

Carbon Pricing Education

Carbon Pricing Senior
Task Force

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Monitoring Analytics

Carbon Allowance Price Impacts on Cost Based Offers

Carbon Price per MWh				
Unit Type	Carbon Allowance Price			
	\$5/metric ton	\$10/metric ton	\$15/metric ton	\$50/metric ton
CT	\$2.45	\$4.90	\$7.36	\$24.52
CC	\$1.67	\$3.34	\$5.01	\$16.71
CP	\$4.32	\$8.63	\$12.95	\$43.15
Unit Type	Carbon Allowance Price			
	\$100/metric ton	\$200/metric ton	\$400/metric ton	\$700/metric ton
CT	\$49.04	\$98.08	\$196.17	\$343.29
CC	\$33.41	\$66.83	\$133.65	\$233.89
CP	\$86.30	\$172.60	\$345.21	\$604.12

Carbon Allowance Contribution to PJM Load Weighted LMP, 2015 through 2018

Year	LMP	Carbon Allowance Contribution	
	(\$/MWh)	\$/MWh	Percent
2015	\$36.16	\$0.21	0.6%
2016	\$29.23	\$0.09	0.3%
2017	\$30.99	\$0.09	0.3%
2018	\$38.24	\$0.16	0.4%

Carbon Price Implied by REC prices

	2015	2016	2017	2018	2019
Jurisdiction with Tier I or Class I REC	Carbon Price (\$ per metric ton) Implied by REC Prices				
Delaware	\$31.91	\$32.91	\$10.26	\$10.22	\$13.30
Maryland	\$31.04	\$33.35	\$35.26	\$35.94	\$31.78
New Jersey	\$25.29	\$26.93	\$24.01	\$23.00	\$19.72
Ohio	\$8.52	\$5.29	\$6.27	\$9.43	\$11.12
Pennsylvania	\$30.17	\$33.49	\$35.40	\$36.17	\$31.78
Washington, D.C.	\$3.91	\$4.40	\$4.88	\$4.74	\$5.64
Jurisdiction with Solar REC	Carbon Price (\$ per metric ton) Implied by Solar REC Prices				
Delaware	\$85.40	\$86.48	\$35.70	\$17.33	
Maryland	\$296.62	\$292.64	\$252.59	\$210.76	\$137.64
New Jersey	\$388.73	\$424.21	\$459.21	\$439.03	\$391.50
Ohio	\$64.86	\$69.53	\$72.40		
Pennsylvania	\$66.89	\$55.06	\$43.84	\$24.77	\$44.50
Washington, D.C.	\$994.05	\$993.49	\$866.17	\$823.23	\$768.99

Cap & Trade Carbon Prices - RGGI

Auction Date	Allowance Quantity Offered (metric tons)	Allowance Quantity Sold (metric tons)	Clearing Price (\$ per metric ton)
March 11, 2015	13,855,137	13,855,137	\$5.96
June 3, 2015	14,068,236	14,068,236	\$6.06
September 3, 2015	23,019,179	23,019,179	\$6.64
December 2, 2015	13,947,311	13,947,311	\$8.27
March 9, 2016	13,461,475	13,461,475	\$5.79
June 1, 2016	13,689,106	13,689,106	\$4.99
September 7, 2016	13,527,321	13,527,321	\$5.00
December 7, 2016	13,418,459	13,418,459	\$3.91
March 8, 2017	13,037,428	13,037,428	\$3.31
June 7, 2017	13,242,606	13,242,606	\$2.79
September 8, 2017	13,037,686	13,037,686	\$4.80
December 8, 2017	13,324,723	13,324,723	\$4.19
March 14, 2018	12,295,774	12,295,774	\$4.18
June 13, 2018	12,492,867	12,492,867	\$4.43
September 9, 2018	12,328,741	12,328,741	\$4.96
December 5, 2018	12,120,580	12,120,580	\$5.90
March 13, 2019	11,687,660	11,687,660	\$5.81
June 5, 2019	11,994,304	11,994,304	\$6.19
Load Weighted Clearing Price - March 2015 through June 2019			\$5.24

Cap & Trade Carbon Prices - California

Auction Month	Total Current Vintage Allowances Offered (metric tons)	Total Current Vintage Allowances Sold (metric tons)	Current Auction Settlement Price (\$ per metric ton)
Feb-15	73,610,528	73,610,528	\$12.21
May-15	76,931,627	76,931,627	\$12.29
Aug-15	73,429,360	73,429,360	\$12.52
Nov-15	75,113,008	75,113,008	\$12.73
Feb-16	71,555,827	68,026,000	\$12.73
May-16	67,675,951	7,260,000	\$12.73
Aug-16	86,278,410	30,021,000	\$12.73
Nov-16	87,069,495	76,960,000	\$12.73
Feb-17	65,104,273	11,673,000	\$13.57
May-17	75,311,960	75,311,960	\$13.80
Aug-17	63,887,833	63,887,833	\$14.75
Nov-17	79,548,286	79,548,286	\$15.06
Feb-18	98,215,920	98,215,920	\$14.61
May-18	90,587,738	90,587,738	\$14.65
Aug-18	79,421,265	79,421,265	\$15.05
Nov-18	78,825,717	78,825,717	\$15.31
Feb-19	80,847,404	80,847,404	\$15.73
May-19	66,321,122	66,321,122	\$17.45
Load Weighted Settlement Price - Feb 2015 through May 2019			\$14.07

