

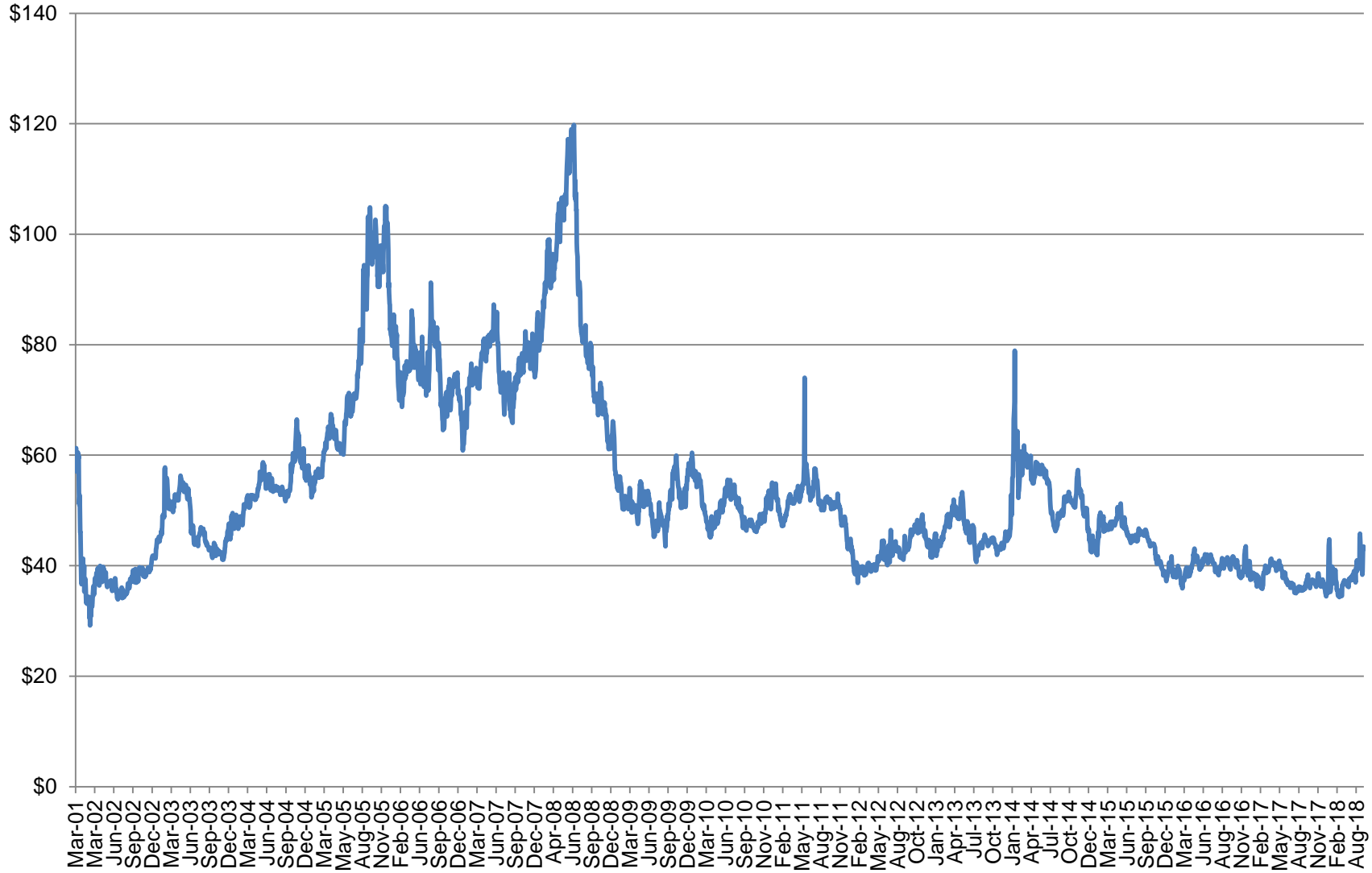


# Electric Forward Market Report

## Front Year PJM Western Hub On-Peak (5x16) - \$/MWh

Report Date: 02/15/2019

\$/MWh



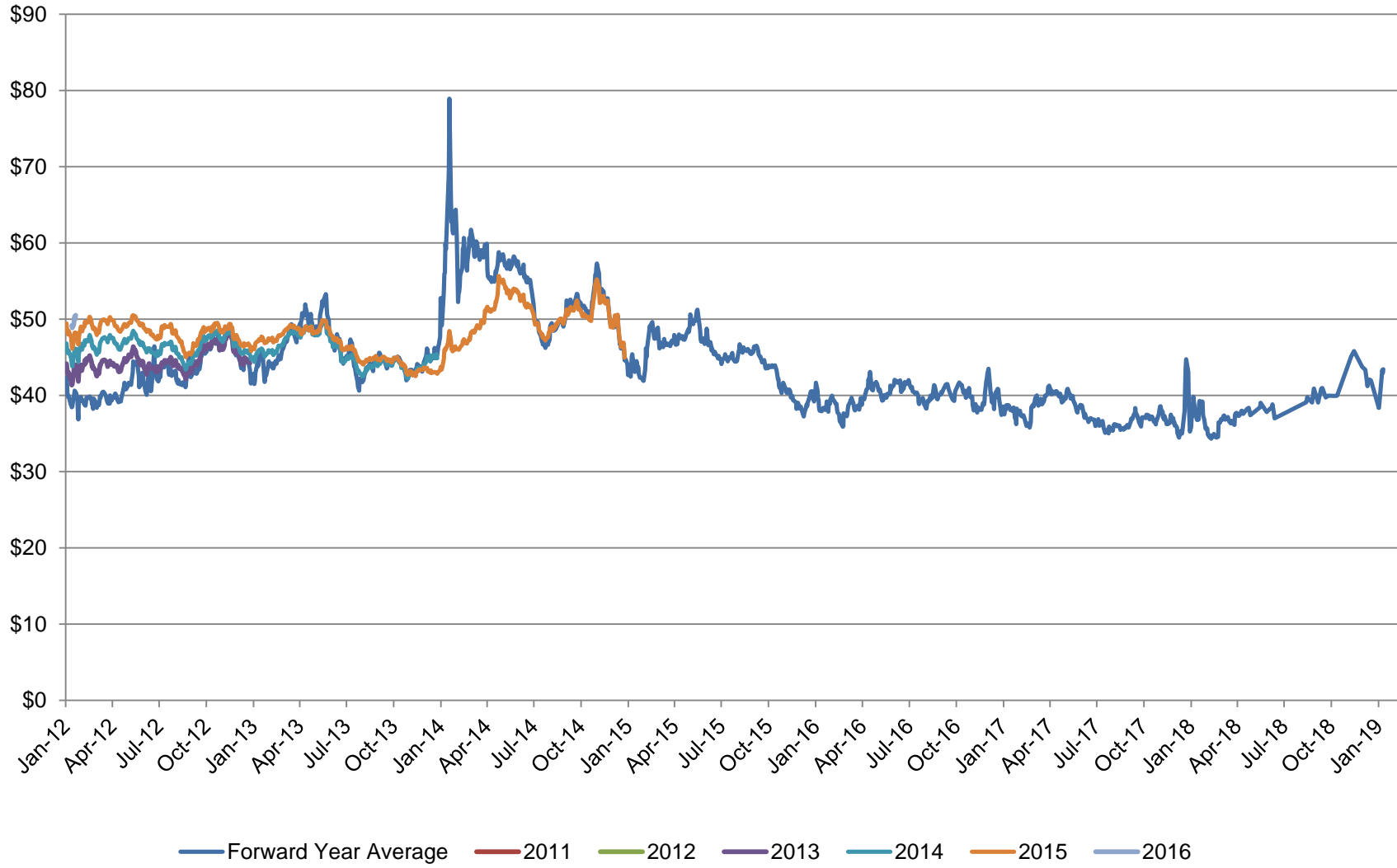


# Electric Forward Market Report

## Annual PJM Western Hub On-Peak (5x16) - \$/MWh

Report Date: 02/15/2019

\$/MWh



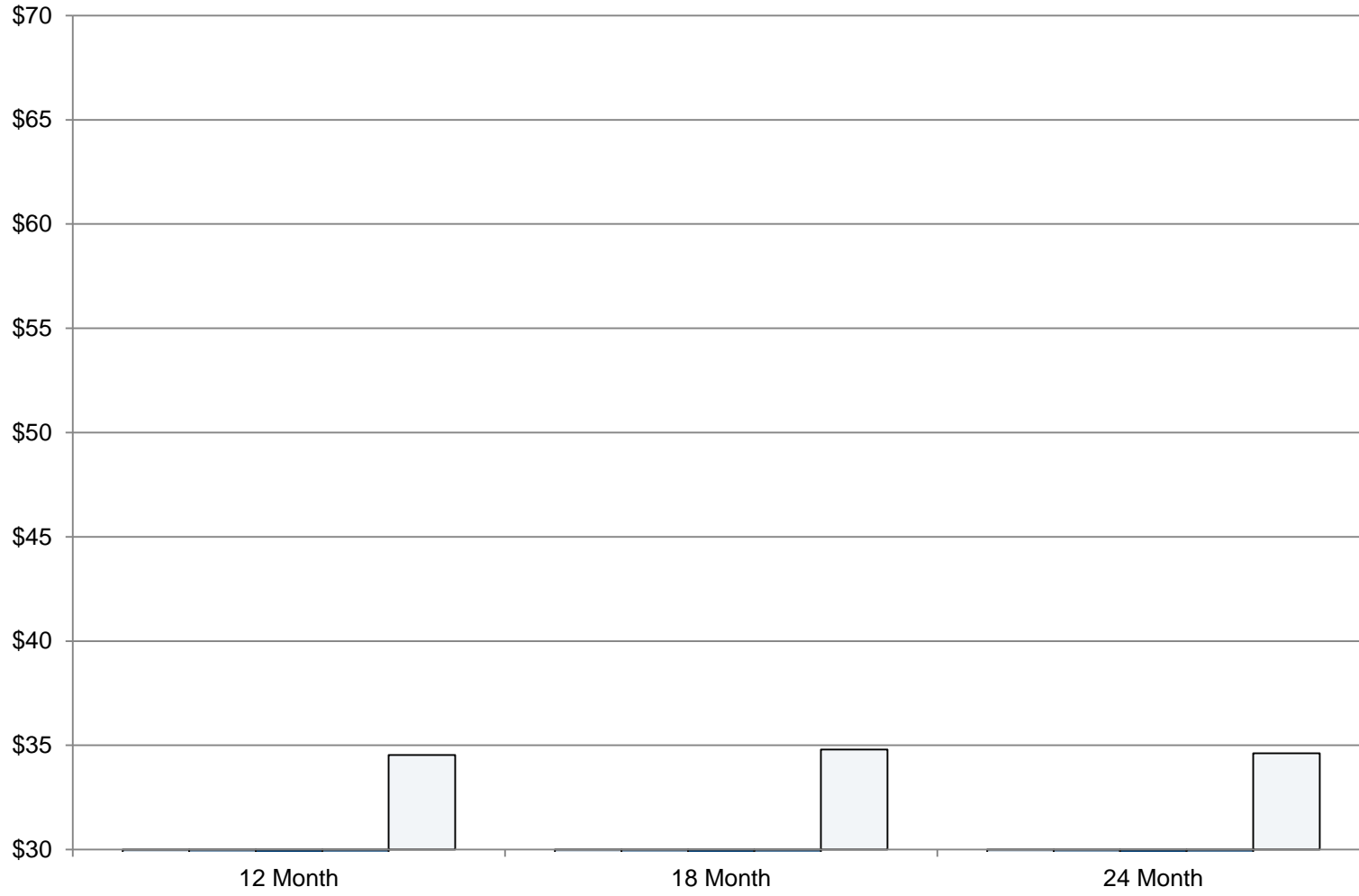


# Electric Forward Market Report

## Front Strips, PJM Western Hub On-Peak (5x16) - \$/MWh

Report Date: 02/15/2019

\$/MWh



■ Current ■ 1 Week Ago ■ 1 Month Ago ■ 3 Months Ago □ 1 Year Ago



