PIMS Workshop on Mathematics and Clean Energy Applications

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Narratives in Mathematics and Clean Energy

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How I got involved in renewable energy

I've always been interested in Applied Mathematics. I graduated with an BMath in Applied Math from Waterloo and completed a PhD in Applied mathematics at University of Alberta. But by the time completed my PhD, I was disillusioned with applied math, as I found it was often applied in name only. So, I headed off to a Post Doc in Physical Oceanography. Working with some of the best oceanographers in the world was illuminating. While the research involved using many advanced mathematical tools, I found my contribution as a mathematician was often to simplify things and to look for patterns in complex data.

When I took up my current position at Acadia University, located on the Bay of Fundy, I hoped that I could find local applications of my research. At the time, my research was focused on the Antarctic Circumpolar Current, research that was important in climate modelling but hardly local. Then, David Greenberg, a researcher at the Bedford Institute of Oceanography, gave me the opportunity to work with his numerical model of the Bay of Fundy and look into the question of the potential resource for tidal energy. It was a great little project, perfect for a couple of keen undergraduate students. It quickly became the focus of my sabbatical (to the detriment of my funded climate project). The project resulted in a nice paper, combining numerical models with some theory to establish the tidal resource was nearly 10 times larger than previously estimated. That caught people's attention and presented me with opportunities.

I then made a key decision. Instead of focussing purely on my own research, I decided to get involved with all aspects of tidal energy in Nova Scotia. I attended many meetings, workshops, conferences and town hall discussions; locally, nationally, internationally. I listened and participated in discussion about engineering, environmental impacts, regulation, social licence, community involvement, everything surrounding tidal energy. Based on what I learned, I chose to apply my mathematical knowledge and resources to projects that would help tidal energy become reality. I said yes to as many opportunities as possible. This often meant stepping forward and taking a leading role in organizing collaborations and writing grant applications. It often pushed me beyond my comfort zone but it was also great fun.

In the end, my advice to other mathematicians who want to get involved in clean energy or climate activities is twofold. First, just go out there and do it; go to the meetings and conferences, listen to what is being said and, when given the chance, speak up. Second, use your training as a mathematician to recognize patterns in difficult problems, to see possible solutions and to explain the solutions to others. Your contributions are needed.