PSEG is strengthening its customer relationships by investing heavily in grid enhancements, improving the efficiency and seamlessness of the transmission system, expanding energy efficiency programs, and greening its generation fleet.

If Alexander Graham Bell were suddenly transported from 1876 to today, he would not recognize the telecommunications industry. In contrast, the founder of the electric industry, Thomas Edison, might think he was just waking up from one his famous afternoon naps. The fundamentals of the electric grid—centralized power distributed along wires to homes and businesses—look much the same.

Some in our industry say this is about to change—that we are entering a new, fundamentally different age of energy; that utilities are headed the way of the dinosaurs; and that centralized power is doomed. I agree that change is coming—and already is underway—but I believe that utilities and central power will be at the center of the 21st-century grid.

The utility model has been very powerful in bringing universal access to natural gas, electricity, and water. The utility of today and tomorrow can play a similarly critical role in ensuring universal access to new technologies, from thermostats that promote energy efficiency to solar panels, batteries, and other devices. Utilities have scale and access to customer information that will allow for optimal deployment of these new technologies in a way that maximizes benefits at the lowest cost.
Utilities can ensure that access to these new technologies is not just mostly available to upper-income customers or regressively subsidized by lower- and middle-income customers.

I also believe that grid modernization must differ from utility to utility, reflecting the unique geography, history, situation, and regulatory structure for each company. Our New Jersey utility, Public Service Electric and Gas Company (PSE&G), is a great example. We are investing heavily in grid enhancements to make it more resilient and reliable, improve the efficiency and seamlessness of the transmission system, expand energy efficiency programs, and make our electric generation environmentally friendly.

Improving Reliability and Resiliency
In 2012, Superstorm Sandy broke all records for PSE&G in terms of the number and length of outages, as well as the amount of destruction. But possibly even more telling is that Sandy was the third record-breaking storm in less than 18 months. Storms are not just getting worse; they are coming at us more often.

PSEG has long been an advocate for utilities playing their role in trying to mitigate climate change, but with these three storms something else became crystal clear—a major part of modernizing the electric system must include adapting to and planning for the impacts of climate change.

It would be unwise, especially for those utilities that serve our nation’s coastal regions, to think that powerful storms coupled with rising sea levels will not continue to strain current electric and gas distribution systems.

These storms also illustrate that people have become more dependent on electricity than ever. The average home now has dozens of electric appliances and devices that need to be plugged in or recharged. And with more mobile devices, wider screen TVs, and other gadgets—people are becoming less tolerant when they lose electric service. Quite simply, they expect an ever-increasing level of reliability.

A priority of today’s utilities must be to upgrade our infrastructure so that it cannot only withstand the impacts of frequent and more violent storms, but recover from those storms faster.

After Sandy, PSEG received approval for a three-year, $1.22-billion program—which we dubbed our “Energy Strong” initiative. Work is underway to upgrade, raise, or fortify 28 substations affected by Superstorm Sandy or Hurricane Irene, as well as to replace and modernize 250 miles of gas pipes in flood-prone areas. In addition, we are adding smart technology to help us monitor our system and speed restoration when there are outages.

This is just a start, targeting those especially vulnerable facilities affected by past storms. As those in our industry know all too well, every storm is different and presents its own challenges. Our efforts to harden and increase the resiliency of our facilities need to go beyond the storms we have just weathered and prepare for the storms of the future. Our customers don’t just want this, they expect it.
Modernizing the Transmission System

The building of the electric grid has been called one of the greatest engineering achievements of the 20th century. However, the backbone of the transmission system needs to be modernized due to the massive increase in electricity being used and moved around the grid. PSE&G was among the first public utilities to create a high-voltage transmission system that was efficiently linked into the PJM network. This system provides widespread access to reliable energy and helps lower costs through achieving economies of scale.

The first transmission line to cross New Jersey was built in the 1920s by crews using teams of mules, horses, and oxen to pull wagons loaded with heavy equipment over barely existing roads. PSE&G is replacing and upgrading that line along with other parts of its system. Now, instead of using mules, helicopters are transporting equipment and workers to aid construction in remote areas while also helping limit impacts on pristine land.

In 2014, we completed construction of the $390-million North Central reliability line and placed into service the $400-million Burlington-Camden line. These two 230-kilovolt (KV) lines will make an important contribution to system reliability. In 2015, we energized the 500-KV Susquehanna to Roseland line, which will ease transmission congestion and lower prices in northern New Jersey. These and other transmission projects are being completed on time and on budget.

In all, more than 60 percent of PSEG’s $10-billion, 5-year capital investment program is related to transmission. The tools in our kit may have changed over the last 100 years, but reliability remains fundamental. We will continue to pursue an aggressive transmission modernization program to support the high standard of reliable service that is our company’s and industry’s hallmark.

Expanding Energy Efficiency Investments

This is an area that Thomas Edison, the tireless promoter of expanding uses of electricity, would find hard to fathom. However, I do believe that at the core of our efforts to modernize the grid must be an emphasis on energy efficiency. A utility CEO who believes in climate change—as I do—and understands the impact of power generation on the environment has to look seriously at energy efficiency. Investments in energy efficiency are wins for the customer, for the environment, and for our shareholders—and they create jobs.

My company estimates that reducing energy consumption by 2 percent in New Jersey would put $130 million in the pockets of the state’s consumers and would eliminate 1 million tons of carbon emissions—equal to taking 200,000 cars off our roads.