# Electric Forward Market Report

## Calendar Forward Strips PJM Western Hub On-Peak (5x16) - \$/MWh

Report Date: 02/15/2019

\$/MWh



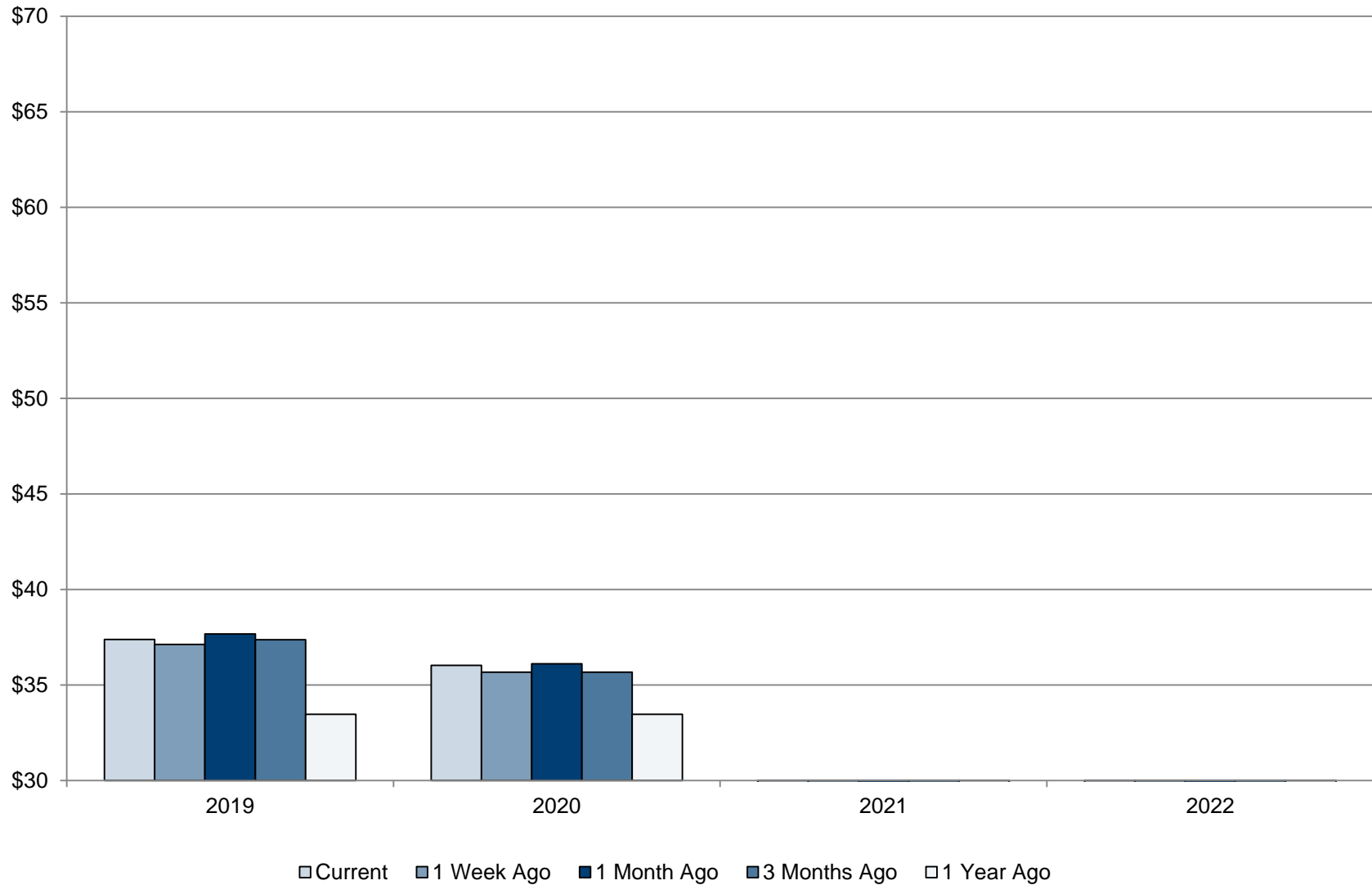


# Electric Forward Market Report

## Summer Calendar Strips, PJM Western Hub On-Peak (5x16) - \$/MWh

Report Date: 02/15/2019

\$/MWh



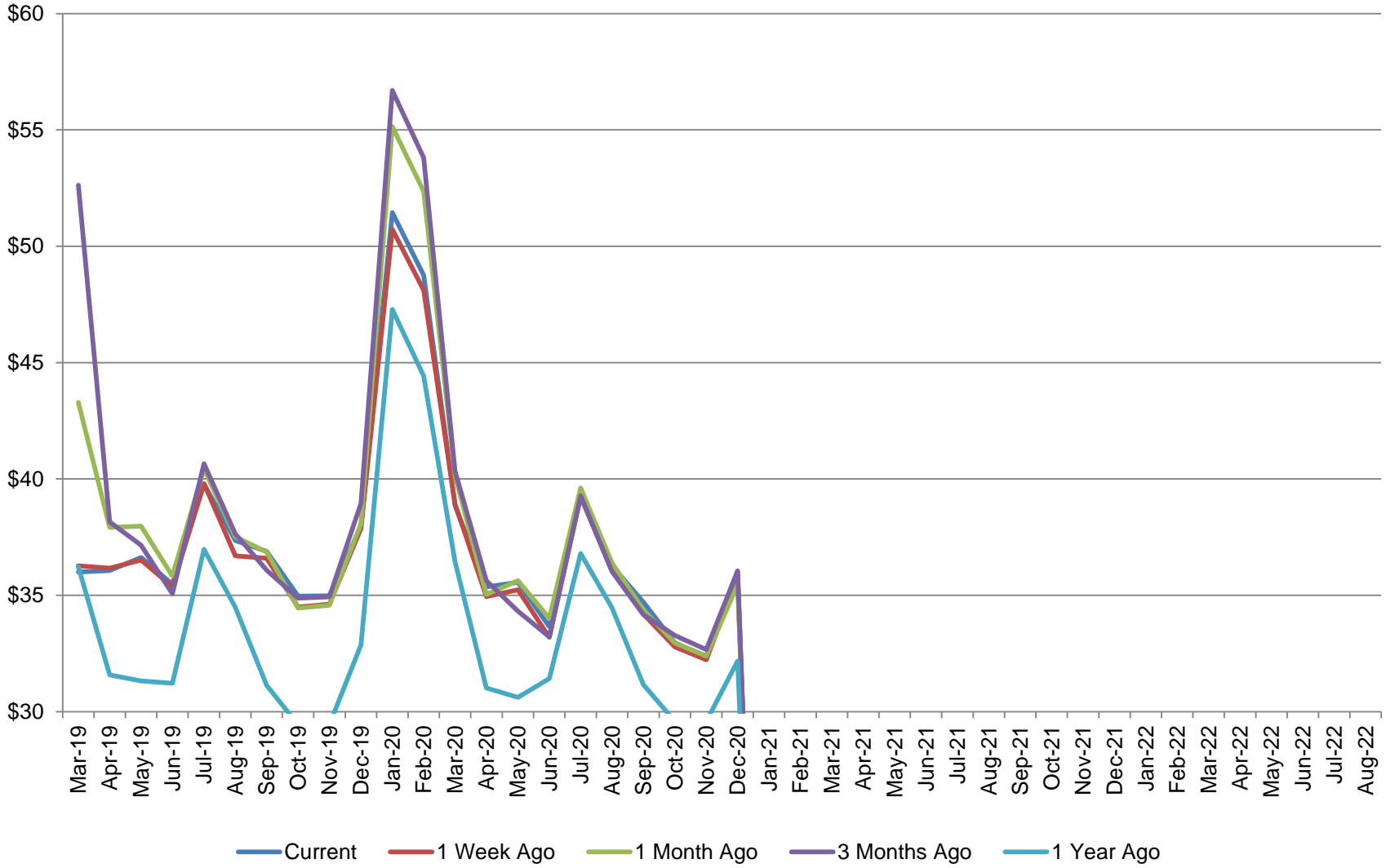


# Electric Forward Market Report

## Term Structure, Monthly PJM Western Hub On-Peak (5x16) - \$/MWh

Report Date: 02/15/2019

\$/MWh

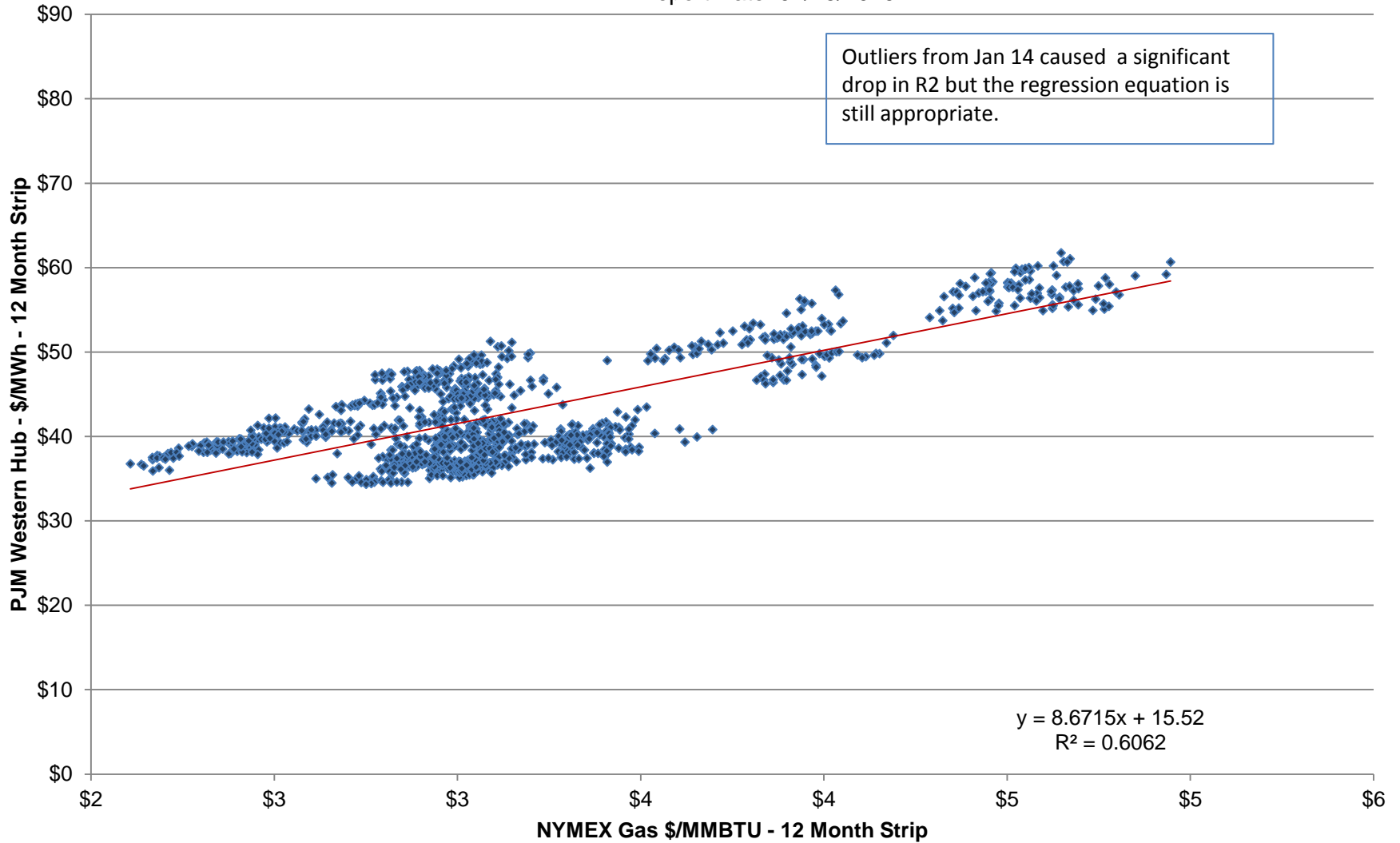




