10 years of blogging…. Nuclear power is making progress, but it hasn't been easy

It's hard to believe, but this month it is 10 years since our first blog post in May of 2009. 10 years! And what a decade it has been for the nuclear power industry. There were highs and lows, and most of all change…..

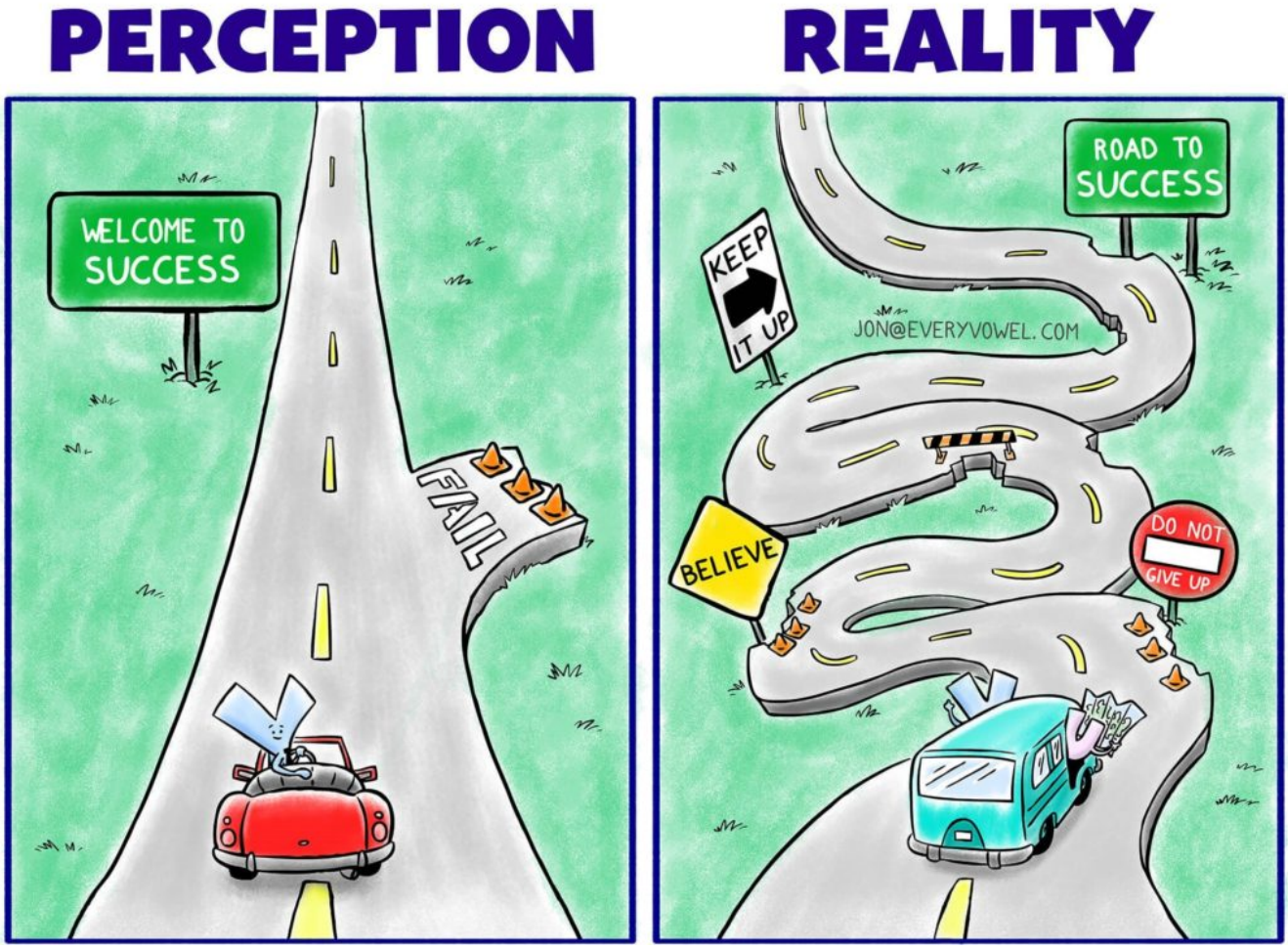
In 2009, there was still optimism about the nuclear renaissance, until the effects of a world financial crisis and the first downturn in global energy demand since World War 2 made it a difficult time to support large energy projects. Nevertheless, the first next generation EPR design in Finland was under construction, and the UAE would soon select the Koreans to build their new nuclear plant (based on their next generation APR1400), to become the first nuclear newcomer-country in many years.

This was also the time the environmental movement started to consider the merits of nuclear power. It was 2009 when Stuart Brand published his book "Whole Earth Discipline: An Ecopragmatist Manifesto" in which he took on the environmental establishment with this statement that "***Cities are green. Nuclear energy is green. Genetic engineering is green.***" This was a turning point for some environmentalists as they started to question their life-long opposition to nuclear power.

