

49. Booth, Chovan, Waligura: Influencers Part VI_ Energy

00:01 Kendall Lott: Hey PMs, I have a pair of symposia to tell you about that are happening around the DC Beltway area. The University of Maryland's Project Management Center for Excellence is offering its fifth annual project management symposium, "Turning Knowledge into Practice" on May 10th and 11th, 2018 at the university's college park campus. I told you about that one last month. Register at pmsymposium.umd.edu. And in June, we have Silver Spring chapter's fifth annual professional development symposium, this year entitled, "The Versatile Project Manager," with its broad focus on approaches, tools, and ideas for emerging and seasoned professionals. In the heart of Silver Spring, Maryland, this one-day event on Wednesday, June 27th, will provide you with up to 7 PDUs and a take away PM toolkit. To find out more, go to PMI Silver Spring Chapter's website at pmissc.org.

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01:01 Darren Booth: You are either leading an energy revolution or you're getting plowed over by it.

01:04 Karen Chovan: They are called projects, but they're essentially a portfolio of a lot of interrelated, complex pieces that come together both on the physical component side and on the community relations side of things, as well as the environmental assessment process.

01:26 Charles Waligura: In the olden days, we said, "Oh, we know this and we do it." Well, nowadays it is required to document it.

01:39 KL: The energy sector, comprised of the companies that generate and capture the power derived from the utilization of physical or chemical resources, especially to provide light and heat or to work machines. So says the dictionary. The first images that come to mind are of big power plants. Sometimes gleaming, beautiful, or sometimes rusty oil derricks in deserts and in seas. Power lines clustered and web-like that criss-cross the country. But now, we're finding newer, cheaper means of production and distribution. And we all have thoughts on what sustainability means. Maligned or admired, the energy sector is one that all human communities need to have up and running. So my questions that drove this episode were, what is the nature of projects in the energy sector? How has the sector changed? And what has this meant for project managers? Once again, I found myself plumbing the projectmanagement.com portal to find experts who can shed some light on the matter.

02:32 Announcer: From the studios of Final Milestone Productions overlooking the White House in downtown Washington DC, this is PM Point Of View, the podcast that looks at project management from all the angles. Here's your host, Kendall Lott.

02:49 KL: My first guest, Darren Booth, is a power industry project manager. His home is in Tampa, Florida, but he has a portfolio of projects that span the globe. He started out working on big, multi-billion dollar projects. Now he helps universities, municipalities, and major commercial customers in the strategic implementation of disruptive technology solutions to help them achieve

their sustainability goals, as well as lower cost and minimize risk and add resiliency. He calls this pipeline of projects Green Power U.

03:20 Darren Booth: Green Power U is multi-tiered, like most of the things that I'm involved with nowadays. Part of the U stands for you as an individual, because I think there's been a shift as we, as a planet, are starting to think about how we impact our surroundings. And are we harnessing technology to the right potential to have prosperity and a cleaner and greener planet? That's part of the U. The other part of the U really has focused on university. And I focus on universities because the future of electricity is being taught on campus, and when those students leave campus, whether it's this year or four years from now, they are going to perhaps likely be driving a second-hand, used electric vehicle. And when they show up at their first employer four years from now, they're going to ask their employer where they plug in. [chuckle] So you can see, it gets a little more intertwined.

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04:35 KL: Because of a technological shift, you've literally changed the projects that you work on now. Typically, what is it they say, you can have it faster, cheaper, or better, pick two. But the thing is, is that the technology shift has allowed you to improve across the board on all of those. So it sounds like you're able to do things faster and cheaper, and there's not a drop in quality at some level. Although I'm sure a small temporary item has some level of quality that's different than a \$1 billion power plant.

05:01 DB: Yeah. That is a great point because you can actually have your cake and eat it too nowadays. I'll give an example. Let's take any major university across the country. They most likely have a central energy plant. If you're in the engineering department, you would know where this plant was, but probably most students just walk by it and don't even notice it. But that plant is producing the hot water for the campus, and producing heat for the campus in the winter, it's producing chilled water for air conditioning in the summer. And that central energy plant, boy, if you're a young project manager and the campus was growing and they needed more electricity, that plant maybe needs to be expanded from a capacity point of view. If you limited the scope of your project to those boundaries, you'd have to be old school and stick to picking two out of the three. But if you take a step back, you might go, "The exterior lighting throughout campus hasn't been upgraded to LED yet. If we upgrade to LED, boom, I've solved my problem and now I can eliminate the entire project." And maybe upgrading to LED costs less than that expansion. So it's really possible to have your cake and eat it too.