# 5-Year Regression Analysis - Forward Gas vs. Forward Electricity

## PJM Western Hub / NYMEX 12 Month Strip

Report Date: 02/15/2019

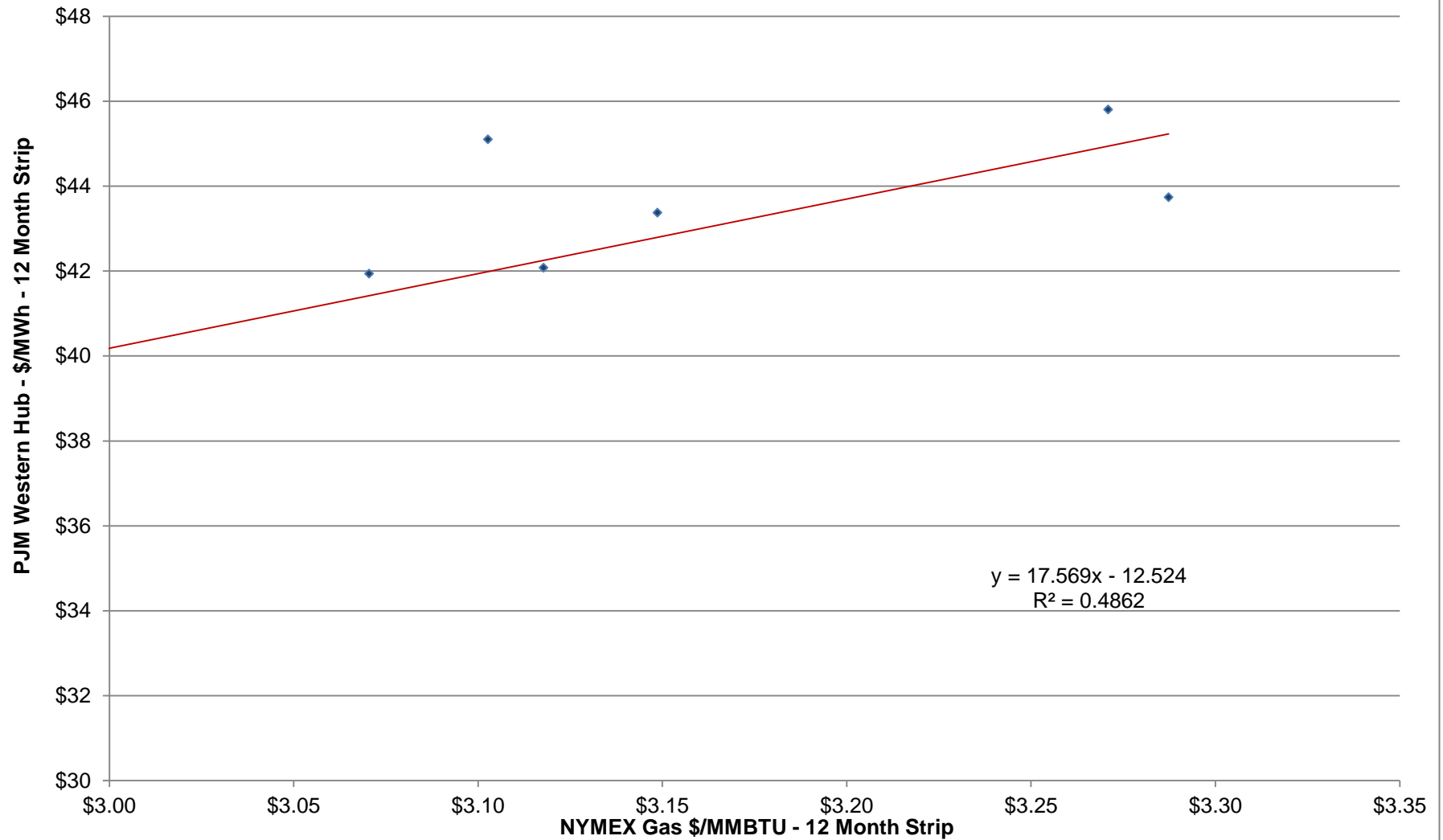




# 1-Year Regression Analysis - Forward Gas vs. Forward Electricity

## PJM Western Hub / NYMEX 12 Month Strip

Report Date: 02/15/2019





## PJM Report Chart Descriptions

<p>Front Year PJM Western Hub On-Peak Graph..... p. 1</p> <p style="margin-left: 20px;">Average of the Front 12-Months NYMEX Future Contracts for PJM West-Hub Electric trading on that Date</p> <p style="margin-left: 20px;">Example: The Front-Year on 7/15/08 was the Average of the Jul-08 to Jun-09 contracts, which was \$104.35/MW</p>	p. 1
