US data

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	0.124	0.123	0.125	0.126	0.127	0.132	0.133	0.133	0.132	0.127	0.125	0.125
2011	0.125	0.125	0.127	0.127	0.129	0.134	0.135	0.135	0.135	0.130	0.128	0.127
2012	0.128	0.128	0.127	0.127	0.129	0.135	0.133	0.133	0.133	0.128	0.127	0.127
2013	0.129	0.129	0.128	0.128	0.131	0.137	0.137	0.137	0.137	0.132	0.130	0.131
2014	0.134	0.134	0.135	0.131	0.136	0.143	0.143	0.143	0.141	0.136	0.134	0.135
2015	0.138	0.138	0.136	0.137	0.137	0.143	0.142	0.142	0.141	0.136	0.134	0.133
2016	0.134	0.134	0.134	0.134	0.133	0.138	0.139	0.139	0.139	0.134	0.131	0.133
2017	0.134	0.135	0.134	0.135	0.137	0.142	0.143	0.142	0.142	0.137	0.136	0.136
2018	0.135	0.135	0.135	0.134	0.136	0.139	0.139	0.139	0.138	0.136	0.134	0.135
2019	0.135	0.136	0.135	0.135	0.136	0.139	0.140	0.139	0.139	0.136	0.133	0.133
2020	0.134	0.134	0.134	0.133	0.134	0.137	0.137	0.137	0.137	0.135	0.136	NaN

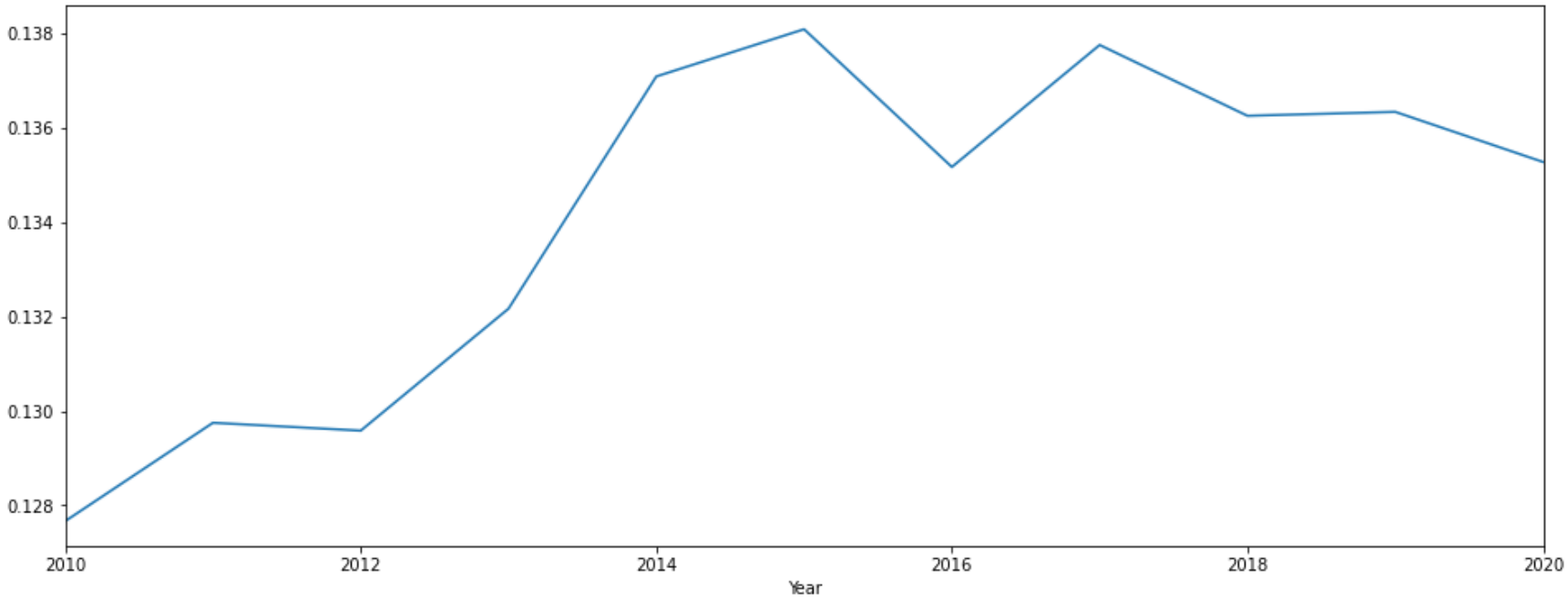
PA data

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	0.163	0.163	0.163	0.162	0.162	0.173	0.173	0.173	0.174	0.161	0.160	0.160
2011	0.163	0.165	0.164	0.163	0.163	0.167	0.172	0.173	0.172	0.169	0.169	0.169
2012	0.163	0.164	0.162	0.163	0.164	0.167	0.159	0.159	0.159	0.166	0.165	0.165
2013	0.156	0.157	0.157	0.163	0.163	0.159	0.159	0.159	0.164	0.161	0.162	0.164
2014	0.162	0.162	0.157	0.156	0.156	0.157	0.159	0.158	0.156	0.154	0.154	0.159
2015	0.159	0.160	0.156	0.157	0.156	0.160	0.159	0.159	0.158	0.155	0.155	0.155
2016	0.160	0.159	0.157	0.156	0.155	0.157	0.158	0.157	0.158	0.153	0.152	0.151
2017	0.152	0.151	0.150	0.151	0.152	0.153	0.153	0.152	0.152	0.145	0.148	0.150
2018	0.147	0.148	0.145	0.145	0.153	0.155	0.155	0.154	0.152	0.149	0.151	0.150
2019	0.118	0.155	0.155	0.155	0.156	0.156	0.156	0.155	0.154	0.152	0.152	0.153
2020	0.153	0.154	0.153	0.152	0.151	0.154	0.155	0.154	0.153	0.151	0.150	NaN

US annual averages

```
Year
2010    0.127667
2011    0.129750
2012    0.129583
2013    0.132167
2014    0.137083
2015    0.138083
2016    0.135167
2017    0.137750
2018    0.136250
2019    0.136333
2020    0.135273
dtype: float64
```

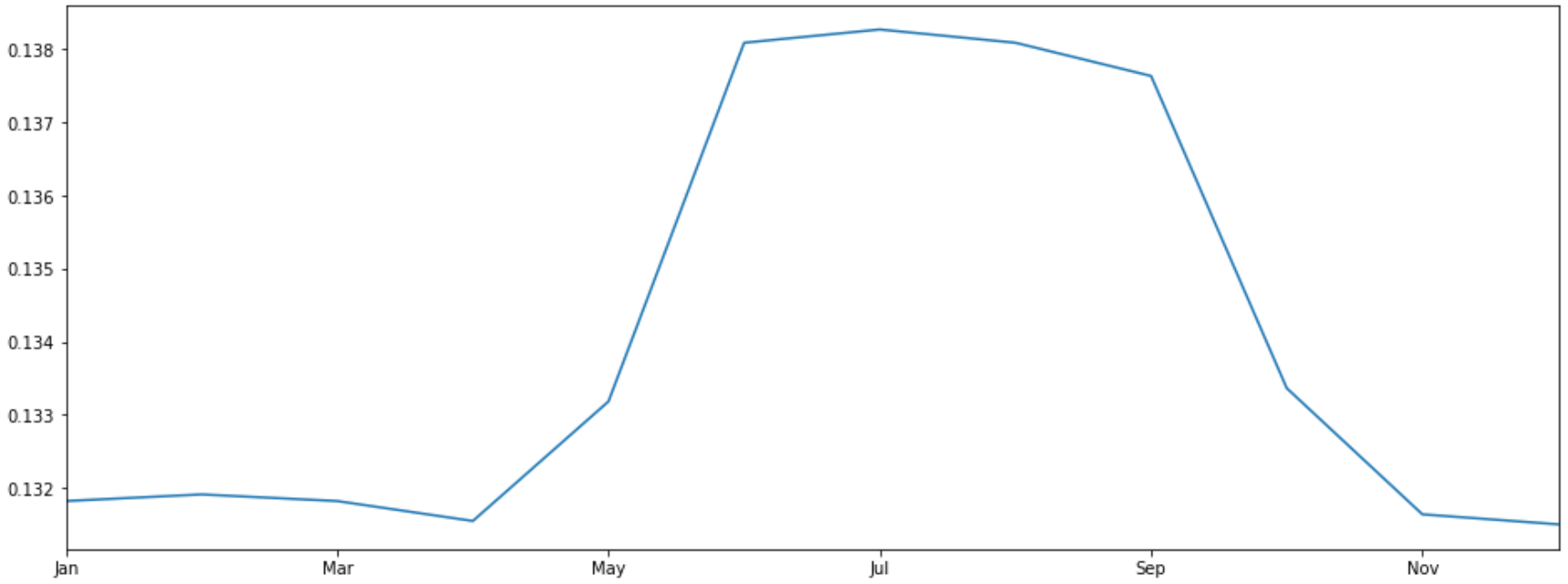
<AxesSubplot:xlabel='Year'>



US monthly averages

```
Jan    0.131818
Feb    0.131909
Mar    0.131818
Apr    0.131545
May    0.133182
Jun    0.138091
Jul    0.138273
Aug    0.138091
Sep    0.137636
Oct    0.133364
Nov    0.131636
Dec    0.131500
dtype: float64
```

