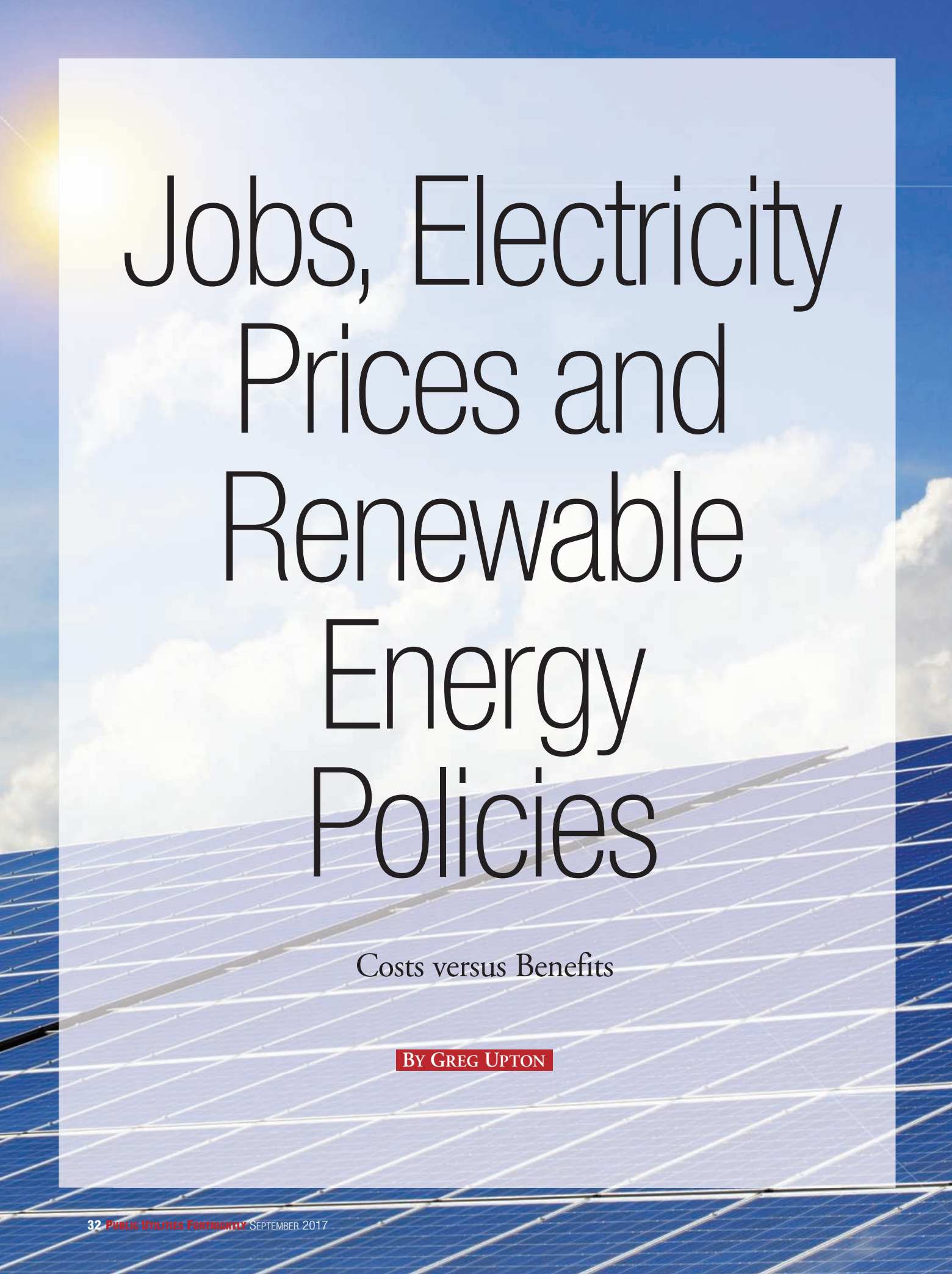

Jobs, Electricity Prices and Renewable Energy Policies

Costs versus Benefits

By Greg Upton

In December 2015, the world came together in what was considered a historic agreement to reduce carbon dioxide emissions to combat global climate change. But shortly after the 2016 U.S. presidential election, newly elected President Donald Trump announced that the nation would exit the Paris Agreement.

The Paris Agreement's major goal is "keeping a global temperature rise this century well below two degrees Celsius above pre-industrial levels." Advocates for the agreement point to renewable energy as a primary way to reduce carbon emissions that warm global temperatures.

In his June 2017 speech announcing the withdrawal, President Trump argued that the agreement disadvantaged American workers and taxpayers and specifically cited millions of lost jobs.[1] However, the Paris Agreement itself specifically lists "creation of decent work and quality jobs" as a priority.

This rhetorical battle is not new. Those in favor of government policies that support renewable energy argue that these policies will create jobs, while opponents argue the opposite. Clearly, both sides cannot be correct. Policies aimed at promoting renewable energy technologies over traditional fossil fuels have been either net job creators or net job destroyers. Both cannot be true.

The U.S. provides a natural case study for the impact of renewable energy policies on electricity markets, and by extension on consumers of electricity. Renewable portfolio standards are state-level policies that require a proportion of electrical demand be supplied by specified renewable sources by a specific date. RPS legislation has been passed and implemented in thirty states. Figure One lists RPS states and the year of passage.

Renewable portfolio standards target utilities and other electricity providers and require them to comply with the regulatory mandate. They typically include a system of renewable energy credits. Renewable energy providers generate one credit for every megawatt-hour of renewable electricity produced.