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06:33 KL: Is it about generation or delivery here?

06:37 DB: It has to be both. And some of the recent storms and natural disasters have brought that to the forefront of many folks is, "Hey, what are our critical facilities? What operations can we not afford to lose electricity?" There's a lot of campuses across the country where they've known that for decades because they do a lot of long-term scientific research projects and they can't afford to lose power for a second. But people are recognizing that 100 years ago, we built big centralized plants, transmitted the power across great distances, because no one wants a giant power plant in their backyard, and delivered the electricity. If you can put your solar farm 100 miles away or on top of your building, you obviously eliminate a major risk of the delivery of that electricity. Because

if a tree falls somewhere between that 100 miles and the plant across the power line, you don't lose power if your electricity is generated on your roof.

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07:50 KL: And you said the kids sitting in the campuses now are learning about electricity, I'm assuming we're talking about people going into the field that is very different than what has happened in the past. So I was wondering, what is shifting? You just talked about some technology there, but what's fundamentally different?

08:05 DB: Thinking back when I was first getting involved in the field when I was in school, I would've been focused on efficiency. And efficiency is limit economy of scale kind of efficiency. So it was always bigger. Most of our electricity in America is still produced with technology that...you know, it's steam. We are boiling water to make steam to run a turbine to spin a generator to create electricity. The economy of scale over the last 100 years that they've pushed out of that steam cycle is because they've made the plants bigger and they've increased the pressure on the steam, right?

08:48 KL: Right.

08:48 DB: But the power of a solar panel, you're getting increases in efficiency and the prices are literally falling in half, in cycles that are looking very similar to the evolution of technology with cellphones or the microchip because they're more of a digital technology. So folks that are growing up now and going to college now, they're not thinking of that old school kind of, how do we make an incremental improvement? They're coming from the perspective of, how do we take a totally new look at what our need for electricity is? And just like with the LED example, maybe you just don't need a bigger plant. Maybe you need to reduce the demand across campus by 50% because you add some insulation in your buildings and you add some sun shades, and you put in LED lights and you put a few solar canopies here and there, and oh, you get some more efficient air conditioners. You just start layering all these technology benefits.

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10:05 KL: You're suggesting that between the technology and some level of culture change, what we're going to see is the way energy is both produced and, I guess, in a sense delivered, is going to change.

10:17 DB: Yeah. And I think of it, the old school I worked on projects, and now, even if it on the surface appears to be a very simple project, it's really more of a portfolio because everything's intertwined. And even the reduction of electricity, that's part of your carbon reduction sensitivity to doing your part to protect the environment. But you're also looking at, OK, reducing my electricity is one thing. Securing the electricity I need from a clean renewable source. Of course, there's a benefit adding resiliency so that I have critical operations that can function even during a storm and a power outage from the electric grid.

11:08 KL: And is this is a good to have, a nice to have, or must-have from where you're seeing the industry right now?

11:16 DB: If you're the CFO of an organization or board of trustees, it's the financial benefits,

really, because the technology has improved so much. So, why would you pay 12 cents for electricity when you can get it for six? And there's been some recent projects across the country that are delivering phenomenal savings. The acceleration and the growth is further fueling decreased production costs for the manufacturers of the equipment. They are continuing to get this growth. The expectation is prices will continue to be compressed. So, why wouldn't you want cleaner and cheaper and faster.

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12:06 KL: So, how is this changing project management, over the last 20 years, what it looked like to build a power plant? It's not a construction project, it's almost a technology implementation project.

12:18 DB: Yeah, I would call it more of a... It's an integration project or it's a stakeholder management project.

12:27 KL: Interesting.

12:28 DB: My title might be project manager or project director but my day-to-day real function is stakeholder management because it's that stakeholder management process and skill set that is kind of all mining all of these intertwined features and benefits so that I can maximize the value of the ultimate project.

12:49 KL: What's your method for approaching that then? Can you give us an example of a type of project and then how you would actually tackle that, make that such a priority?

12:57 DB: The first thing I do is I think I really wear a hat that is... It's not a hard hat. [chuckle] The hat I am wearing is more of the energy guide or the guru or the sherpa. I'm an advisor. I am helping guide a diverse set of stakeholders from a college campus perspective. The alumni is a stakeholder because they're showing up at football games, wondering where they plug in their electric car.

13:28 KL: Yeah.