Potential Auction Revenue

Estimated CO ₂ allowance revenue (\$ millions)						
	5 percent reduction below 2018 PJM generator emissions	10 percent reduction below 2018 PJM generator emissions	15 percent reduction below 2018 PJM generator emissions	20 percent reduction below 2018 PJM generator emissions	25 percent reduction below 2018 PJM generator emissions	50 percent reduction below 2018 PJM generator emissions
Jurisdiction	Carbon Price (\$ per metric ton) \$6.00					
Delaware	\$14.6	\$13.8	\$13.0	\$12.3	\$11.5	\$7.7
Illinois	\$180.6	\$171.1	\$161.6	\$152.1	\$142.5	\$95.0
Indiana	\$254.4	\$241.0	\$227.6	\$214.3	\$200.9	\$133.9
Kentucky	\$155.1	\$146.9	\$138.8	\$130.6	\$122.4	\$81.6
Maryland	\$88.8	\$84.1	\$79.4	\$74.8	\$70.1	\$46.7
Michigan	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
New Jersey	\$80.3	\$76.0	\$71.8	\$67.6	\$63.4	\$42.2
North Carolina	\$1.6	\$1.5	\$1.4	\$1.3	\$1.2	\$0.8
Ohio	\$459.8	\$435.6	\$411.4	\$387.2	\$363.0	\$242.0
Pennsylvania	\$421.0	\$398.8	\$376.7	\$354.5	\$332.4	\$221.6
Tennessee	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Virginia	\$177.9	\$168.5	\$159.2	\$149.8	\$140.4	\$93.6
Washington, D.C.	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
West Virginia	\$335.3	\$317.7	\$300.0	\$282.4	\$264.7	\$176.5
Total	\$2,169.3	\$2,055.1	\$1,940.9	\$1,826.7	\$1,712.6	\$1,141.7

Potential Auction Revenue

Jurisdiction	Estimated CO ₂ allowance revenue (\$ millions)					
	5 percent reduction below 2018 PJM generator emissions	10 percent reduction below 2018 PJM generator emissions	15 percent reduction below 2018 PJM generator emissions	20 percent reduction below 2018 PJM generator emissions	25 percent reduction below 2018 PJM generator emissions	50 percent reduction below 2018 PJM generator emissions
	Carbon Price (\$ per metric ton)					
	\$15.00					
Delaware	\$36.5	\$34.5	\$32.6	\$30.7	\$28.8	\$19.2
Illinois	\$451.4	\$427.6	\$403.9	\$380.1	\$356.4	\$237.6
Indiana	\$636.1	\$602.6	\$569.1	\$535.6	\$502.2	\$334.8
Kentucky	\$387.7	\$367.3	\$346.9	\$326.5	\$306.1	\$204.0
Maryland	\$221.9	\$210.3	\$198.6	\$186.9	\$175.2	\$116.8
Michigan	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
New Jersey	\$200.7	\$190.1	\$179.5	\$169.0	\$158.4	\$105.6
North Carolina	\$3.9	\$3.7	\$3.5	\$3.3	\$3.1	\$2.1
Ohio	\$1,149.5	\$1,089.0	\$1,028.5	\$968.0	\$907.5	\$605.0
Pennsylvania	\$1,052.5	\$997.1	\$941.7	\$886.3	\$830.9	\$553.9
Tennessee	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Virginia	\$444.7	\$421.3	\$397.9	\$374.5	\$351.1	\$234.1
Washington, D.C.	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
West Virginia	\$838.3	\$794.2	\$750.1	\$706.0	\$661.8	\$441.2
Total	\$5,423.1	\$5,137.7	\$4,852.3	\$4,566.9	\$4,281.4	\$2,854.3

RPS Compliance Cost

RPS Compliance Cost as reported by Jurisdictions (\$ million)					
Jurisdiction with RPS	2014	2015	2016	2017	2018
Delaware		\$16.0	\$18.4	\$18.8	
Illinois	\$21.7	\$24.8	\$25.7	\$25.9	\$25.8
Maryland	\$104.0	\$126.7	\$135.2	\$72.0	
Michigan	\$0.5		\$3.3	\$4.0	
New Jersey	\$395.8	\$524.8	\$593.4	\$606.3	
Ohio	\$42.6	\$42.6	\$37.6	\$39.9	
Pennsylvania	\$86.2	\$114.6	\$125.0		
Washington D.C.	\$27.4	\$38.5	\$47.2	\$42.7	\$50.6
PJM Total	\$678.1	\$888.0	\$985.9	\$809.6	\$76.4

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