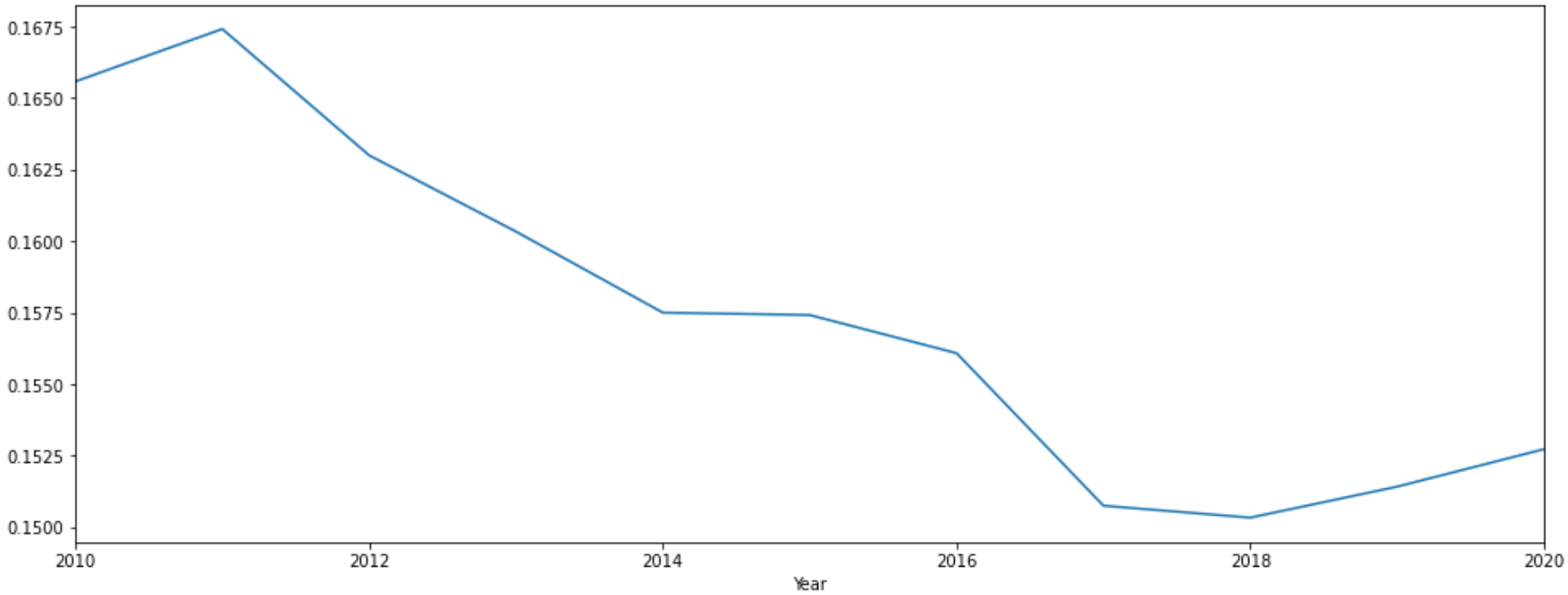
<AxesSubplot:>



PA annual averages

Year
2010   0.165583
2011   0.167417
2012   0.163000
2013   0.160333
2014   0.157500
2015   0.157417
2016   0.156083
2017   0.150750
2018   0.150333
2019   0.151417
2020   0.152727
dtype: float64

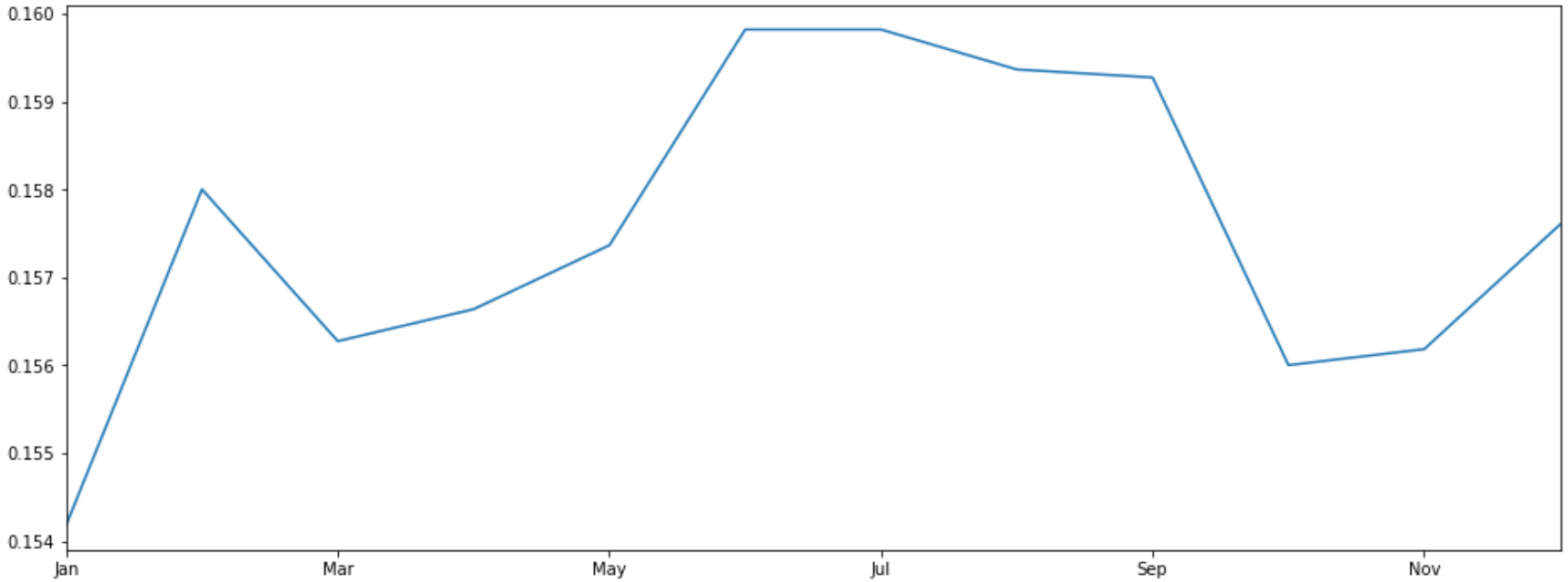
<AxesSubplot:xlabel='Year'>



PA monthly averages

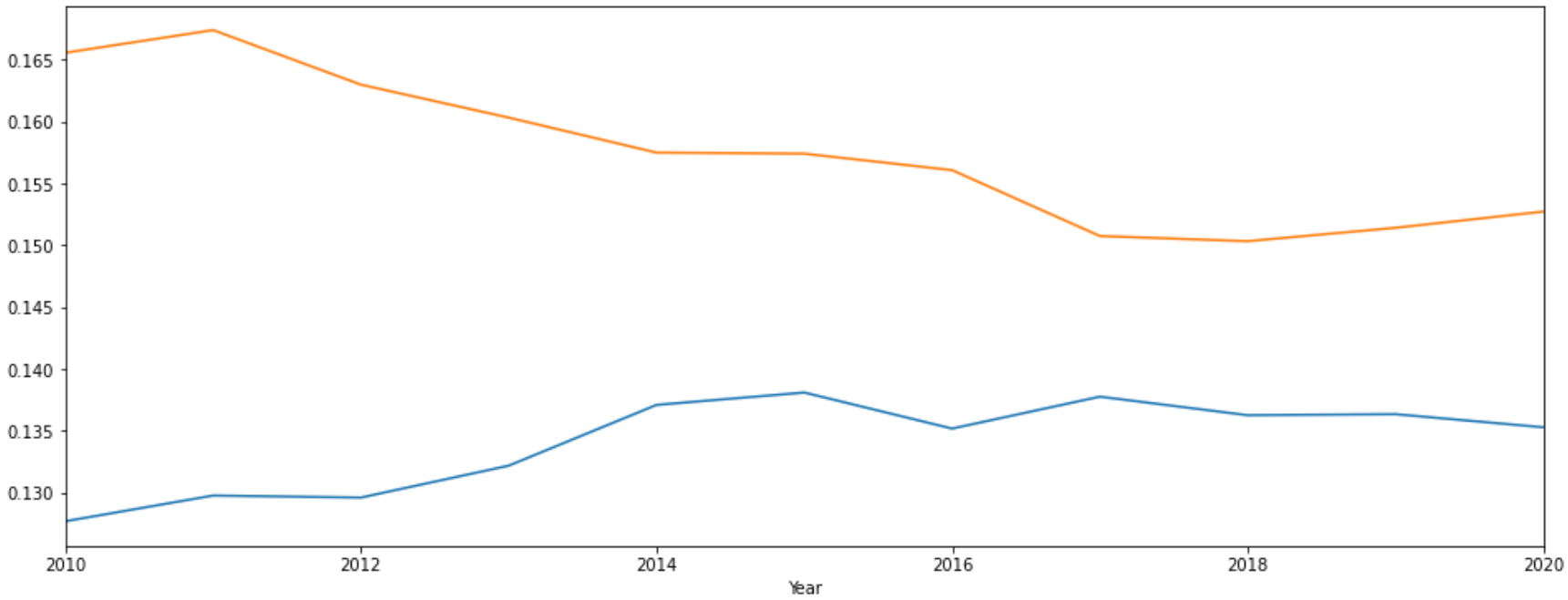
```
Jan    0.154182
Feb    0.158000
Mar    0.156273
Apr    0.156636
May    0.157364
Jun    0.159818
Jul    0.159818
Aug    0.159364
Sep    0.159273
Oct    0.156000
Nov    0.156182
Dec    0.157600
dtype: float64
```