The political push for these standards and other renewable energy policies are generally summarized with two major talking points. First, it is argued that these policies will create high-quality well-paying jobs for local residents,[2] instead of spending those same dollars importing fossil fuels from other parts of the country and world.

Second, it's argued that these policies lead to decreases in electricity prices. Often, short periods of low or even negative prices associated with surges in renewable power at peak producing times are cited.[3] After all, the fuel for these sources is free, right?

My recent research provides insight into the questionable nature of these arguments. First, a simple descriptive analysis reveals that the thirty U.S. states that have implemented renewable portfolio standards have experienced slower growth in renewables than those states without the standards.

When controls for political, economic and renewable energy characteristics are considered, the standards have not had an impact on in-state renewable energy generation or capacity growth. Thus, the argument that these standards are spurring local development is difficult to justify.

States with RPS have experienced significantly faster increases in electricity prices than states without the standards.

Renewable energy has grown in the U.S. significantly over these past two decades, but the states with these standards have not experienced a disproportionate share of this growth.

Second, research shows that states with renewable portfolio standards have experienced significantly faster increases in electricity prices than states without the standards.

Empirical point estimates suggest an eleven percent increase in electricity prices in RPS states, relative to comparable states without the standards.

While the exact counterfactual absent the policy is always difficult to determine with certainty, these results are clearly inconsistent with the notion that these standards lead to decreases in electricity prices to final consumers.

There is no doubt that environmental and health externalities associated with fossil fuel consumption exist. These have been extensively documented both anecdotally as well as in the academic literature.

Further, concern about global climate change is increasingly becoming the primary catalyst for investment in alternative energy. Renewable energy does have the potential to play a valid and valuable role in addressing these problems. But, it is

(Cont. on page 37)

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This piece is loosely based on the 2017 article in Energy Economics entitled "Funding renewable energy: An analysis of renewable portfolio standards."

Renewable Energy Policies

(Cont. from p. 33)

disingenuous to pretend that there are no costs associated with this transition. Unfortunately, in economics there are rarely win-win-win situations.

Is it possible to mitigate environmental concerns associated with energy production? Absolutely. Can renewable energy generation be a component in this process? Of course. Can we achieve this at a lower cost while simultaneously creating more jobs? Doubtful.

As society looks to wean itself off fossil fuels, we must simultaneously acknowledge that doing so will be costly. While future generations might be grateful for our efforts, the reality is that the current generation is incurring the costs. Being honest about this is the first step to moving toward a carbon-reduced future. PUF

Endnotes:

1. NERA Economic Consulting. Impacts of Greenhouse Gas Regulations on the Industrial Sector. March 2017. http://assets.accf.org
2. Some illustrative examples:
   National Solar Jobs Census.
   http://www.thesolarfoundation.org
   EDF Environmental Defense Fund and Meister Consultant Group.
   "Now Hiring: The Growth of America's Clean Energy & Sustainable Jobs"
   http://edfclimatecorps.org
   Sierra Club.
   "Report: Clean Energy Jobs Overwhelm Coal, Oil & Gas in 41 States and D.C."
   https://www.docdroid.net
   Think Progress.
   "Clean Energy Employs More People than Fossil Fuels in Nearly Every U.S. State"
   https://thinkprogress.org
3. Other examples:
   PV Magazine.
   "German Renewables Pushing Wholesale Electricity Further into Negative Territory." https://www.pv-magazine.com
   Scientific American.
   "Energy Costs at Record Lows Thanks to Natural Gas and Clean Energy."
   https://www.scientificamerican.com
   Quartz.
   "California is Getting So Much Power from Solar that Wholesale Electricity Prices are Turning Negative."
   https://qz.com
   Clean Energy Council.
   "About Electricity Prices."
   http://www.cleanenergycouncil.org.au

FIG. 1 OVERVIEW OF RENEWABLE PORTFOLIO STANDARDS

State	Year	State	Year
Arizona	2001	Montana	2005
California	2002	Nevada	1997
Colorado	2004	New Hampshire	2007
Connecticut	1999	New Jersey	2001
Delaware	2005	New Mexico	2002
Hawaii	2004	New York	2004
Illinois	2005	North Carolina	2007
Iowa	1983	Ohio	2008
Kansas	2009	Oregon	2007
Maine	1999	Pennsylvania	2004
Maryland	2004	Rhode Island	2004
Massachusetts	1997	Texas	1999
Michigan	2008	Washington	2006
Minnesota	1997	West Virginia	2009
Missouri	2008	Wisconsin	1999

Notes: West Virginia's RPS was repealed in 2015. Vermont passed an RPS in 2015, but was not included in this analysis due to its passage occurring beyond the time period of this study due to data availability.

Powering America's Jobs

(Cont. from p. 30)

in the country. This is the largest engineered system on planet Earth. If you do things on taxes that change or make more expensive the cost of capital, or hinder the companies' access to capital, then that has a kind of negative ripple effect.

I don't understand how regulators or policy makers can do what they need to do, and make good decisions, if they don't understand the dimensions and the economic impact of an industry that they are affecting. Our report shows how dynamic the industry is, and how it is changing. The need for more sophisticated, more knowledgeable, more multi-skilled employees is only going to grow.

We think we've made a good contribution by showing the elements of the economic impact that sometimes have been overlooked, or have been thought of as not part of the electric industry, when they very much are. We hope it's a resource that will periodically be refreshed. This was a necessary piece of work to do, and we were happy to have been able to be the ones to do it. PUF

On September 14, 1847, **William Ayrton**, was born in London, England. He co-invented several electric measuring devices. And he introduced the electric arc light to Japan as that country was first modernizing after the opening by Commodore Perry.