think about is, is it realistic for us to put a dent in our power bill using solar?

If somebody owns the John Hancock tower in Boston, looks to putting solar on that building, you got a very tall, skinny building, right? You're not going to get a lot of solar on it, so that'd be the first thing I'd look at if I was the building owner.

If you're a property owner and you own a mall with a large, sprawling footprint and a huge parking lot and things of that nature, those buildings lend themselves really quite well to doing solar.

That would be the first thing that you would think about, matching how many square feet of available roof space that you have to how much power you're actually consuming in the building.

That match is very important because I feel that if you don't achieve 20 percent or 30 percent of the total consumption in the building, it probably doesn't make sense to go through the exercise.

Scott: Anything on the horizon? You've talked about a few things in terms of subsidies that are available, but anything else from a legislative or financial perspective that people should be aware of or things that are going on?

Phil: I think, not on the legislative side, but what is happening in the industry is the economy to scale are really coming to roost now, and we feel that as an industry we're getting towards grid parody.

Grid parody means that I can take an electron that's generated by coal-fired plant, gas plant, an oil plant, whatever new plant and I can compare that to an electron created by solar plant and they're very, very close to the same value.

Which means that we won't need incentives down the road. The cost of panels, solar panels, has dropped about 35% in the last six months of this year. There is an over-supply, there is a glut in the industry and that will eventually work its way out. The cost to manufacturing has come down considerably.

Scott: That's incredible. It's like big-screen TVs.

Phil: Or computers.

Scott: Or computers.

Phil: Laptops. Would you pay for a laptop in 2001? I remember paying about five grand for Apple back then.

Scott: I do as well, which means we just dated ourselves.

[laughter]



Scott: Few wrap up questions. Three to five takeaways. We like to give people a few things to think about. If you are a commercial real estate developer, an owner, a manager, what should they be thinking about? We'll talk about a couple of those.

Phil: They should certainly be thinking about their tax appetite. If it's a company that's profitable, it's making money, has a tax appetite. They should be thinking about solar. There isn't a better investment because you can set your watch by, in terms of the schedule.

It's an investment grade asset. You could build a system and sell the system if you wanted to. Investors will package these up and sell them as a block. It is a very reliable investment. As I say to people inside my company, I'd much rather go out and get a loan from a bank to build a system that we own than to take that same money and pay it to Uncle Sam.

Why take your money? The federal government, the IRS, is incentivizing us and motivating us to invest our money in building and doing projects. This is one way to do it. If I was a building owner, I would be looking at it the exact same way. If you are running a profitable business, we often times get customers that say, "Hey, we just finished this project. Can we do another one?"

Scott: [laughs] Always an ideal situation, right?

Phil: Yeah. Then you know you have a customer.

Scott: You have a customer. You've done a good job for them. That's great. How do people learn more about Beaumont Solar?

Phil: Certainly, go to our website, beaumontsolarco.com. Contact me personally, phil@beaumontsolarco.com and we will be happy to give any one a run through.

Look at their building, go on Google Earth, give them an analysis of it and let them know what we think, and give them just a really quick snapshot, "Hey, we think you can get this kind of return" and do that very quickly. We can turn something around in a day or two.

Scott: As always, the contact information for Phil and for Beaumont will be in the show notes on the podcast on our website. We will make those available as well in the transcripts and we send this out to everybody on the inter webs.

For the meantime, Phil, thank you. It was a tremendous education for me. This was great to learn and picked up a lot of good things. I certainly think our customers are going to be really interested in this topic. It's something new for us and that's terrific.

Phil: Fantastic. Look forward to working with you.

Scott: Thank you.



QUESTIONS FOR THE HOSTS?

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