

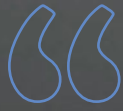
# John McDonald

**Smart Grid Business Development  
Leader** at GE Grid Solutions

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Interview with **John McDonald**





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**John McDonald was in sixth grade when he realized he wanted to be an electrical engineer. A half century later, he is a legend in the industry. McDonald is an active member of the IEEE Power & Energy Society, a subcommittee chair of the society's Long Range Planning Committee, and a mentor to young professionals entering the field. McDonald has authored and co-authored more than 100 technical papers and articles and five books. Alan Ross spoke with McDonald about the smart grid (both past and present) and what seasoned professionals can do to help young generations enter the ever-changing field of transformer technology.**

**Transformer Technology:** What are your thoughts on the Smart Grid, and how have you seen technology progress towards that goal recently and in the past?

**John McDonald:** About 12, 13, or 14 years ago we started hearing the term "Smart Grid," but a lot of us that had been in the industry a long time initially kind of took offense to it, because this wasn't new. I started adding intelligence to the grid in the work I was doing going back to 1974 when I started doing my full-time engineering work.

I actually call it the "Smarter Grid." I differentiate what intelligence we have been adding to the grid over the past 20 to 30 years, and what is so different [now]. The biggest difference is that we have a lot of new technology that is being developed much more quickly than ever before, and it gives us much more functionality. There are many, many more things that we can do on the grid than we were able to do before.

**TT** What are some examples of the advancements that define the "Smarter Grid?"

**JM** For a long time, we were getting data from the field every two to four seconds. And that's what we call the scan rate of the SCADA master station—the Supervisory Control and Data Acquisition system. But now, with synchrophasers, we can get 40 to 50 samples per second compared to one sample every two to four seconds. We get so much more insight into how the grid operates and it just gives us much more capability to do more.

**TT** I have a personal passion against proprietarization—when software or equipment sellers say "buy my thing, it's the only thing, and I control it; you have to work

with me and I don't work with others." We will not have a smart grid with proprietarization. How have you been able to bring more of an integrated approach to it through your involvement with IEEE?

**JM** The days of standalone devices are long gone. But it only works if the different vendors with their technology components all comply with the same set of standards. There's much more emphasis today on industry standards and that's why IEEE is so important as a standards development organization. Even though there are 39 societies, and 7 councils in IEEE, the Power & Energy Society writes over 50 percent of the standards. It just shows, with respect to the grid, how important standards are.

I have chaired the substations committee, and we have 500 experts writing all the standards for the substation. Up until about the mid-90s, everything was proprietary. The communications and automation were all proprietary, because we didn't have standards that we could point to that were accepted for the industry and that were mutually agreed upon. That changed in the mid-90s, and from then on, the industry requires industry standards that are not proprietary.

**TT** In what ways do you help young professionals and students in IEEE enter the field?

**JM** I tell students and young professionals the three things that you can really benefit from when you are involved with IEEE. One is technology. Two is your network. Three is leadership experience.

First, the best way to learn technology, and to truly learn in depth, is to volunteer to write a standard on that technology.

I differentiate the intelligence we have been adding to the grid over the past 20 to 30 years from the technologies that we have now. What we have now I call the “Smarter Grid”.



You don't write a standard about what you've done in the past, or what you're doing today—but you do have to have a vision for the future.

You are in a room with lots of industry experts from different organizations. You're learning from everybody and everybody is learning from you. When you write a standard you can get that input from all the people there. It is so valuable and so rich—it's information that you would never get just by going to work every day at your own company. You really learn the technology in depth and you also learn where the technology is going because you're writing the standard for the future.

Second, you expand your network with really key industry context. These people that you're working with become lifelong friends, and if you ever get into a situation with your work where you're stumped and you're not sure what decision to make, or you need some more information, you have a vast network of industry people that you can always talk to.

Third, IEEE is a volunteer organization and in my 48 years being an IEEE member I've grown as an engineer and industry leader, gaining valuable leadership experience through many leadership positions I've held.

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**TT** How can IEEE help you grow as an engineer and an industry leader, and do so at your own pace?

**JM** You really cannot do it in your own company, because it takes time to advance in a company. But at IEEE you could do it instantaneously. Volunteer for leadership positions. If you're interested in developing a particular standard, find out where the next meeting is, attend the meeting, and volunteer to write a part of a chapter for a new standard.

I started in the substations committee in 1987 as a working group member, but within one year our working group chair moved on and we had an opening to chair that working group and I volunteered. Within a year I was the chairman of the working group, and I had just joined the year before. There are unlimited opportunities to get really good leadership experience.

**TT** Many of the Legends I have spoken to as part of this series are Eagle Scouts, and so are you and your son. Tell us about that part of your life.

**JM** My father went through scouts himself and he really, really enjoyed the benefits of it. My grandparents were active, and my dad took my [younger] brother and me and made sure we were in Cub Scouts. My mom was our den mother, so my mom had the den meetings in the afternoon. My dad was Scoutmaster for a while in Boy Scouts.

We went through Boy Scouts with a lot of support from our parents. I'm a kind of a very driven person, very competitive. I'm the type of person who always wants to see things through. The challenge of getting the ranks and the merit badges... that was important to me. I became an Eagle Scout and I found that it really helps. [It] not only helps you with your resume, but it also helps you. In Scouts you're not only managing peers, but you're also managing adults, the leaders of the troop. I said that when I hopefully got married and had kids of my own, I'd hopefully have a son, and I would make sure my son had the same opportunities [my parents] gave to my brother and me.





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**TT** You've run a program called Key Insights in Career Management for IEEE PES student members and young professionals. How did you do it, and why?

**JM** I was going to be talking to all of the IEEE PES student members in the US and Canada at the IEEE PES student congress. We always have technical talks on different technical subjects, but it is very important for students and young professionals to get some mentorship and some guidance in their career. I went through 45 years of my full-time engineering career and thought about key decisions and key things that really influenced the rest of my career, and I found that there were 12. I laid out those 12, but I wanted to present them in a way that was fun and entertaining, but still impactful, so I used a lot of family photos, business photos, and some photos from IEEE PES meetings and trips. The impact has been great both within IEEE and with my own company, as a webinar or in person. There's a link on the IEEE PES Resource Center so that anyone in the world can access it and hear what I had to say.