13:29 DB: It's students that are in the Engineering Department, that want to be on the cutting edge of what they're learning, but it's the students in the Art Department that want to truly feel that the rest of the campus is engaged in cleaning up the environment. From the Dean of Admissions, they have to make sure that they're attracting the kind of students they want and they're providing the facilities that those students are requiring, and that their alumni are supporting. Of course, you got the dollars and cents of it, you get the CFO perspective, "Boy, how do I pay for all this?" They obviously want to reduce costs. And then of course the other CFO concern is the risk, how do I reduce the risk?

14:16 DB: It's probably also fair to put things in perspective, a billion-dollar power plant takes time, there's a lot of concrete that gets poured in there. A lot of those billion-dollar ones are 30, 40, 50 years old. Every year they have major projects just to do the maintenance on these big huge machines. But the future, I believe, will have a lot smaller, more nimble, more locally distributed generation sources, but it's not going to happen overnight and there's a lot of just maintaining the old system that also has to happen.

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15:01 KL: Seems like we tend to have project selection and design here making sure that your stakeholders are accommodated, and even what gets rolled out, given your knowledge of the new technology.

15:13 DB: Yeah, absolutely. And I think that's kind of one of the fundamental shifts in the challenge of the project management role is that back to that central energy plant expansion, if you're the project manager of that and you're not able to kind of grow the scope of your stakeholders, you're going to miss out on all the potential opportunities to really produce the highest quality results.

15:36 KL: Imagining younger project managers entering the field now, where you've said, "Look guys, it's going to be your portfolio. It's technology, it's stakeholders with their needs." So, how would you have them address this?

15:48 DB: Take a deep breath, take a step back, and think of yourself as popping from the granular detail of the project management process and popping up to 40,000 feet. The big picture probably needs a scope or a project statement that has a very clear goal like, "We're going to achieve zero net energy used by X date." And that kind of clearly defines that 40,000 foot view for you.

16:25 KL: There we go.

16:26 DB: And it'll also help you figure out that the way we're running our water treatment plant or sewage treatment plant or irrigating our sports fields, it's using a lot of electricity, be it using a lot of either reclaimed water and we're doing wonderful things or using a lot of freshwater. How do we reduce our water demand? And how do we get the students on campus to use half as much water? It's easier probably to get them to use as half as much electricity just because we put in a more efficient air conditioning system, or a more efficient lighting, but how do we get some of the stakeholders involved in decisions that will also help reduce the demand in line with that kind of goal?

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17:21 KL: The global, the big picture, means setting the outcome or goals that's needed. What is it actually going to achieve being very specific about those goals and those outcomes. And then you get to ask, how do we deliver that now? How should it be changing? And now, who do I need to go talk to? And your knowledge of the technology gets applied there and then you're saying you mix that with your understanding of stakeholders and the engagement of stakeholders.

17:43 DB: Yeah. And then I would add that you need a continuous loop with those stakeholders because A, the technology is changing quickly; B, stakeholders' goals and perceptions of reality or the future is changing. And as that changes, boy, that changes the alignment among your stakeholders. And what you had in alignment six months ago, can easily shift. So you need that reinforcement loop.

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18:22 KL: One of the things that you mentioned in your bio is facilitating customer choice. What's going on with that?

18:27 DB: In the power industry, the consumer...it's a commodity and 100 watts of electricity is 100 watts but how your 100 watts of electricity is produced is part of the choice because now you've got customers that want 100% of their electricity to come from renewable sources. But there's also the app mentality or convenience element of choice. For example, in my own home I bought a Nest thermostat and I bought it because it's the latest greatest high-tech gadget and I'm going to save money on electricity, but you know what, I'd buy another one tomorrow if I moved houses because of the convenience. It saves me 15, 20% on electric bill, but it's the control now at my fingertips, from my smart phone, and the thermostat is smarter than I am. It knows I left the house. It knows that I don't need to run the air conditioner.

19:30 KL: I like this, I mean when I was thinking of culture change, how we approach things politically, we're in the question of, has the climate changed? Who's driving it? Do we really need renewable resources are these meaningful? But you just hit a key culture change I hadn't thought of which is the... You called it the app mentality. There's definitely an approach that says, I have an app for that.

19:53 DB: Right, and when you extend that across the US electric grid, my 12 year old, when you ask her to turn off the air conditioning or turn down the air conditioning, turn on the ceiling fan, she reaches for the cellphone.