<AxesSubplot:>

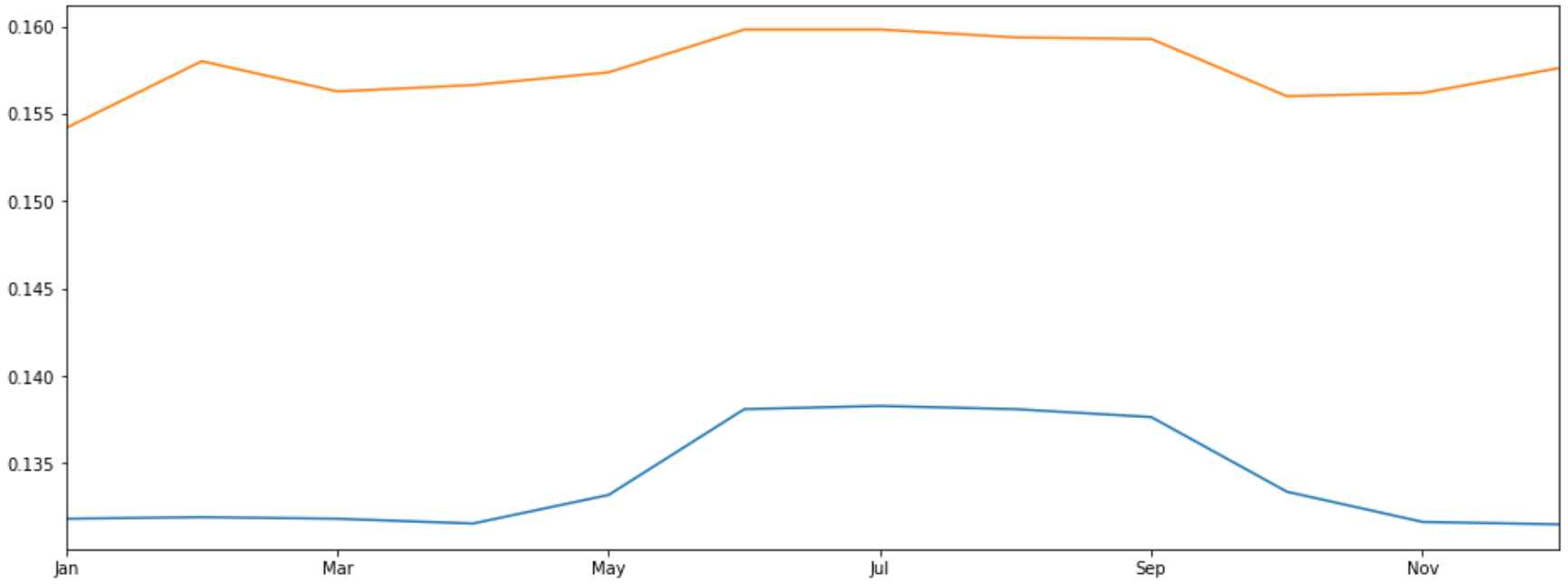



```
print("Comparing PA prices to US average prices")
```

