

## THE FUTURE OF ENERGY LAW – ELECTRICITY

Edward H. Comer\*

Thank you for inviting me to Utah. It is wonderful being here. I would like to start with two brief messages.

First, the good news is that the electric fleet is getting cleaner. It takes a long time to change because our generation fleet is huge, but it has been getting cleaner and this trend will continue in the future. The electric industry has lowered emissions significantly over the past thirty years. In 2009, Sulfur oxides (SO<sub>x</sub>) and sulfur dioxide (SO<sub>2</sub>) emissions were 67 percent lower than they were in 1980. And nitrogen oxide emissions were 72 percent lower over the same period. And during this time, demand for electricity grew by 75 percent. I expect the trend toward cleaner electric generation will continue in the future.

Second, to expedite the clean-up we need good, reliable, low-cost, low-carbon technology that makes electricity affordable for people to use. Lawyers and laws may point the way, but alone, they are not going to get us there. Rather, better, innovative, lower-cost technology is essential to change how electricity is generated and delivered.

This is the start of a new year and a new decade. It's January 2011. I want you to think back ten years to January 2001. You may remember we had a federal budget surplus. There were no such things as—and let me list them—iPods, iPads, Twitter, Facebook, Kindles, Androids. Most televisions had picture tubes, not flat screens. The Hummer was GM's lead car, not the Chevy Volt. We used to have CDs. They replaced vinyl and tapes. Halo was a shampoo, not a video game. Things do change, especially when technology is involved.

I tend to be much more optimistic about the future of electricity than the discussions I heard this morning. Energy, and particularly electricity, is the engine of innovation and productivity for our economy. Today with the computer revolution and the wireless society, almost everything we do is electric powered. People don't read books anymore. They read on an electric-powered screen. Our economy is becoming more productive: we are using less energy per unit of Gross Domestic Product (GDP), largely because of electricity. And I'll say it several times this morning, the electric industry generation portfolio is becoming cleaner. It is gradual, but it is happening. These trends are going to continue.

---

\* © 2011 Edward H. Comer, is Vice President and General Counsel at the Edison Electric Institute. He has been with EEI since 1981. He holds a Bachelors degree from the University of Chicago, where he specialized in Russian History, and a Law degree from the University of Pennsylvania Law School. He is also an active member of the American Bar Association. Prior to joining EEI, he spent several years in private practice at Terris and Sunderland in Washington, D.C. Before that, he worked at the Office of Hearings and Appeals at the U.S. Department of Energy (DOE) on oil rate regulation and allocation issues.

In ten years from now we will have more forms of electric transportation. Electric vehicles will be a more common part of the way we travel. Contrary to views expressed earlier this morning, an electric vehicle is a clean machine. It produces less carbon than a comparable traditional gas-powered vehicle, even if the electricity is generated totally from coal. This is confirmed in a joint study from the Electric Power Research Institute and National Resources Defense Council.<sup>1</sup> If you charge an electric car with electricity that is primarily derived from nuclear, renewables or hydro power, the vehicle is certainly going to be far cleaner. Moreover, since 99 percent of our electricity is produced from domestic fuels, electric transportation offers significant national security and balance of payment benefits.

There is even a more significant reward from the development of electric vehicle technology. The critical element in any practical, cost-effective electric vehicle is a better, lighter, more efficient battery system. Such a battery may be the “killer app” in the electric industry, because the ability to store electricity efficiently and cheaply can truly change the economics, and potentially the structure, of the industry.

Currently, electricity lacks reasonably priced storage options so power—which is transmitted virtually instantaneously—must be generated at the time it is used. This leads to large daily—as well as seasonal—variations in electric use patterns. Affordable storage could help smooth these variations and additionally make variable energy sources, including wind and solar power, more economic and more viable in the long-term.

#### I. OUR DIVERSITY OF FUEL RESOURCES TO GENERATE ELECTRICITY IS A MAJOR STRENGTH

The electric industry is fortunate to have a large diversity of fuels that we can use to generate electricity. Coal is currently our largest fuel source—about 50 percent of domestic electric generation. We also rely upon natural gas, hydro power and nuclear power, as well as renewables. Just as with any business or investment portfolio, diversity gives us a lot of flexibility and risk protection. Diversity, for example, protects against the fuel price risks or delivery risks.