20:13 DB: Part of my Green Power U, too, is by involving the future workforce into the future of electricity, we can accelerate the whole process. There is absolutely a sensitivity around the globe to what's going on with our weather? How do we become more resilient with our electric grid? Those are critical things, and that's driving the customer to want choices. Those choices can now come down to things like, how do I reduce the cost? How do I increase the reliability? How do I make it cleaner? And then of course, the level of stakeholders that are not necessarily sitting at the boardroom table making the final decision to approve the project or probe the financing, but they want to know where to plug in their electric vehicle.

21:12 KL: Is there a role for the approaches that are consistent with agile development processes in here? Something to do with minimally viable product, early check ins with customers, different ways of handling team dynamics. Does that play into this?

21:29 DB: Yeah. I think you are absolutely right. Although your typical, big industrial project manager probably doesn't think of themselves as an agile kind of leader, but the reality in the future of energy, you've got to be. Change management, I think it is a big part of my job on a daily basis. Both internal and external change management. You've got folks in the organization internally that have been doing things the same way for a while, 20, 30 years of their career, and some of those folks are going to immediately recognize the need for change. There'll be other folks that absolutely will resist that. As soon as you put solar panels on their roof, they're like, "Wait a minute, do we really want all our customers to think that solar power is a good thing?" And that's the big aha moment because it's like, "Solar power is a good thing. Don't you want the lowest price of electricity for all of your customers?" [chuckle] They don't understand that you're either leading an energy revolution or you're getting plowed over by it.

22:44 KL: With so many options as far as types of energy and delivery methods, a good project manager needs to come in as energy guide/guru. Help your stakeholders set their goals according to the higher long-term values in the organization and maintain close stakeholder contact throughout the duration of the project. Sound familiar?

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23:12 KL: Karen Chovan is a geological engineer from Saskatchewan, Canada. She's a registered trainer of Green Project Management and the owner of Enviro Integration Strategies whose mission is to drastically improve the way industrial developments and projects are planned, designed and operated, so that they eliminate environmental and social risk.

23:34 Karen Chovan: I kind of got thrown into project management right at the beginning of my career. I came out of geological engineering and did a little bit of work on the engineering side -- field investigations and what not -- and was very quickly thrown into managing construction projects in the field. There was just a lot of things that I learned as a result of things being poorly planned or not being considered. And a lot of times it came down to, last minute things that needed to be changed in the field. So that was the start of it. Where I came more into awareness of, say, community stakeholder engagement was, when I was working in a corporate realm. And being more of the oversight role and reviewing major projects being proposed. And clearly seeing a gap in what community stakeholders might want and what was being considered within the scope of the project.

24:39 KL: So this is a really interesting turn from my perspective, because we're not talking stakeholders in the classic project management sense that I've seen it in IT, meaning the business drivers, the people who own the business requirements, other members of the project, people that need the product. This is dealing with, we're hitting politics here, you're talking about a community that is wondering why an extractive industry is in their backyard.

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25:07 KL: If I'm understanding, you're taking this generic concept of stakeholder management to a real pointed intersection between how a community engages in particular kind of project or engages with one, which is around energy extraction. So is this a function of delays on the front side of planning, or has this been a driver for how the projects perform across the board? It strikes me as a planning problem mostly.

25:33 KC: I do believe it is a planning problem. But bigger than that is, that these kinds of projects, they are called projects, but they're essentially a portfolio of a lot of interrelated complex pieces that come together both on the physical component side and on the community relations side of things, as well as the environmental assessment process, and all of the studies that need to be done in the field to actually make the design with the right things in mind. So you have all these moving parts coming together, and if you haven't stepped back to think about all of those things that need to come into play at the very beginning, you can go full down one path and come up with a solution for the client who is the future owner of that operation and completely forget all of those other people that are involved with their own objectives. Because now you have a series of objectives that need to met under one umbrella, not just the development of that one thing.

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27:03 KL: It's often that the stakeholders have different objectives and our job is to synthesize them or make sure they're covered. And then we also talk about some sort of salience model for stakeholders. So they have different levels of power and importance and urgency for us. But what you're hitting, if I'm not mistaken, is a little even deeper than that, which is where the stakeholders may have explicitly opposite agendas or opposing agendas.

27:29 KC: In some cases, yes, often though, there isn't a real dispute with a development. What is more often the case is that, they weren't considered, their opinions weren't bought in. So maybe selection of the site could be altered and they would be happy with that but they weren't asked. Maybe they wanted some shared benefits out of the project. Where there's a lot of these kinds of projects are in remote areas where there is no potential for business development or very little. And this is an opportunity for them to gain some jobs, gain some education, bring in some additional resources into their communities. And those should all be on the table. And if they're not, then of course you're going to have people who are going to be upset with the project. And they will put up barriers for you.