The cheapest, cleanest energy is the energy you don’t use. Energy
Devastation following Superstorm Sandy was widespread. Crews from around the country and Canada worked tirelessly to bring service back to customers.

Sandy was the third record-breaking storm in less than 18 months.

More than 60 percent of PSEG’s $10-billion, 5-year capital investment program is related to transmission.

Thomas Edison with the founder of PSEG, Thomas McCarter, at the opening of PSEG’s Kearney Plant. The site still hosts a power plant.
waste, having limited resources (money or time) available for energy-related investments, or are skeptical about whether energy savings will actually materialize and justify their investment. Landlords also are reluctant to make efficiency upgrades in heating and cooling systems when the benefits of lower bills will flow through to the tenants (residential and commercial) who pay the utility bill.

To put it simply: Energy efficiency just isn’t a priority for most people or businesses—even when it makes strong economic sense.

Utilities can be instrumental in closing the energy efficiency investment gap, putting to work our low-cost capital, our brand and customer relationships, and our focus on serving everyone. When a utility invests in energy efficiency, it creates a dynamic where even if rates go up, bills can come down.

I am proud of the results PSE&G has achieved with energy efficiency programs: a total investment of about $300 million so far. For example, we have a program that helps hospitals make energy efficiency improvements, saving them more than $11.5 million a year in energy costs. Those savings can make it easier for a hospital to afford new, life-saving medical equipment, benefiting our customers who use those facilities.

We recently received approval to invest an additional $95 million in three popular energy efficiency programs, but we want to do much more. Energy efficiency will be most powerful when all customers are taking advantage of new technologies that lower costs and usage. We need to maximize the benefits of energy efficiency by moving toward universal participation. Utilities, with a role defined beyond the meter, can be critical in making this happen and doing so in the lowest-cost manner.

Making energy efficiency universal is a role that’s tailor-made for a utility. It’s doable if we build on the real advantages of being connected together in a strong network, serving all.

We have a diverse country, so it makes sense to customize strategies to match the particular situation, energy profile, and characteristics
Subsidies are needed to help nurture and grow new technologies, but asking all customers, including those struggling to pay their bills, to subsidize installations primarily used by high-income customers is not right.

Greening Our Generation Fleet
The electric industry has spent billions of dollars greening the fleet. We have increased the effectiveness and capacity of existing emissions-free nuclear plants; invested in technology at coal plants that dramatically reduces mercury, sulfur oxides, nitrogen oxides, and particulate emissions; and shifted to greater use of comparatively green natural gas. And electric utilities are at the forefront of investing in renewables.

At PSEG, through a program we call “Solar 4 All,” we have installed solar at many of our facilities, on old landfills and brownfields, and on 180,000 utility poles throughout PSE&G’s service territory. We currently operate more than 100 megawatts (MW) of utility-scale solar in our New Jersey-based utility. In addition, our unregulated business, PSEG Solar Source, has 11 solar facilities in nine states totaling 123 MW.

As we transform the grid, we will need to ensure that it can accommodate an expansion of distributed energy resources, including rooftop solar, wind, and storage. This includes increasing the “eyes and ears” in the distribution system to better integrate these resources and manage their impact.

However, there is a limit to what can be done to add solar in a highly developed state such as New Jersey. Not everyone can put solar on their home or on a warehouse.

Many of our customers live in apartments that simply cannot take advantage of rooftop solar. As more suburban and rural customers adopt solar (and the large subsidies that all customers pay for), the burden for maintaining the grid shifts to those who have not or cannot take advantage of solar.
we need a new way of thinking, with greater partnering between regulators and utilities. If all parties can work together—and not against each other—the rewards to customers, our economy, and our environment will be enormous. This new framework must align the interests of our consumers, shareholders, and society.

Today, utilities’ revenues are directly tied to the amount of electricity they sell. This model reaches back to Thomas Edison’s days when regulators wanted to reward utilities for adding new customers to the burgeoning electric grid.

As effective as these incentives were, they are out of step with what our customers and society need today. Utilities need incentives to reduce energy use and customer bills, not sell more. Utilities need a construct that supports long-term plans to make existing infrastructure smarter and more resilient—investments that make the grid work better but do not necessarily add new customers. Modernizing the way we regulate utilities will help make energy more reliable, cleaner, and more affordable for all customers.

A new framework also is critical to making sure that the power of the utility is unleashed so that all customers have access to the benefits of new technologies.

A New Regulatory Framework
There is one more area that needs to be modernized—the regulatory framework under which utilities make investments. Going forward,

Subsidies are needed to help nurture and grow new technologies, but asking all customers, including those struggling to pay their bills, to subsidize installations primarily used by high-income customers is not right. It is simply more efficient and fair for the utility to deploy the technology and share both the benefits and the costs among all its customers.

While solar is having a positive impact, we need to keep in mind that energy efficiency delivers more environmental bang for the buck and, if done right, can be made universally available.

Our efforts to clean our generation need to continue. These initiatives will lessen the negative impact of our industry and will support the next big wave of environmental improvements in air quality, including reduced carbon emissions as we electrify the transportation sector. Energy produced by centralized generation is by its nature more efficient than lots of mobile power generation in the form of combustion engines. But the real payoff for the electrification of transportation comes as we continually improve the environmental profile of the electricity behind it.

A new framework also is critical to making sure that the power of the utility is unleashed so that all customers have access to the benefits of new technologies.

Maybe the utility of the future will be unrecognizable by our founder, but I am convinced that utilities are at the core of modernizing our electric grid. Now, more than ever, we need a regulatory framework that releases and unlocks that power.