



**Caesar Rodney Institute
Center for Energy Competitiveness**

Renewable Portfolio Standards Cost Caps

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Executive Summary

Delaware's General Assembly approved a 3% cost cap when extending the states Renewable Portfolio Standards (RPS) in 2010. The cap was exceeded in 2012, and now is over 9% for customers of Delaware's one regulated electric utility, Delmarva Power, but no freeze has been triggered. Without a freeze compliance cost may rise to 12.5% to 15% by 2025, and 21% to 24% by 2032. After seven years there is finally a robust regulation in the final stages of approval to calculate whether a freeze is required. A freeze is expected to be declared in the next few months. The General Assembly may be tempted to increase the cost cap, but this study indicates a higher cost cap would not be supported by Delaware electric customers.

Twenty nine states have mandatory RPS, and twenty have costs caps to protect electric customers from excessive increased costs from the premium costs of wind, solar, and other alternative power sources. The caps range from 0.1 % in Montana to 12.6 % in New Jersey, and average 4.4%. The RPS require using more alternative power each year, but if the cost cap is exceeded the increasing requirement is frozen in place. Only Ohio implemented a freeze, and that was temporary for two years.

Willingness to Pay surveys indicate about a third of people would pay nothing extra on utility bills to reduce global warming, about a quarter would pay 3%, about a fifth would pay 6%, and the final fifth would pay substantially more. However, there is a big disconnect between the number of people who say they would pay more, and those who actually participate in voluntary utility based Green Pricing Programs that charge a 2% to 10% monthly premium for 100% renewable energy. Two thirds say they would pay more in Willingness to Pay surveys, while an average of only about 2% opt in for modest Green Pricing Programs.

States with Mandatory RPS

State	Cost Cap %	State	Cost Cap %	State	Cost Cap %
Arizona	none	Massachusetts	8%	North Carolina	1.4%
California	None	Michigan	3.1%	Ohio	1.3%
Colorado	2%	Minnesota	None	Oregon	4%
Connecticut	7.1%	Missouri	1%	Pennsylvania	None
Delaware	3%	Montana	0.1%	Rhode island	9.5%
Hawaii	None	Nevada	None	Texas	3.1%
Illinois	1.3%	New Hampshire	7.3%	Vermont	None
Iowa	None	New Jersey	12.6%	Washington	4%
Maine	6.1%	New Mexico	3.5%	Wisconsin	7.6%
Maryland	6.5%	New York	1.7%		

Source: National Conference of State Legislators State Renewable Portfolio Standards and Goals
<http://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx>

Willingness to Pay Surveys

There are a number of surveys measuring how much Americans are willing to pay on electric utility bills to reduce global warming. The University of Michigan survey from this year seems to represent about the midline of the other surveys, has the clearest delineation of cost brackets, and is the most recent survey. The key points are; 34% would pay nothing extra, 62% would pay up to \$4/month (about 3% in Delaware), and 80% of the population is not willing to pay more than \$8/month (about 6% in Delaware). The Public Service Commission staff estimated Delmarva Power residential customers paid 9.5% in the 2016 Compliance Year that ended May 31, 2017. Summaries of several surveys follow:

- Associated Press/Energy & Policy Institute University of Chicago 9/15/2016
<https://www.cbsnews.com/news/americans-money-to-fight-global-warming-climate-change/>
57% would pay \$0 to \$1/month, 39% up to \$10/month, 33% up to \$20/month. 20% up to \$50/month
- Laboratory for Energy & Environment, MIT 4/2007
https://sequestration.mit.edu/pdf/LFEE_2007_01_WP.pdf
79% would pay \$0 to \$5/month, 59% up to \$10/month, 30% up to \$25/month, 19% up to \$50/month, 10% up to \$100/month
- Willingness to Pay, Kotchen (Yale), Boyle (National Bureau of Economic Research, Leiserowitz (Virginia Tech) 1/18/2012
<http://environment.yale.edu/kotchen/pubs/pinstchc.pdf>
31% would pay \$0, 15% \$2/month, 15% \$5/month, 8% \$10/month, 2% \$13/month, 1% \$16/month, 4% \$21/month, 21% didn't know or didn't answer
- "National Survey on Energy & Environment", Center for Local, State, and Urban Policy, University of Michigan, Spring, 2017 <http://closup.umich.edu/national-surveys-on-energy-and-environment/nsee-data-tables/nsee-2017-spring/#TOC>
34% would pay \$0, 28% up to \$4/month, 18% up to up to \$8/month, 7% up to \$21/month, 4% up to \$42/month, 3% would pay more, 6% not sure.
- Rasmussen, 6/15/2015, <https://www.newscorpse.com/ncWP/?p=28686>
41% would pay \$0, 24% \$ up to \$8/month, 26% up to \$25/month, 6% up to \$83/month

Other Measures of Willingness to Pay

There are over fifty public utilities offering Green Pricing Programs to their customers to purchase 100% renewable energy service for a premium charge per month. The most recent comprehensive study was conducted by the Institute for Energy Research in 2013 covering thirty-one utilities. IER found an average participation rate of 2.1% with a range of 0.035% to 21%, with two thirds of the programs with less than 1%. An earlier study by the National Renewable Energy Laboratory found similar results. There is a large disconnect between what people say in Willingness to Pay surveys, and what they do when an actual program is available.

In surveys about two thirds of respondents would be willing to pay some premium to reduce global warming, but only about 2% actually sign up for a program.

- “New Hampshire utility to end renewable energy rate program” , Associated Press 7/29/2013, <https://www.wind-watch.org/news/2013/07/30/new-hampshire-utility-to-end-renewable-energy-rate-program/> 30% premium had 0.04% participation rate, \$3/month had 1.2% participation rate
- ‘Green Pricing Programs”, Institute for Energy Research, 6/2013, <http://instituteforenergyresearch.org/topics/policy/green-pricing-programs/> 2.1% average participation rate among 31 utilities with two thirds below 1%, range was .035 to 21%
- “Utility Green Pricing Programs, What Defines Success”, National Renewable Energy Laboratory, 9/2001, <https://www.nrel.gov/docs/fy01osti/29831.pdf> highest participation rate was 7.4%, over half were less than 1%
- Delaware Electric Cooperative offers a Green Pricing Program for about \$2/month and has about a 0.3% participation rate according to Mark Nielson, DEC VP

Forecast of future RPS cost in Delaware

DNREC has quoted estimates from the Delmarva Power 2016 Integrated Resource Plan showing RPS costs going down in the future. Those reports are out-of-date. Federal tax credits for renewable energy have been reduced in future years. The Investment Tax Credit, often used for solar projects, will be reduced from 30% to 10% by 2022. The Production Tax Credit, most often used for wind projects, will be phased out completely by 2022. Meanwhile, annual cost reductions for solar and onshore wind power projects have essentially stopped. If state RPS mandates continue, or even increase, state subsidies will have to increase.

I expect onshore wind power Renewable Energy Credit prices to increase from about \$11/REC today to \$35/REC by 2022, and Solar Renewable Energy Credits will increase from about \$35/SREC today to \$100/SREC by 2022, all in 2016\$. Other key assumptions are electric demand falls at 1% a year, offsets from the Qualified Fuel Project will be primarily used for RECs, and offshore wind costs use Maryland project estimated cost for a 70 MW wind farm.

Renewable Compliance Charges for Delmarva Power customers could rise to 12.5% by 2025 without offshore wind, or 15% with offshore wind. There has been discussion of extending and expanding the RPS to 50% by 2032 with an 8.5% solar carve out. That could lead to a compliance charge of 21% by 2032 without offshore wind, and 24% with offshore wind.