28:33 KL: I was about to say, it sounded like a communication problem, but when you started hitting that, no, it's not just that they weren't asked, but there are issues of shared benefits we're getting into core stakeholder issues, right? The ability for the project to produce something of value that produces benefits.

28:49 KC: Yeah and so it's not often like a complete dispute. Sometimes it is like the North Dakota pipeline is obviously one of those that, somebody made a change to the alignment of the pipeline, the new alignment in the area there, people were not engaged at all with that decision. And now there's a big problem there. [laughter]

29:09 KL: You've got planning and you also have change management then... the idea of almost like in IT we'd say the configuration change. This idea that in the middle of the project, we're making a change. And again, this idea of not incorporating all your stakeholders.

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29:28 KL: Do you find people resisting this? Do you find that project managers or the portfolio manager, if you will, that the senior project directors and all, do they not get this?

29:36 KC: I think that there's a couple of things happening. I think one, there's a shift in the expectations by external stakeholders. Not just local communities for example, but on a broader scale, and social awareness of environment and climate change and all those things is causing that. So there's a lot more expectations there.

30:00 KC: Within the mining sector, I will say that often the external stakeholders, the community engagement is done by a group completely external to the projects groups. So there's a big potential for communication gaps there, both in terms of commitments being made to the communities and the concerns that the community folks have, but also just there are technical language barriers that come up. Stakeholder engagement folks may not have the technical background to understand when a project manager's telling them the technical details of that project. So they're not speaking to each other in the same language essentially, and the timelines of some of these things don't also jive

because community engagement essentially follows a schedule that is in agreement with the communities, and that may not match the pace at which a project is advancing. So there's a number of things that can impact it and if you haven't stepped back to think about all those inter relations and have good communications internally, your external communication aspects are really going to miss the mark.

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31:33 KL: So how do you address this then? Because the idea that there's two different calendars operating. We can get over a language barrier by recognizing it, and understanding, I've just given you a lot of technical detail what this means is... or allowing good questions and answers and feedback and learning that way. But the difference of the rhythm, how is that addressed? How do you tackle that?

31:53 KC: I think if you know that has to come back to the organizational level just to basically understand that the pace of the project advancing can't simply be based on how quickly they can collect information in the field and design something. It has to evolve around, not just the field information, but also that information from the communities. And so they need to be able to step back and say, "Okay, how do all these schedules come together and at what critical points do we need to have particular information in order to proceed without the risk of having to come back and change something later because you missed it?" So if you can step back and map out all the critical components where there might be big decisions that need to be made, where you need particular pieces of information to make those decisions, and then start working backwards on, "Okay when does the engagement need to start?" And when we go for that engagement meeting, what information do we need to bring?

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33:12 KL: It sounds like you're almost dealing with information planning. It's not really in the PMBOK, this is not comms. This is understanding what information will be needed to feed our breakdown structure to make it work.

33:23 KC: Yeah, and so I like to call this all requirements gathering. I know that's more of an IT term, but I've been learning a lot more about lean tools and processes, and value stream mapping is one of those tools that you're mapping out all the physical components and things that need to happen for the process, but you're also mapping out all of the information needs and where those things come from and tying all that together. I like to use that model with these types of complex projects. And it doesn't have to be just these industrial type developments, but anything that's complex, where it has all these moving parts, that's information and the actual physical components combined, where you need to step back and do that.

34:12 KL: So this is value stream mapping we're talking about here?

34:13 KC: Essentially, if you can do that earlier on, at least at a high level, to understand where things start to intersect.

34:23 KL: Tell us a little bit more about that because I think that's an interesting tool for project managers, perhaps.

34:26 KC: I want to say it's a beautified or enlarged process flow map of sorts, but you would build on just the process that you are creating and add in all of the other steps that need to compliment that or give supporting information for it. So I guess an example would be is, if I want to choose a site for an operating facility or say, a waste management facility, I need to also then understand all of the environmental information that will impact the selection of that site. I also need to understand all of the land use by communities and whether they would have any issues with those selected sites, and all of those studies that need to go hand in hand with collecting that information. Environmental work can take months to gather the right information. You've got to organize drilling and analyze the flow of water and what trees and species live in the areas or the other vegetation. You need to understand a lot of things to pick a site. So in this sense, you would back up from that one piece of information that you need to get to your final objective of selecting a site, and have all these other things that tie into that, and it's all information gathering in order to select the right site.