<p>Annual PJM Western Hub On-Peak Graph..... p. 2</p> <p style="margin-left: 20px;">Historical front-year PJM Western Hub price vs. the average 12-Month price by Calendar Year</p> <p style="margin-left: 20px;">Example: Calendar Year 2010 is the Average of the Jan-10 to Dec-10 contracts for all dates that those 12 contract months were trading</p>	p. 2
<p>Front Strips, PJM Western Hub On-Peak Graph..... p. 3</p> <p style="margin-left: 20px;">Average of the 12, 18, and 24 Month forward on-peak PJM West Hub prices compared to the same durations 1 Week, 1 Month, 3 Months, and 1 Year ago</p> <p style="margin-left: 20px;">Example: 18-Month Duration on 7/15/08 was the average of the Jul-08 to Dec-09 contracts, which was \$103.05/MW</p> <p style="margin-left: 40px;">1 Month Ago, the average price on 6/15/08* was for the months Jun-08 to Nov-09 and was \$110.99/MW</p>	p. 3
<p>Calendar Forward Strips, PJM Western Hub On-Peak Graph..... p. 4</p> <p style="margin-left: 20px;">Average of January to December On-Peak PJM West Hub prices for the noted year at Current Price, 1 Week, 1 Month, 3 Months and 1 Year Ago</p>	p. 4