Fuel diversity also provides us with more opportunities to develop clean generation options. In 1980, federal law prohibited using natural gas to produce electricity.<sup>2</sup> Today, natural gas produces about 20 percent of our domestic

---

<sup>1</sup> ELECTRIC POWER RESEARCH INSTITUTE AND NATIONAL RESOURCES DEFENSE COUNCIL, ENVIRONMENTAL ASSESSMENT OF PLUG-IN HYBRID ELECTRIC VEHICLES, VOLUME 3: CALIFORNIA ASSESSMENT REPORT (2009), *available at* [http://my.epri.com/portal/server.pt?space=CommunityPage&cached=true&parentname=ObjMgr&parentid=2&control=SetCommunity&CommunityID=404&RaiseDocID=00000000001017680&RaiseDocType=Abstract\\_id](http://my.epri.com/portal/server.pt?space=CommunityPage&cached=true&parentname=ObjMgr&parentid=2&control=SetCommunity&CommunityID=404&RaiseDocID=00000000001017680&RaiseDocType=Abstract_id).

<sup>2</sup> Energy Supply and Environmental Coordination Act of 1974 (ESECA), Pub. L. No. 93-319, 88 Stat. 246 (1974) (Allowing the Federal Government to prohibit electric utilities from burning natural gas or petroleum products).

electricity supply and that share is increasing!<sup>3</sup> In the late twentieth century, policymakers and businessmen worried that our natural gas supply was declining. Prices were rising and we were building huge liquefied natural gas terminals to import natural gas from overseas. However, with the advent of new hydraulic fracturing technologies, that picture has reversed. We have sufficient natural gas that the producers are worried their prices are too low. And we expect to see many more natural gas generation plants over the next ten years.

## II. KEY CHALLENGES TO PROVIDING ELECTRICITY: RELIABILITY, COSTS AND TECHNOLOGY

The electric industry faces many challenges. Our first challenge is to always keep our customer satisfied. What do customers want? They want two things: low prices and reliability—extraordinarily high reliability, 24/7. Outages that people will accept on a wireless computer connection or a smart phone system are just not acceptable in the electric world. Customers insist that electricity has to be there all the time. Our customers are totally dependent on electricity for more and more things that they do every day. In addition, our customers are very price sensitive. Overall, customers have a good deal in purchasing electricity. Our prices, especially when adjusted for inflation over time, are relatively low and stable. In most places, prices do not vary with time of use. Nevertheless, our customers do not want electricity prices to go higher.

Our second challenge is raising the funds to invest in the cleaner technologies, smart grid systems, and other systems we will need in the future without causing unacceptable cost increases to our customers. The electric industry is the most capital-intensive industry in the country. Power plants and transmission lines last a long time. And it will take a long time to turn over and replace the existing system. Even in the climate bills that were discussed in the last Congress, the assumption was it will take until 2050 to turn over the fleet.<sup>4</sup> It is not something that happens overnight. It's too expensive, it's too complex, and the technology challenges are way too significant.

Generally, cleaner technologies to generate electricity are more costly than conventional technologies. The good news is that some of these costs have been declining. For example, wind energy prices have been coming down significantly over the past decade and can be comparable to prices for coal-based power in many instances.<sup>5</sup>

---

<sup>3</sup> See generally U.S. ENERGY INFORMATION ADMINISTRATION, ANNUAL ENERGY OUTLOOK 2011, available at <http://www.eia.gov/forecasts/aeo/pdf/0383%282011%29.pdf> [hereinafter EIA, ANNUAL ENERGY OUTLOOK 2011].

<sup>4</sup> American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. § 311 (2009). Section 311 established an economy wide greenhouse gas reduction goal of 83 percent below 2005 levels in 2050.

<sup>5</sup> Sarah Feinberg, *Wind turbine prices fall to their lowest in recent years*, BLOOMBERG (Feb. 7, 2011), <http://bnef.com/PressReleases/view/139>.