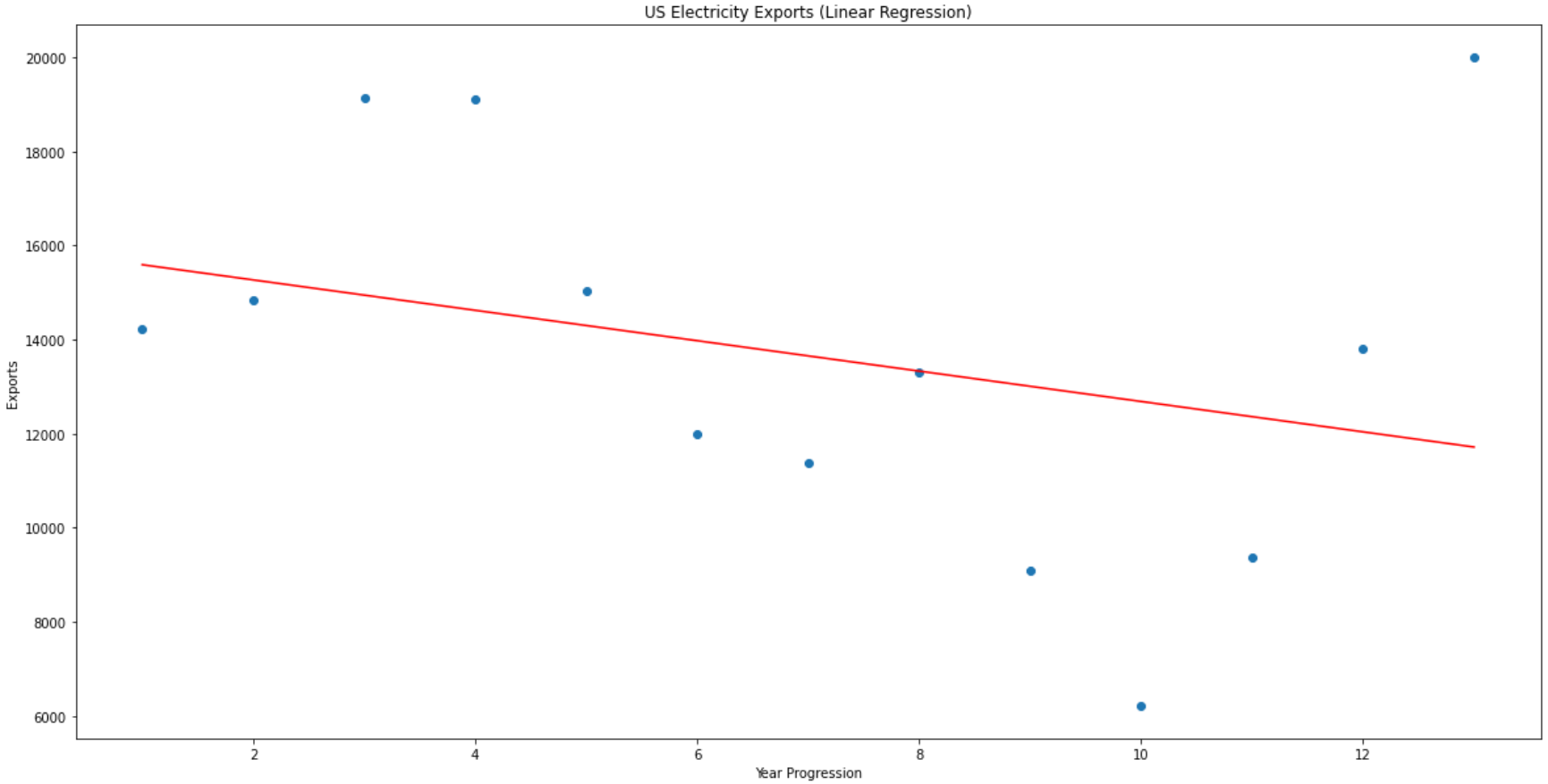
<AxesSubplot:xlabel='Year'>



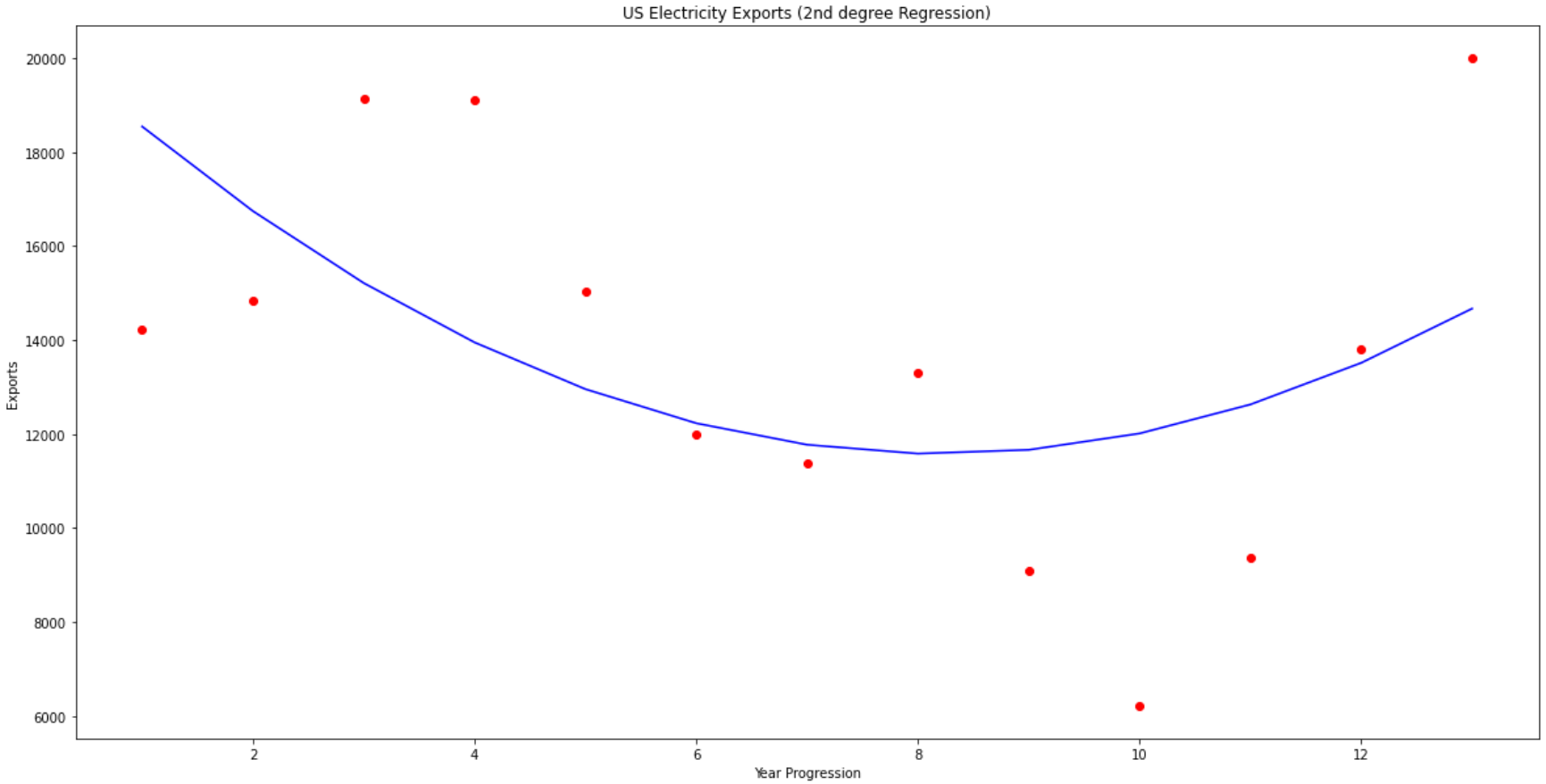
<AxesSubplot:>



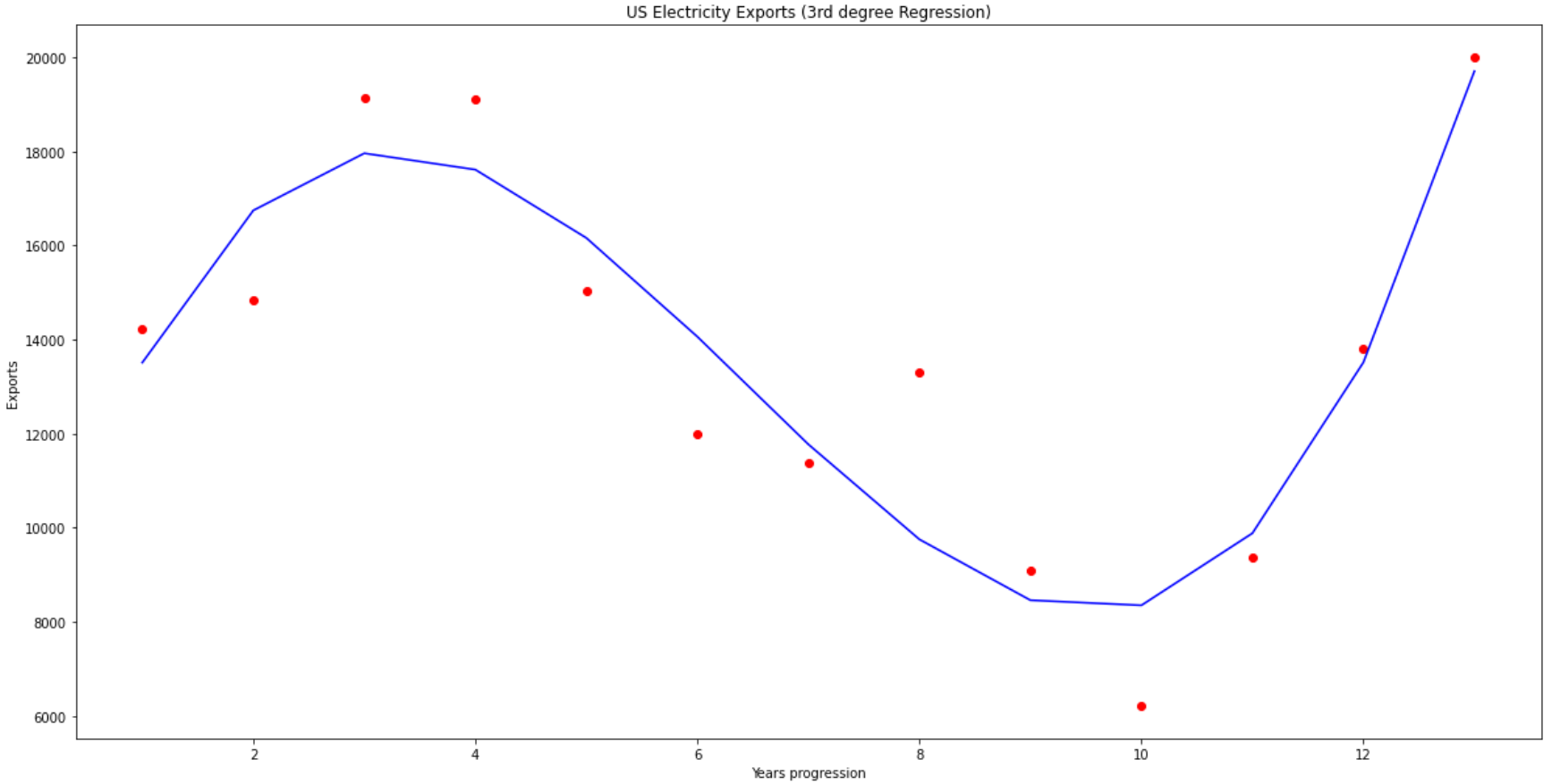
	Year	Exports
0	1999	14222
1	2000	14829
2	2005	19151
3	2010	19106
4	2011	15049
5	2012	11996
6	2013	11373
7	2014	13298
8	2015	9100
9	2016	6214
10	2017	9371
11	2018	13805
12	2019	20008


US Electricity Exports (Linear Regression)
Exports
Year Progression
20000
18000
16000
14000
12000
10000
8000
6000
2
4
6
8
10
12