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<p>Term Structure, Monthly PJM Western Hub On-Peak Forward Curve..... p. 6</p> <p style="margin-left: 20px;">PJM Western Hub On-Peak price of each contract month as they settled on the Current (most recent) close date, 1 Week, 1 Month, 3 Months, and 1 Year Ago</p> <p style="margin-left: 20px;">Purpose: To show the relative shape of the forward curve. Note that Winter and Summer contracts are higher than shoulder months</p>	p. 6
<p>5-Year Regression Analysis - Forward Gas vs. Electricity..... p. 7</p> <p style="margin-left: 20px;">Relationship of natural gas forwards (1-yr strip) and electricity forwards (1-yr peak strip) over the last five years</p> <p style="margin-left: 20px;">Explanation: Each data point represents where the electric (y-axis) and gas (x-axis) closed on a given day</p> <p style="margin-left: 20px;">Purpose: To demonstrate the very close relationship of gas and electric prices over the past 5 years</p> <p style="margin-left: 20px;">PJM Western Hub is used because it is the most liquid of traded nodes in the world</p> <p style="margin-left: 40px;">and therefore removes any localized anomalies from the data</p>	p. 7
<p>1-Year Regression Analysis - Forward Gas vs. Electricity..... p. 8</p> <p style="margin-left: 20px;">Relationship of natural gas and electricity forwards (1-yr peak strip) over the last year</p> <p style="margin-left: 20px;">PJM Western Hub is used because it is the most liquid of traded nodes in the world</p> <p style="margin-left: 40px;">and therefore removes any localized anomalies from the data</p>	p. 8

\*6/15/08 was a Sunday, average prices would be based on 6/13/08 close