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36:08 KL: I'm thinking that project managers often are not the technical experts, but have to know how a project is delivering value and what its impact is on its stakeholders including those that are actually funding it for example by the ability to bring it inside the iron triangle. I'm wondering if this is another element that they need to be learning.

36:27 KC: Yeah, they need to be good at asking the right questions to bring that dialogue forward and really not just be telling the team what needs to be done but saying, "Okay, here's our objectives and goals," and including goals of the environmental performance and social performances and then going back and asking the teams to figure out how they can achieve all of those things and bringing their experience forward. So it's making sure the dialogue happens.

37:00 KL: That's the project management point of view.

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37:06 KL: Well, how does this tie in with the different kinds of development methods? You just talked about lean. In the extraction industry are we talking lean versus waterfall? Those are kind of IT type of development things.

37:18 KC: I really think that lean and agile have already been applied in the mining world anyways because there's a lot places you need to do options analyses for example. And then the followed order of each decision might take you down a different path for the next step. And so what you end up having is a general look of where you want to get to... the objectives. You want to expect some type of ore from an ore body but in the meantime you're never starting with all the information. You're always starting with a concept, you develop a little bit more, you gather information from the field that help make better decisions, and each phase that you move through you have more and more information to help you carry on. In the meantime you've also made some decisions on various options that take you down one path or another. So really it is a very agile approach that you should be following if you're not, but it is still mixed in that waterfall of moving through say, concept, pre-feas, feasibility, detail design and all these different phases you're still following overall the waterfall to get from one point to the very end.

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38:50 KL: This reminds me of another comment we've heard on an earlier podcast which is ultimately a project manager once they've moved past learning the tools of the trade and the techniques, the software, and are good communicators in the sense of managers of teams, their real focus is that they are risk managers. They're mitigating the risk that this thing they've planned will fail. So I'm seeing the stakeholder engagement here as flat out a risk issue about, you know, getting picketed as you're moving through this process at any point.

39:19 KC: It is risk, yeah. And a lot of people don't really like the term "sustainability" or it means too many different things, and it's really about risk management. Are you addressing all the right things? Are you engaging the right people at the right time so that you can avoid the typical risks of scheduled delays, cost overruns, and all those other things?

39:44 KL: This process then around stakeholder engagement is one that's understood by the industry at large.

39:50 KC: It is. The question becomes, "Do they start it early enough?" Particularly for green field developments going into a completely fresh region where developments like these have never been done, can be a huge endeavor. You can take two, three years just to develop relationships where they will work with you and tell what they want. There's a big trust factor there.

40:18 KL: Is it a straight off trade-off? The capitalist part of my brain kicks in and says that this could all be converted into dollars. How much information is enough? And what cost is it to gather it? It gets a little bit to value engineering almost like what is the design we're actually after?

40:35 KC: There are cost trade-offs, there's time trade-offs, there's a lot to do with culture, there's a lot to do with politics in the region. You can't just say it's going to cost x amount of dollars for this activity over a period of time because every project is unique.

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40:56 KL: So PMs gather information regarding the requirements and impacts up front and engage your stakeholders as early as possible. It always gets back to stakeholder management, doesn't it? And for energy the stakeholder group is the broadest span possible, the entire physical community, so listen to their opinions and find ways they can benefit. You can find current articles and webinars on projectmanagement.com, and also ProjectsAtWork.com which has now been rolled up under projectmanagement.com.

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41:31 KL: From Houston Texas, Charles Waligura holds a bachelors and a masters in chemical engineering. He currently works in marketing and portfolio management for Odebrecht Industrial. Charles is a past chairman of the American Institute of Chemical Engineers division for fuels and petro-chemicals and a former President of PMIs own Houston chapter, one of the biggest in the world.

KL: I guess your PM's down there are about 80% around the energy space, yeah? So you kind of at

home when you're in Houston as a PM in energy.

42:02 Charles Waligura: That is correct. In the beginning, the project managers in the chapter were very heavily involved in what we call EPC: Engineering, construction, and procurement of oil and gas facilities. I would propose that there has been an evolution. Even though the names of the companies are the same, the members are much more oriented to the software, the information systems, information communication part of the industry even though, like I said, the companies they work for are the Shells, the Exxons, etcetera.

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43:00 KL: So let's talk green energy. I don't know that the projects are all that different in my mind. And then I realized I didn't know what I was talking about. So from your perspective, what is green energy as you see it when you're sitting down in Houston?