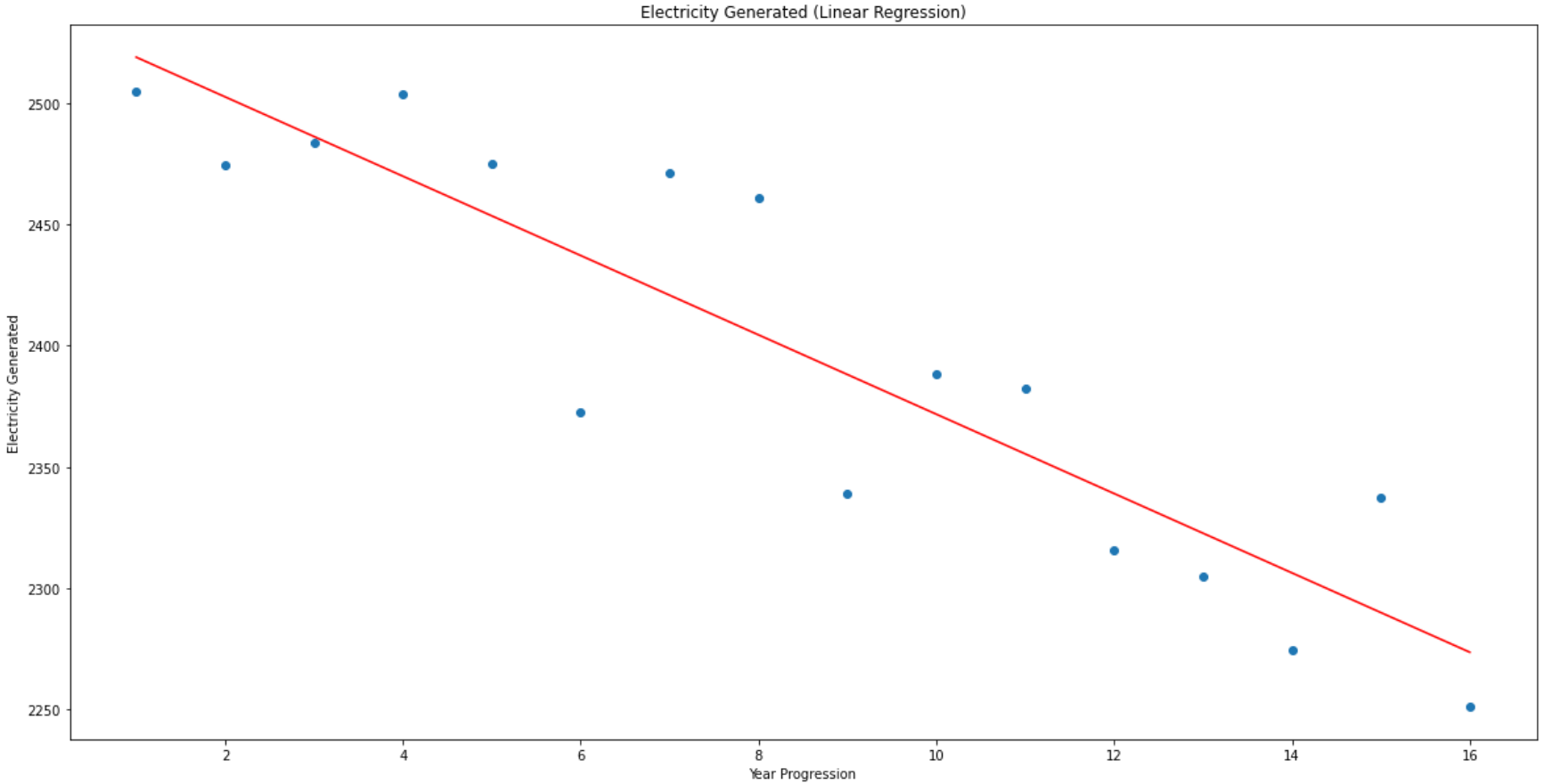
```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```



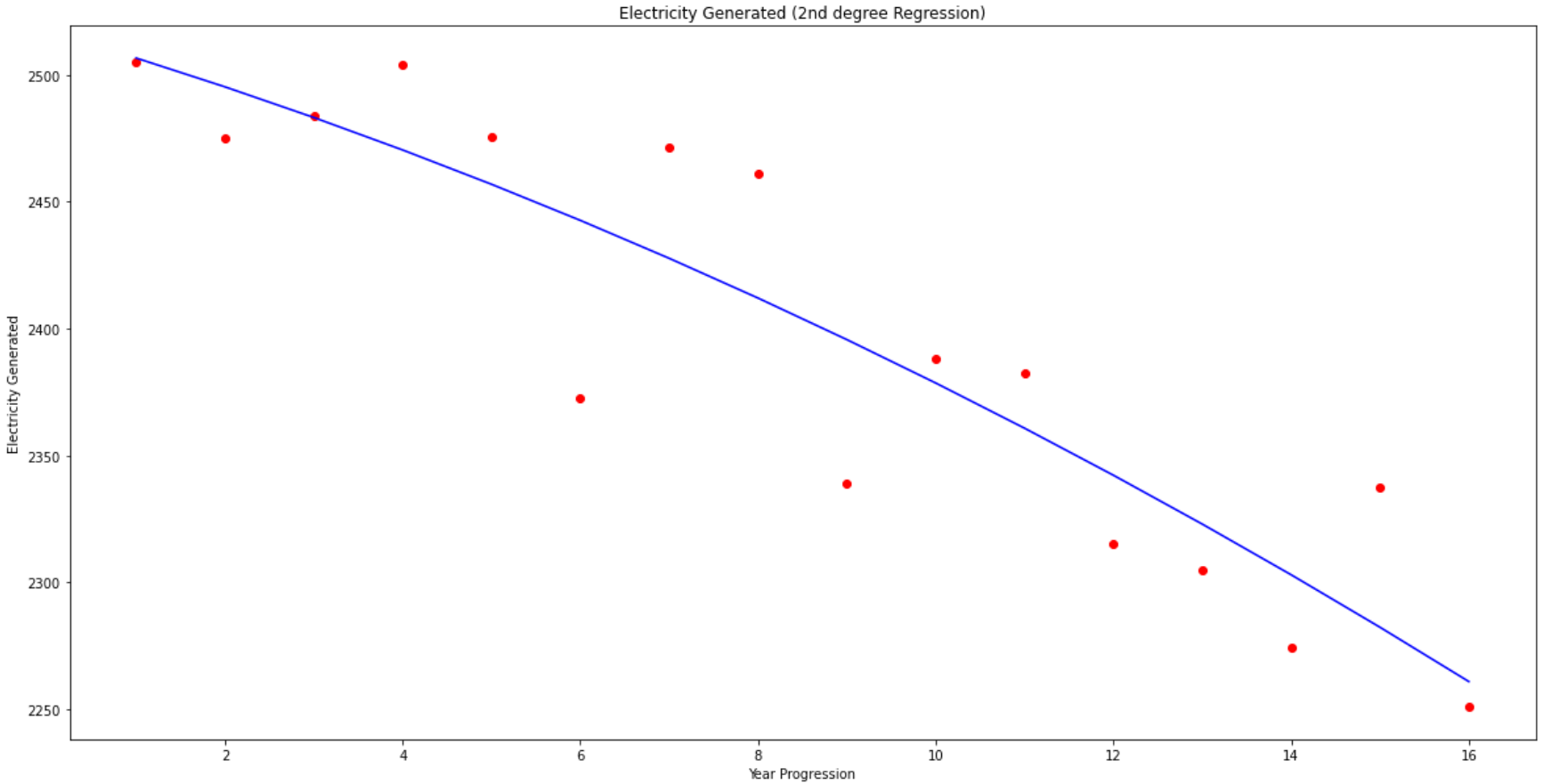

```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```


US Electricity Exports (3rd degree Regression)
Exports
Years progression
20000
18000
16000
14000
12000
10000
8000
6000
2
4
6
8
10
12

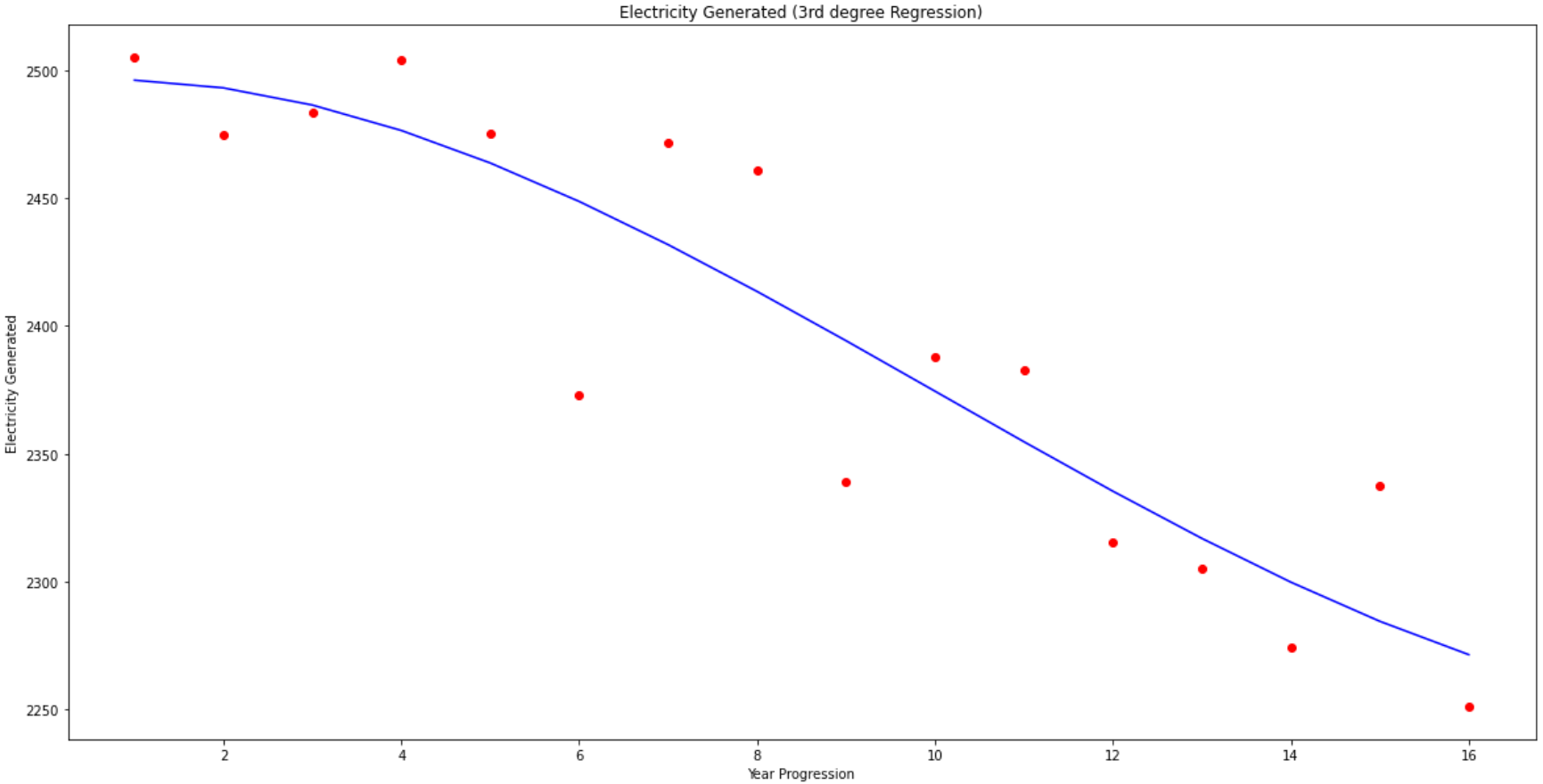
	year	generaion
0	2004	2505.23
1	2005	2474.85
2	2006	2483.66
3	2007	2504.13
4	2008	2475.37
5	2009	2372.78
6	2010	2471.63
7	2011	2460.85
8	2012	2339.17
9	2013	2388.06
10	2014	2382.47
11	2015	2315.32
12	2016	2304.92
13	2017	2274.28
14	2018	2337.25
15	2019	2250.90



