Peer Review

***Grid Connected Solar Power Generation: Engineering Economics, and Risk Management,* by Dr. Peter Gevorkian**

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If I were a municipal, county, or regional administrator charged with the responsibility of recommending where to invest millions of dollars in a far-reaching energy efficiency program to a body of elected officials, Peter Gevorkian's ***Grid Connected Solar Power Generation*** would be my go-to reference guide. Given the breadth of subject matter and depth of thought within this work, I wouldn't need any other source material.

In this, his ninth book covering a territory that he has by now benchmarked, Dr. Gevorkian proves that he is a very sage observer of the technical, practical, and financial elements associated with planning and carrying out large-scale solar energy projects. The greatest testament to Dr. Gevorkian's wisdom is that he is speaking from a wellspring drawn from many decades of experience.

When addressing photovoltaic installation from a theoretical platform, Dr. Gevorkian is operating from a practical bent. His references draw from his vast and diverse sources of forty-plus years of design and installation experience.

His professional work and his books have a well-grounded component of exactness and precision because Dr. Gevorkian has both the ability to visualize the projects as well as to draw upon deep quantitative savvy. It is that quality that lays the foundation for effective measurement and verification. It's as if his books are encyclopedic volumes that represent chapters of his life as a senior engineer, mathematician and academic.

I met Dr. Gevorkian a decade ago when he was in the midst of designing and developing a vast photovoltaics installation for the world-class water and life museum in Hemet, California. The project was commissioned by the Southern California Metropolitan Water District. Michael Lehrer and Mark Gangi were the project architects.

There were two important elements that made this project, and Dr. Gevorkian's work within it, really stand out. First of all, Hemet, located in southern California's Inland Empire, is in remote, near-desert conditions.

So the notion of a water and life museum in the middle of arid land next to a man-made reservoir devoted to preserving an emergency supply of water to serve many millions of southern California residents was, to say the least, a bit of an oxymoron.

Secondly, because the team's plan was to develop a building under these conditions and garner a LEED Platinum rating from the U. S. Green Building Council, the team had to think very creatively. They had no precedents as this project was the first of its kind in the

world. Aided by Dr. Gevorkian's key contributions, the project ultimately was awarded LEED Platinum certification and became quite celebrated.
There were many outstanding design elements in this museum. The solar array was a special highlight, as Dr. Gevorkian took full advantage of all that sun power offered by the location. His ability to take advantage of the conditions available to him – to make lemonade out of lemons, as it were - is one of his greatest strengths.

The primary thrust of ***Grid Connected Solar Power Generation*** is to point out that a team must plan and execute a solar power system holistically in the same way that other successful construction projects operate. By acknowledging the interconnectedness of design, construction and finance, Dr. Gevorkian opines that giving short shrift to one of those key elements is to the peril of the project.

It is clear that the focus of developing this book, intended to help finance sector professionals to understand the practical elements of the "art" and "bricks and mortar" of large-scale solar power projects, is a timely idea. Any builder/developer/designer who has been in discussions with finance professionals about energy efficient projects understands that there is typically an attitude of skepticism that ranges from healthy to prohibitive.

Architects and engineers can preach the merits of energy efficient buildings until they turn blue but the finance sector's objections always start with a variation of "We like the idea but we're afraid it will cost too much." So the critical strategy that the design and construction team must employ is to make the business case. This book is a marvelous tool that bridges the languages – and collective mindsets - of the two professional sectors.

There is no denying that a lot is at stake in this conversation. As Dr. Gevorkian notes, solar power will increasingly play a crucial role as a strategy in the United States as time goes on. In other parts of the world, harnessing solar power for use in buildings is a foregone conclusion. It is mandated worldwide and countries like Germany and Spain are recognized leaders in the development of large-scale solar technology.

The threat of global warming has finally become a reality to mainstream thinkers. The baseline results of the recent 2015 United Nations Climate Change Conference in Paris included the establishment of a plan to commit many billions of dollars worldwide to mitigate the root causes of climate change and to establish a climate technology center.

One outcome of the conference that is linked with the spirit of ***Grid Connected Solar Power Generation*** is that decision makers must pursue dramatic answers. This book offers important practical pieces of the knowledge puzzle by addressing solutions through design, procurement, energy production efficiency, and the associated risks and mitigation measures.

Global though leaders and decision makers must have frequent and thorough access to the work of people like Dr. Gevorkian if we are to collectively pull ourselves out of this pervasive yet muddled climate change morass. In his entire canon of work - all nine books - Peter Gevorkian offers a practical assessment of how to address climate change head on. His insight should be an integral part of the public record in the same spirit that he has taken the time and effort to document solutions in voluminous detail.