43:14 CW: Well, a green energy concept is energy sustainability. Wikipedia defines sustainable energy as, "Energy that is consumed at insignificant rates compared to its supply and with manageable collateral effects." Another common definition of sustainable energy is an energy system that serves the need of the present without compromising the ability of future generations to meet their needs.

43:49 KL: As you look at where we're developing into more sustainable energy, what are some of the areas? We've got wind and water, solar, and then, I guess, the bio fuels. Is that kind of the...

44:00 CW: Bio fuels is one of the areas that is becoming much more visible. We think of bio fuel as methanol, as ethanol. These are liquids that can be mixed with gasoline and add to the volume of the gasoline.

[music]

44:28 KL: So let me ask you about projects in this space. Let's look at this from a PM point of view. So this is a very large industry. A lucrative industry. The sustainable aspect is a research and development space with government interactions as well, government support, in many cases, some cutting edge technology in many cases, new engineering. What's going on in these projects that is different than the traditional energy projects you've been handling?

45:00 CW: The green projects tend to be state of the art. Therefore you're dealing with licensors that have designed and operated only a few of these facilities.

45:15 KL: So we're talking about people not having a lot of past performance and not a lot of lessons learned yet maybe. Is that an element?

45:21 CW: There are a lot of modifications and improvements to the technology constantly and that causes a higher level of design and construction risk. One of the big differences in all of these projects is that you're designing for operating safety. The oversight for operating safety is in the government OSHA 1910, the API, the American Petroleum Institute, has many standards and the National Fire Protection Association Standards. All of these are requirements in the design and construction of these facilities. You're using equipment that is not built very commonly. So you're

having to go to specialized vendors. Your materials now are limited. The specifications and the government requirements are much more serious and much more involved.

[music]

46:43 KL: How early do you have to start wrestling with the government requirements when you're in project identification?

46:49 CW: In the development of the project, in most cases you're dealing with financial institutions. The people that are providing the money want to make sure that what you are building actually meets the standards of the government. So again, governmental standards are very important. But they require you to give a lot of information because again, in many cases, you're talking about a lot of money. When I started in the industry, a project that was \$10 million was considered a large project. I do remember when I was at Brown and Root, we were building a chemical plant, actually in Iraq, that was gathering oil and gas and that project we bid for a billion dollars and this was in 1975.

48:01 CW: So, in those days, that was a massive risk. Nowadays, we're talking \$5 billion, \$10 billion are relatively small projects. And so the money that's involved, nowadays, is so large that the companies and the financial institutions require, upfront, a lot of data, and a lot of information has to be generated, before you actually start finalizing engineering. And obviously, if you're dealing so early, you're making lots of changes.

48:49 KL: Yeah.

48:51 CW: So, those changes, if you wait until the project is in construction, you have now cost a massive amount of money, versus making those decisions early, and quantifying those decisions. How much that decision is going to cost has become, really, a fundamental change in the history of these kinds of projects. We call them front end loading.

49:25 KL: Yeah.

49:27 CW: The front end loading can be now, 10% to 20% of the cost of a project, whereas it used to be that you just said, "yes, we're going to go and the profitability of the projects were so great that the company, the owner, could make some last minute decisions, and it was worth the cost.

50:01 CW: I was involved in a project in Mobile, Alabama, and it was a pesticide. In those days, the project could be defined and move forward, really, very quickly, because the product that the pesticide was being made, needed to be on the market and sold, before a another competitor could duplicate the product, and start undercutting the company's profits. So, those areas, you ended up having schedule demand much greater, than what would you call cost.

50:49 KL: I find this fascinating, because, we've had some experts on the podcast here, that have talked about, as a newer phenomenon, the challenge of seeing cost, scope and schedule as the Iron Triangle, as the Golden Triangle, in the sense of, there are some conditions where you want to add to your critical path at a cost, because the requirement of delivery is so high.

[music]

51:21 CW: In the early days, in the, I would call the '70s, offshore oil was just beginning. And I was involved in a project in the North Sea. This was for British Petroleum, and we were building a platform that had 36 well stems. Each of the platforms were about a billion dollars apiece. Massive structures, and you had a massive amount of equipment and material, on top of this steel structure. And when we were doing the process design, the chemistry of the oil coming out of the ground had a fair amount of what we call light hydrocarbons, and this platform was 100 miles offshore.