Similarly, as I alluded to earlier, the cost of natural gas, which we were not allowed to use in 1974, has declined significantly. While there was initial skepticism whether these cost declines are sustainable over the longer term, and there continues to be criticisms of the natural gas production process, at this time, natural gas prices have become an important competitive factor in the wholesale power market.

Electricity generated from natural gas has half the carbon content of electricity generated from coal. This helps reduce our carbon profile. Natural gas is not a long-term solution to the climate problem because a 50 percent reduction is still far above levels that had been proposed in prior legislation. Nevertheless, at this time in terms of the economics of building new generation or replacing coal generation, natural gas is going to be one of the first things you look at.

So much for the good news about fuel options, because we face many other technology and cost challenges. These include the challenge of integrating variable technologies like wind and solar into the electric system. The availability of wind and solar cannot be controlled, but the electric system has to operate at a steady state of 60 cycles a second. Integrating large amounts of wind and solar is a huge technological challenge. It takes a lot of complicated engineering support to keep the system stable. Our customers should not notice whether they are being served by wind, solar or some other source of generation.

A related problem involves the high variability in customer demand patterns. Demand is highest during the day. It's low at night. Smart grid systems giving customers greater ability to control their energy usage can help address this problem. Electric vehicles can help as well, if people would charge their cars at night.

Most observers believe we will continue to need firm base load generation from cleaner nuclear and coal sources to meet our future electricity needs. Coal is simply too large a domestic fuel source, source of jobs, and source of low cost electricity to ignore. Twenty-five states in the country either produce coal or get the majority of their electric power from coal.<sup>6</sup>

For example, coal is the primary electricity fuel source in the Midwest and Southeast. It's used here in Utah. Prices for electricity in those parts of the country tend to be much lower than along the coasts. Whether you like coal or not, coal creates a lot of jobs, and many believe more jobs than the so-called clean energy jobs. This has huge practical and political implications. When you go to Congress and you talk about energy policy, regional interests often more than party affiliations, affect a member's views.

Coal must remain an important part of our future electricity generation mix. Clean coal generation requires reasonably priced carbon capture and storage, a technology that still requires billions in development and demonstration investments to be commercially acceptable. And it requires new laws and regulations to provide certainty for carbon storage underground. Much needs to be done to promote these developments.

---

<sup>6</sup> EIA, ANNUAL ENERGY OUTLOOK 2011, *supra* note 3, at 232 fig.F5.

Nuclear is an important clean fuel source as well. The nuclear industry has done a remarkable job increasing the efficiency of our existing fleet while addressing added safety concerns following Three Mile Island. Nuclear power continues to be challenged in the current environment by high initial investment costs, long-lead times and complex permitting issues. Developments in Japan are sure to cloud nuclear development even more, at least in the short term.

### III. EFFICIENCY IS IMPORTANT, BUT . . .

Nobody talked about efficiency this morning. Efficiency is really important. There are a lot of companies from Walmart to Ford that have made big strides in increasing the efficiency of their operations and their products. The Department of Energy appliance efficiency standards have been in effect for about thirty years. They have made good strides as well. Over the past three years, utilities have doubled our budgets for promoting energy efficiency from \$2.7 billion a year to \$5.4 billion. We have saved enough energy to power approximately 8 million homes a year. The growth in demand for electricity has been declining over time to about 1 percent a year, largely in response to greater end-use efficiency.<sup>7</sup>

Nevertheless, it is not as easy as some people think for utilities to promote and achieve end-use customer efficiency savings. We can give free or reduced-price compact florescent lights to people, conduct training programs, and offer home energy audit programs. But we cannot force our customers to save energy or make them shut off their appliances. Sometimes customers agree to let utilities shut off air conditioners for a few minutes at peak use times, but utilities pay customers for this right.

McKenzie Consulting Group and others have done a lot of economic studies that show that the potential for greater efficiency is huge.<sup>8</sup> But these studies ignore important practical realities that explain why the economic potential is not realized in practice. We heard earlier today the example of the building landlord who has no incentive to invest to reduce his tenant's energy use. A homeowner considering whether to make his house more efficient doesn't just consider potential cost savings in the future, but considers the hassles of finding a qualified contractor and the disruption that accompanies a major renovation. While more insulation may be economically appropriate and may save money in the long run, if finding a qualified contractor and having the work done is a hassle or disrupts regular activities too much, a homeowner may not be inclined to install it. Moreover, with housing values where they are these days, people are probably less inclined to invest to upgrade their houses than they may have been even a couple of years ago.