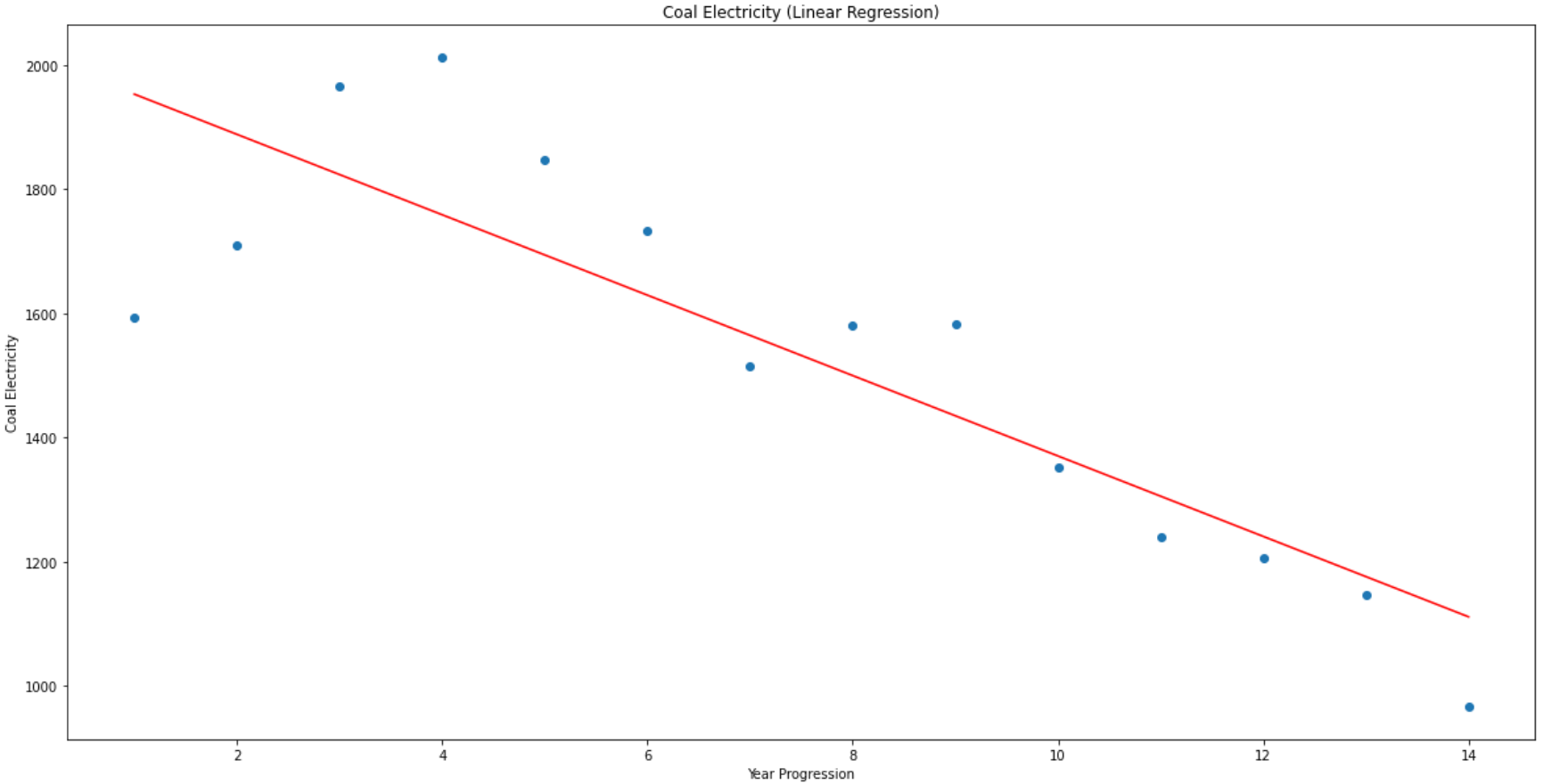

```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```



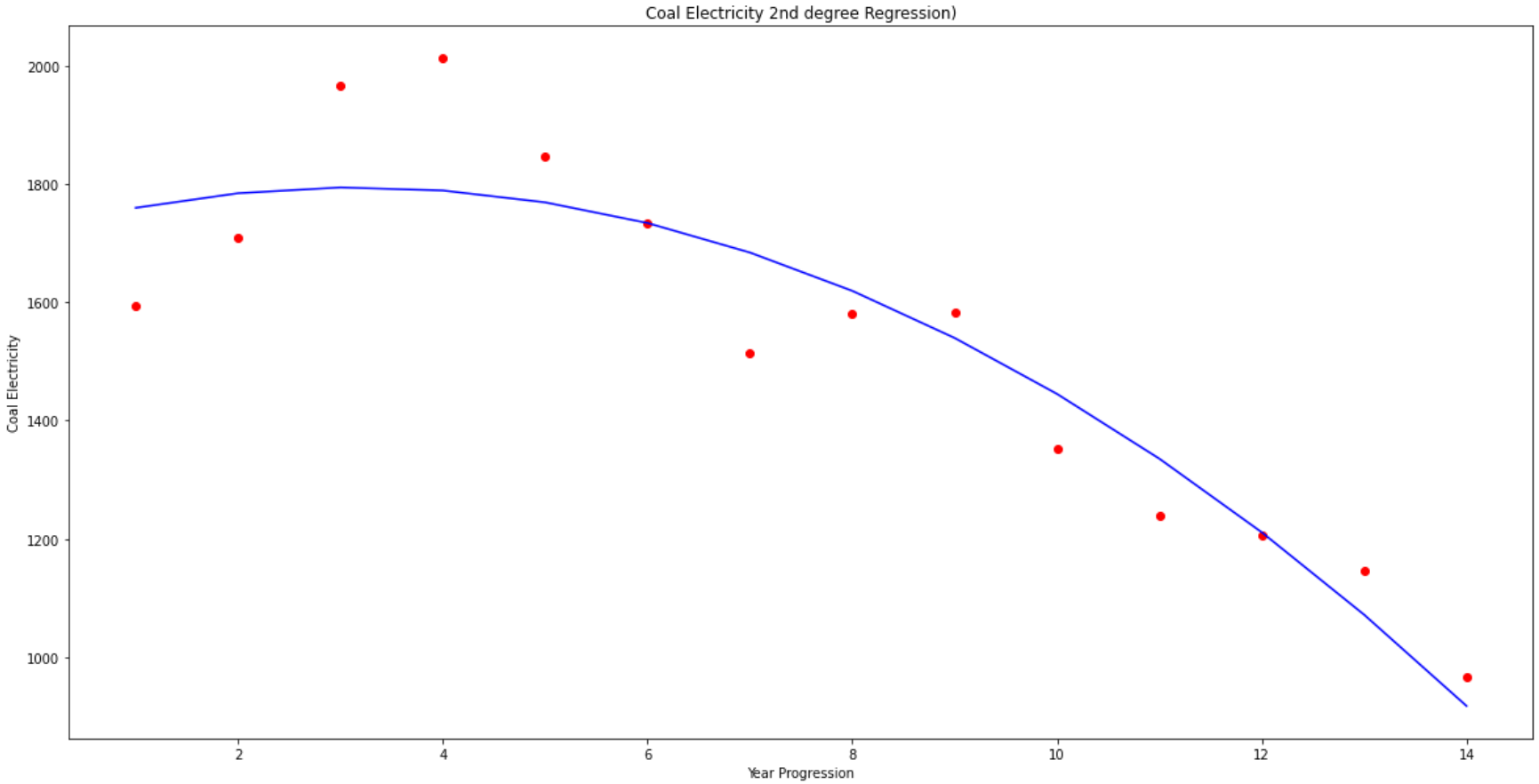

```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```


Electricity Generated (3rd degree Regression)
Electricity Generated
2500
2450
2400
2350
2300
2250
2
4
6
8
10
12
14
16
Year Progression