52:20 CW: So it wasn't easy to, necessarily, to just run a pipeline over to the platform, to pick up these light ends. There was also safety issues, where the light ends could explode and burn, a la the Deep Horizon explosion here in the Gulf of Mexico.

52:44 KL: Right.

52:45 CW: So, in our chemical processing, we said, "My gosh, there is a massive amount of these light ends, that are very valuable, that we were literally burning to make electricity." We had generators, 100 miles offshore, to run electricity. We went back to BP, and said, "If you modify the platform, by expanding to allow some additional equipment, we can blend these light ends with the crude, and send them with the crude, to the shore." And they came back about a month later, and said, "Let's look at revising the design of the platform."

53:32 KL: Very nice.

53:32 CW: And we did. We ended up adding about 10 feet, all around the platform, and obviously, that meant that the structure, and the weights, and everything, were significantly different, and had to go through a very large design change. But the economics drove it.

53:58 KL: Can you address questions of Risk and Safety in the context of these newer projects, is it any different or is this all part of what the industry has long handled and they know how to build projects in terms of anticipating safety concerns or is that any different here?

54:17 CW: A lot of it is due to government requirements, OSHA 1910, that I touched upon a moment ago, has just hundreds of pages in requirements that a project needs to adhere to. A lot of it in the olden days we said, "Oh, we know this and we do it", well nowadays it is required to document it.

54:56 KL: What would you suggest for project managers who've already gotten involved in the energy sector that want to be in the green energy? What are they going to have to know to be more effective project managers? Because as you said, you can't just be any project manager, you need to know this industry some. What are they going to need to be learning and focusing on?

55:12 CW: First you have to be a good engineer in the standard oil, gas, and petro-chem. You need to have typically some apprenticeship, some involvement to understand the engineering, the purchase of equipment and materials, the construction and the operation of these kinds of facilities.

55:39 CW: In addition you need to understand how to modify and improve these technologies. The owners are always trying to better what they had and then they want a better mousetrap. There is a high level of design and construction risk, so during the visualization phases and strategy phases the

mod project manager has to make sure that a lot of time is put into the risk issues of constructing this equipment and installing this equipment and obviously making sure that the design is per the needs, the specifications. Because we are dealing with flammable hazardous liquids, the knowledge of the governmental rules, OSHA 1910, the American Petroleum institute. You are dealing with humans and humans make mistakes and those mistakes in this industry can cost lives so it is a very difficult industry with lots of safety risks.

57:12 KL: Risks and government requirements make these projects tough to manage. PM's should take seriously Charles's recommendation, about the experience and education required before they try and tackle some of those energy projects. Look for his articles on the projectmanagement.com portal under energy.

KL: Energy is a rapidly changing high cost field. More than mere projects, you need to approach energy as a portfolio of inter-related elements. And the culture change...literally the change in our culture, as we address sustainability, environmental damage, new technologies and new jobs, is huge and dynamic.

57:48 KL: And did somebody say risk? As we have noted before, all project managers are, in a sense, essentially risk managers but in energy you have billions of dollars at stake, dangerous chemicals and machinery, and long term social and environmental impact. So stakeholder management is paramount. The stakeholders in these projects include the community that will be affected and hopefully benefit, and the company that plans to profit. In addition, the bankers or financiers who are putting their money on the line are also likely to be involved in the upfront planning and scoping. As more renewable energy sources come into play, along with cheaper means of delivery, energy projects will change, perhaps no less difficult or risky, but definitely offering a place for project management vitality.

58:33 KL: Special thanks to my guests, Darren Booth, Karen Chovan and Charles Waligura.

58:39 S2: Our theme music was composed by Molly Flannery, used with permission. Additional original music by Gary Fieldman, Rich Greenblack, Lionel Lyles, and Hiroaki Honshuku. Post production performed at M Powered Strategies.

58:56 KL: PMPs who have listened through this complete podcast may submit a PDU claim for one PDU in the talent triangle "Strategic" with the project management institute's CCR system. Use provider code 4634 and the title PMPOV 0049. Influencers part 6. Energy. Visit our facebook page, PM Point Of View to comment and to listen to more episodes. There you will also find links to the transcripts of all of our one-hour productions.

59:26 KL: You can also leave a comment on the projectmanagement.com portal, evaluate us on iTunes, and of course you may contact me directly on LinkedIn. I always appreciate hearing from you and in fact that's how I connected with Darren Booth, my first guest in this episode. I'm your host, Kendall Lot and until next time, keep it in scope and get it done.

59:44 S2: This has been a Final Milestone Production sponsored by M Powered Strategies.