---

<sup>7</sup> *Id.* at 93.

<sup>8</sup> *Electric Power & Natural Gas, Unlocking Energy Efficiency in the US Economy*, MCKINSEY & COMPANY (July 2009), [http://www.mckinsey.com/en/Client\\_Service/Electric\\_Power\\_and\\_Natural\\_Gas/Latest\\_thinking/Unlocking\\_energy\\_efficiency\\_in\\_the\\_US\\_economy.aspx](http://www.mckinsey.com/en/Client_Service/Electric_Power_and_Natural_Gas/Latest_thinking/Unlocking_energy_efficiency_in_the_US_economy.aspx).

Another element to consider about efficiency is the rebound effect. This was addressed in a recent article in THE NEW YORKER, entitled *The Efficiency Dilemma* by David Owen.<sup>9</sup> Basically he said that efficiency makes using energy cheaper and makes products more affordable, therefore, people may use more. He offers a great example: refrigerators. We have achieved enormous improvements in the efficiency of refrigerators over the past twenty or thirty years. They use far less energy than they ever did in the past. But what else has happened to the refrigerator market? A huge proliferation in refrigerator use. Every college dorm and virtually every hotel room you go into these days has a small mini-fridge. In short, the promise of greater efficiency is important, but we need to be practical and understand that people value comfort, convenience, and matters other than simply price in making decisions affecting how they use energy.

These practicality considerations are now becoming evident in the rollout of new Smart Grid technologies. There was a lot of discussion this morning about how meters will be able to tell customers what their energy use is on 15-minute intervals. Many believe that such information will lead to large reductions in energy use, or at least switching use patterns to less costly off-peak periods. Whether or not customers will find that desirable still remains to be seen. Several pilot programs have produced some reductions in energy use, but there has also been a huge push back against Smart Grid technology by many customers, particularly when it is combined with time of use pricing for electricity. AARP, probably the largest single lobby in the nation, has launched a major nationwide campaign opposing time of use pricing. Many other consumer groups are skeptical about the cost effectiveness of Smart Grid investment. The controversy demonstrates that customers place a high value on electricity and on the comfort, convenience and services it provides them.

#### IV. CLIMATE LEGISLATION AND EPA REGULATION

It may surprise many of you, but the investor-owned segment of the industry was a supporter of climate legislation in the last Congress. We did support achieving an 80 percent reduction in carbon greenhouse gas emissions by 2050. We wanted to do so in a way that protected both the environment and our customers and gave us what we thought was a viable route to accomplish this over a thirty or forty-year period.

You all know that legislation passed the House, but caused an immediate backlash in many circles. Climate legislation never came to a vote in the Senate. And few observers expect any legislation in the next few years.<sup>10</sup> One lesson of the climate bill is that cost impacts matter.

---

<sup>9</sup> David Owen, *The Efficiency Dilemma*, THE NEW YORKER, Dec. 20, 2010, at 78.

<sup>10</sup> Suzanne Goldenberg, *Senate vote may end Obama's climate change ambitions: Four proposals seek to ban or limit US government's authority to regulate greenhouse gas emissions*, GUARDIAN.CO.UK., Mar. 30, 2011, <http://www.guardian.co.uk/environment/2011/mar/30/senate-vote-obama-climate-change>.

Right now the focus is on EPA regulating carbon. However, the real action at EPA is not likely to be carbon, but rules regulating mercury, hazardous air pollutants, the transport of SO<sub>x</sub> and NO<sub>x</sub>, and other emissions from coal and coal combustion by-products that are scheduled to come out over the next three years. Depending on what those regulations require, they could lead to the closure of many of the older, smaller coal plants in the country and in the installation of various pollution controls on many of the rest.

#### V. CONCLUSION

People are more and more dependent on electricity for work, comfort, convenience, communication, and entertainment. We must surmount many challenges to provide electricity in a way that is clean, low cost and always available, while giving end-users tools to use it wisely and efficiently.