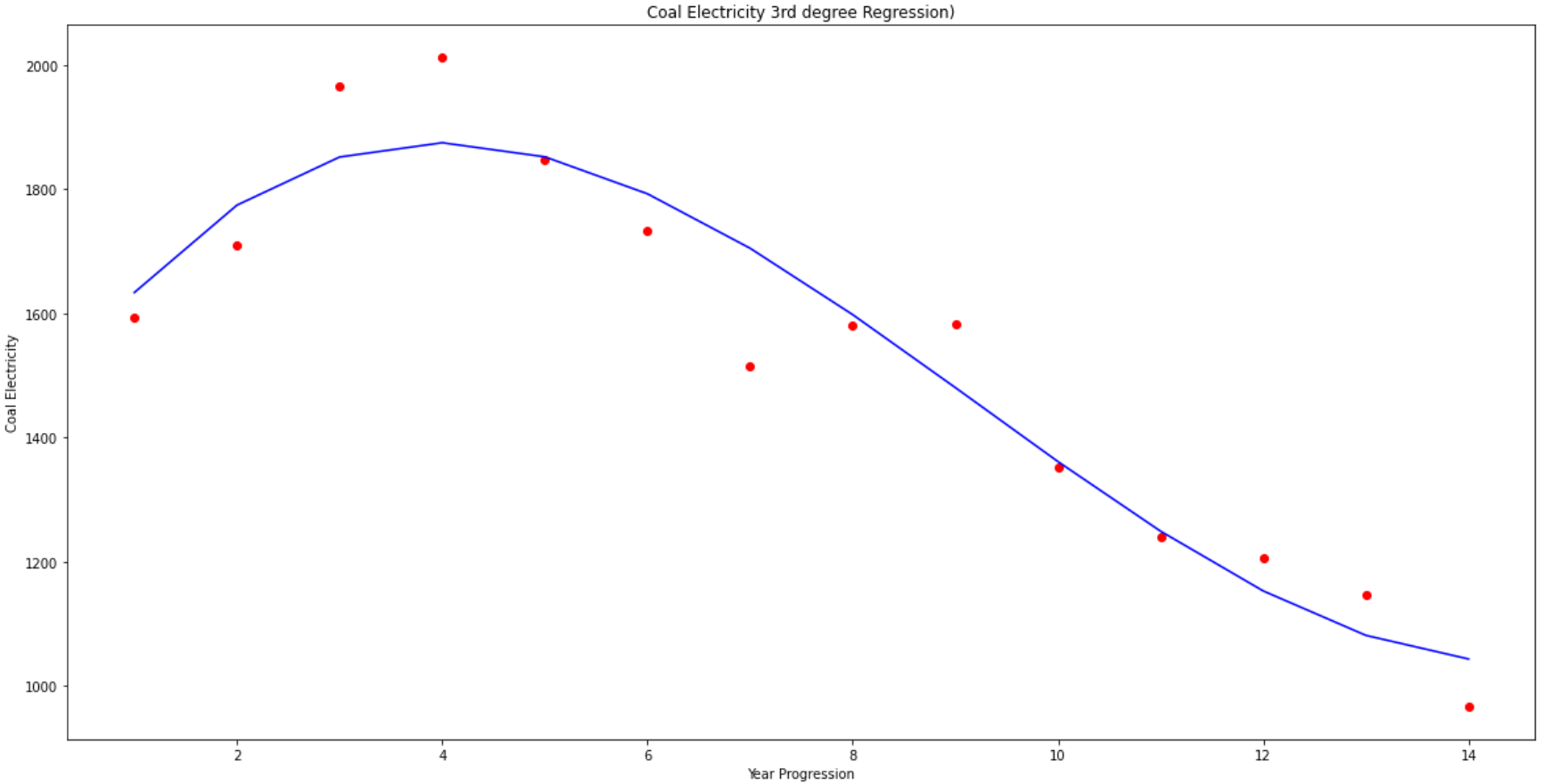
	year	Coal	Nuclear electric power	Natural gas	Hydroelectric pumped storage	Petroleum	Other gases	Renewables**
0	1990	1594.01	576.86	372.77	-3.51	126.46	10.38	357.24
1	1995	1709.43	673.40	496.06	-2.73	74.55	13.87	384.80
2	2000	1966.27	753.89	601.04	-5.54	111.22	13.96	356.48
3	2005	2012.87	781.99	760.96	-6.56	122.23	13.46	357.65
4	2010	1847.29	806.97	987.70	-5.50	37.06	11.31	427.38
5	2011	1733.43	790.20	1013.69	-6.42	30.18	11.57	513.34
6	2012	1514.04	769.33	1225.89	-4.95	23.19	11.90	494.57
7	2013	1581.12	789.02	1124.84	-4.68	27.16	12.85	522.07
8	2014	1581.71	797.17	1126.61	-6.17	30.23	12.02	538.58
9	2015	1352.40	797.18	1333.48	-5.09	28.25	13.12	544.24
10	2016	1239.15	805.69	1378.31	-6.69	24.21	12.81	608.91
11	2017	1205.84	804.95	1296.42	-6.50	21.39	12.47	686.61
12	2018	1145.96	807.08	1468.73	-5.91	25.23	13.46	688.87
13	2019	966.15	809.41	1581.82	-5.26	18.57	13.63	720.44

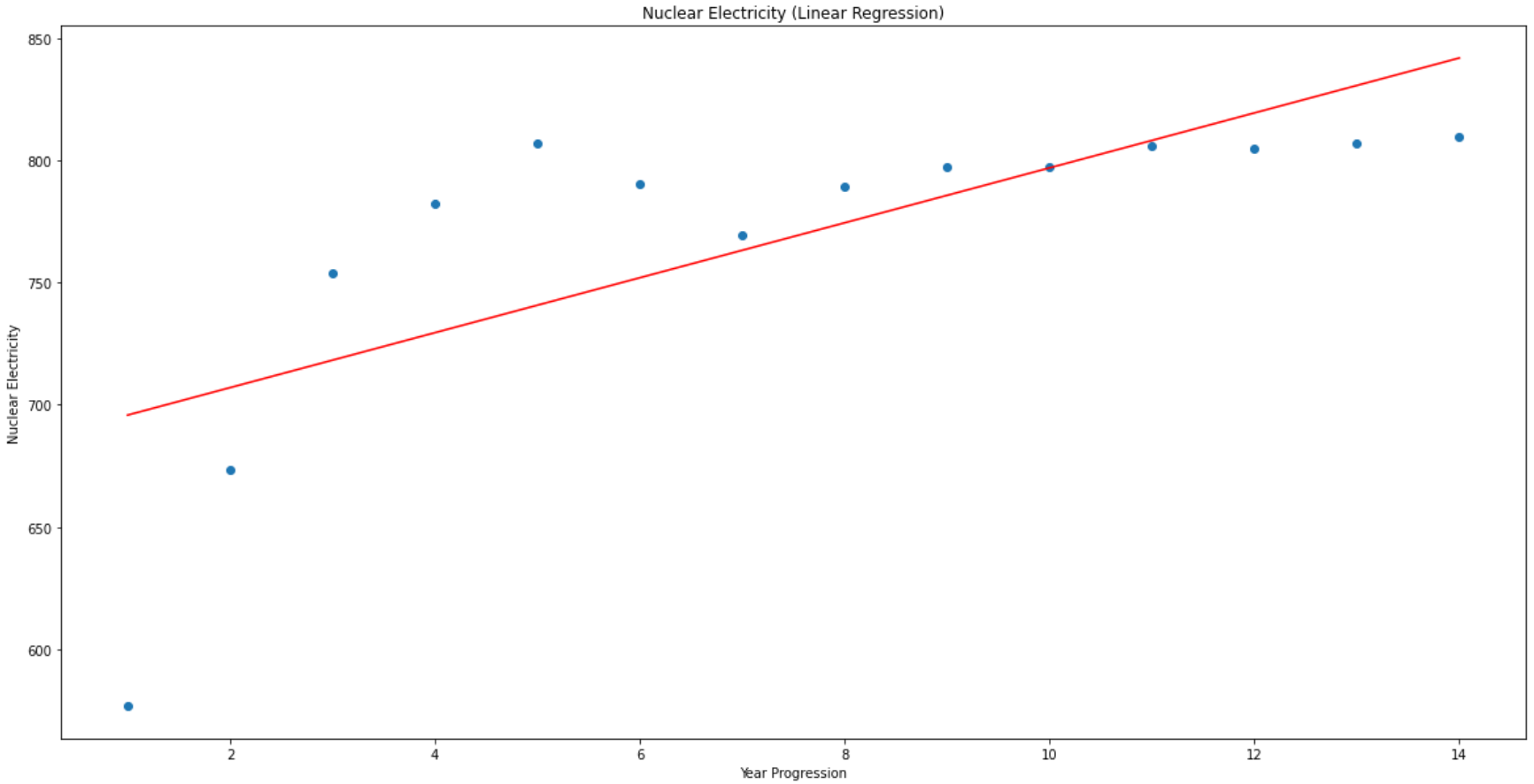

Coal Electricity (Linear Regression)
Coal Electricity
2000
1800
1600
1400
1200
1000
2
4
6
8
10
12
14
Year Progression

```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

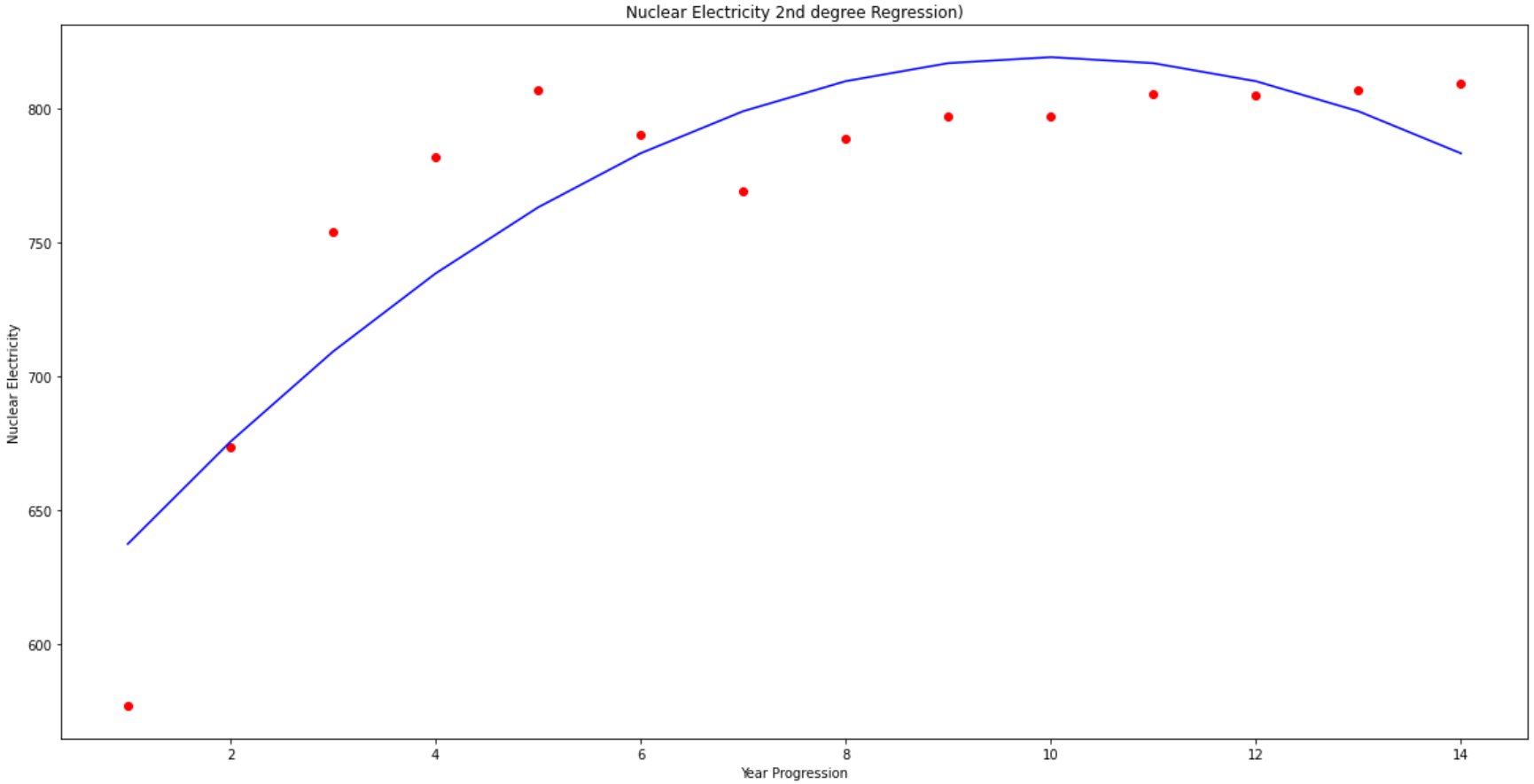