It was looking like the industry would weather the financial storm, but then in 2011, the great Tohuku earthquake and the tsunami that followed devastated the coast of Japan resulting in a serious accident at the Fukushima Daichi nuclear power plant. While no one was killed, an event of this magnitude in an advanced country such as Japan heavily reliant on nuclear power caused a huge amount of global fear. To this day Japan only has 5 of its units in operation with some others permanently out of service as many more are working to meet new higher safety standards to enable them to restart. Some countries took a common-sense approach such as China, who stopped approving new builds until they could satisfy themselves that all was in order. Others such as Germany decided to abandon the technology altogether.

There were some positives in this immediate post Fukushima accident period. In the US, two AP1000 projects were approved in 2012 at Vogtle and VC Summer. The UK continued to march forward with its commitment to new build although it took another year for the UK government to agree to a price of energy for the Hinkley Pt C project which is now under construction.

In 2015 Canada made a big re-commitment to nuclear power approving the refurbishment and life extension of 10 units at Bruce and Darlington, a commitment of $25 Billion over 15 years. This clearly showed a strong commitment to nuclear as these plants will continue to be the backbone of the Ontario electricity system into the 2060s.



And there were many challenges. The world's two largest nuclear vendors,
Westinghouse and Areva, struggled financially as a result of difficult projects
that impacted their financial viability.
After taking a huge financial hit, the VC Summer project was cancelled,
and Toshiba sold the bankrupt Westinghouse to Brookfield.
Meanwhile In the US, hydraulic fracking
produced very cheap natural gas causing financial mayhem in those states with
de-regulated electricity markets resulting in some early nuclear plant closures
and more being considered for economic reasons.

In France, Areva was restructured into Framatome and Orano as the Olkiluoto project in Finland and the Flamanville project in France continued to be delayed. French government support

for nuclear weakened as it set out a policy to reduce its reliance on nuclear from 75% to 50% by 2025.

However, in the US today many states are pushing back and providing support to keep their plants operating as they acknowledge the benefits of nuclear power to grid reliability and their near zero carbon emissions. And in France, the current government has accepted the importance of nuclear power delaying the roll back to 50% to at least 2035 as they consider their future strategy.

While many countries in the west continued to experience challenges, the east is charging ahead. China has the world's most ambitious nuclear program having reached 45 units in operation and targeting to triple this by 2030. They are also starting to work their way into the export market with success in Pakistan and discussions ongoing with many countries. And Russia is having a big impact on the global industry as Rosatom has become a leading exporter of nuclear plants.

Concern about climate change has increased with the most recent agreement to reduce green house gases made in Paris in 2015. Following in the steps of Stuart Brand, more environmentalists now believe that nuclear power must be a part of the solution. The evidence from Germany and California demonstrate that a 100% renewable future is not in the cards as the challenges of managing a system based on an energy-diffuse, intermittent energy source becomes clear. To really decarbonize the world must use all the tools available to reduce emissions. This includes nuclear power. Many governments agree and at the Clean Energy Ministerial (CEM) meeting in Vancouver (just getting underway as we write this post), discussion will continue about the NICE initiative (Nuclear

Innovation – Clean Energy future (NICE)) advocating for all clean energy options to be on the table – and this includes nuclear power. During this meeting, the IEA is expected to release a report that supports the need for nuclear energy to meet climate goals.

There is also an active movement to develop the next generation of nuclear plants, so called SMRs (small modular reactors), that are to be smaller, more versatile and easier to build. The thought is to replace the economics of scale with the economics of numbers. The UK, Canada and the US are all promoting these options with a plethora of companies working on these novel designs.

While there have been challenges over the years, we have seen much progress. Every time negative emotions knock us down, facts and logic raise us up. Today we have the first AP1000s, EPRs, VVER1200s and APR1400s in operation, governments are talking about the role of nuclear power to decarbonize the world to combat climate change, a new generation of SMRs is under development, and environmentalists are seeing the possibility of using these plants going forward. This provides us with hope, but we always recognize that while hope is nice, it is not a strategy. There is much work to do in the next decade and the outcome is far from certain. But there is one thing we are certain of – the world needs lots of energy, clean, reliable and economic to power mankind – and nuclear power has what it takes to deliver.

As for our blog, over the last decade we have written about nuclear power's ups and downs, focused on various countries from China to Korea to Canada and the UK, talked about economics and how to make projects successful and the impact of the Fukushima accident on the psychology of the world.

What about the future?
While our audience has increased dramatically over the last 10 years, we are still talking mostly to ourselves – the nuclear industry – and while that may make us all feel good, it does not change minds. We plan to work hard to expand our reach and start a dialogue with those who are more skeptical of nuclear power and see where that takes us. And of course, we want to continue to talk about those things that are happening and what they mean for both the industry and the world at large.
Your thoughts and recommendations on future direction are welcome.

We thank you for reading our blog and hope you will continue.