```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

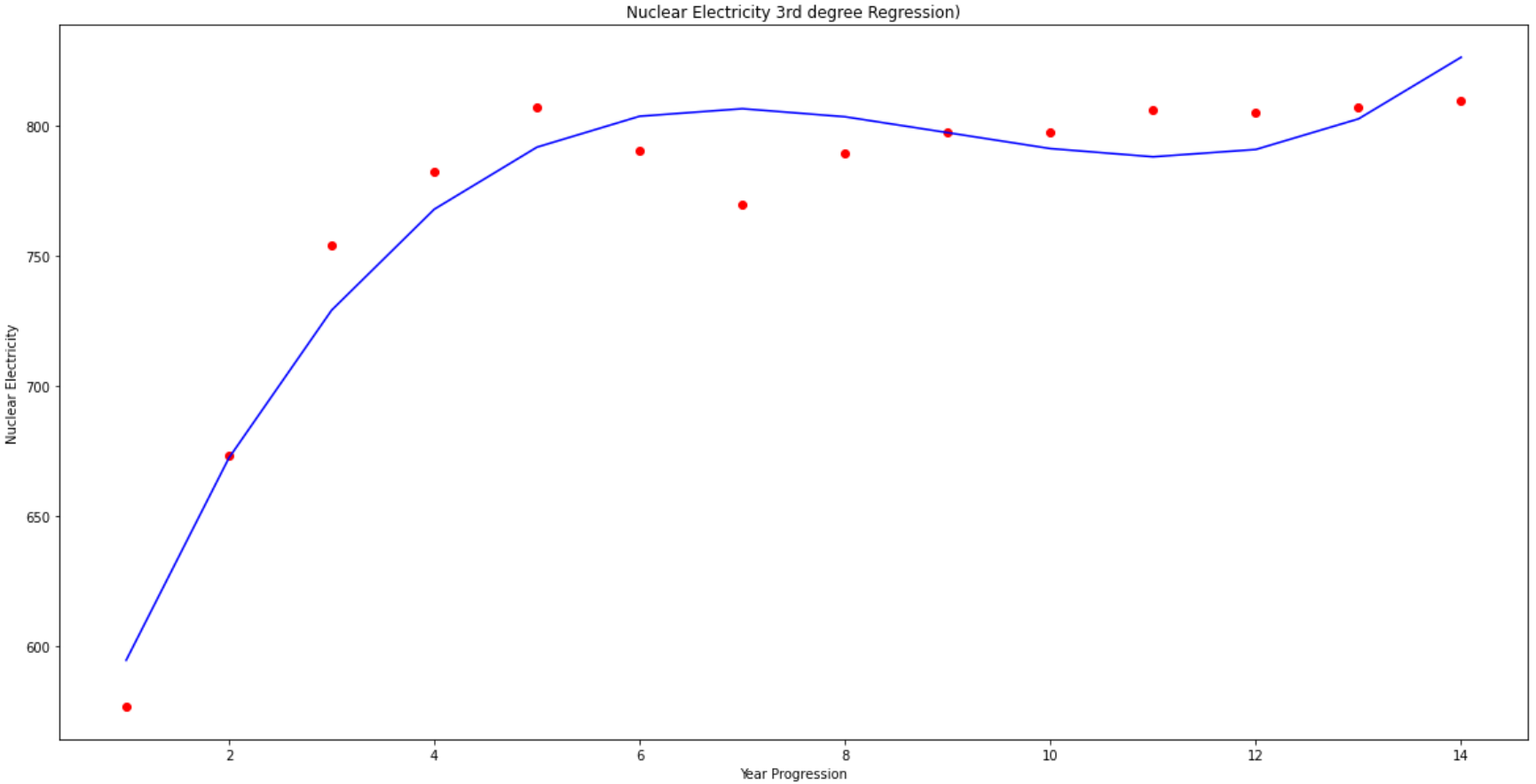

Coal Electricity 3rd degree Regression)
Coal Electricity
Year Progression
2000
1800
1600
1400
1200
1000
2
4
6
8
10
12
14

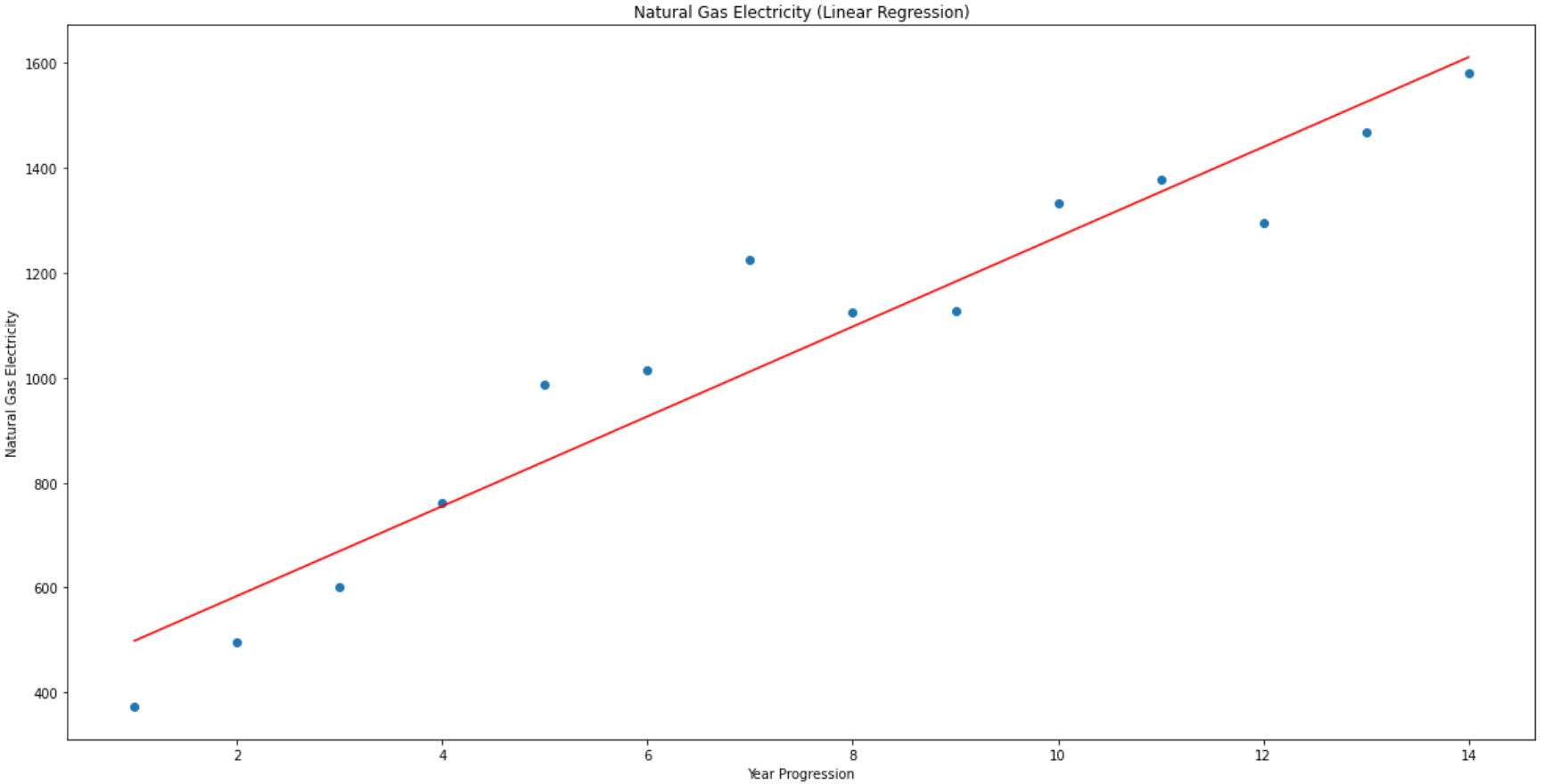



```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

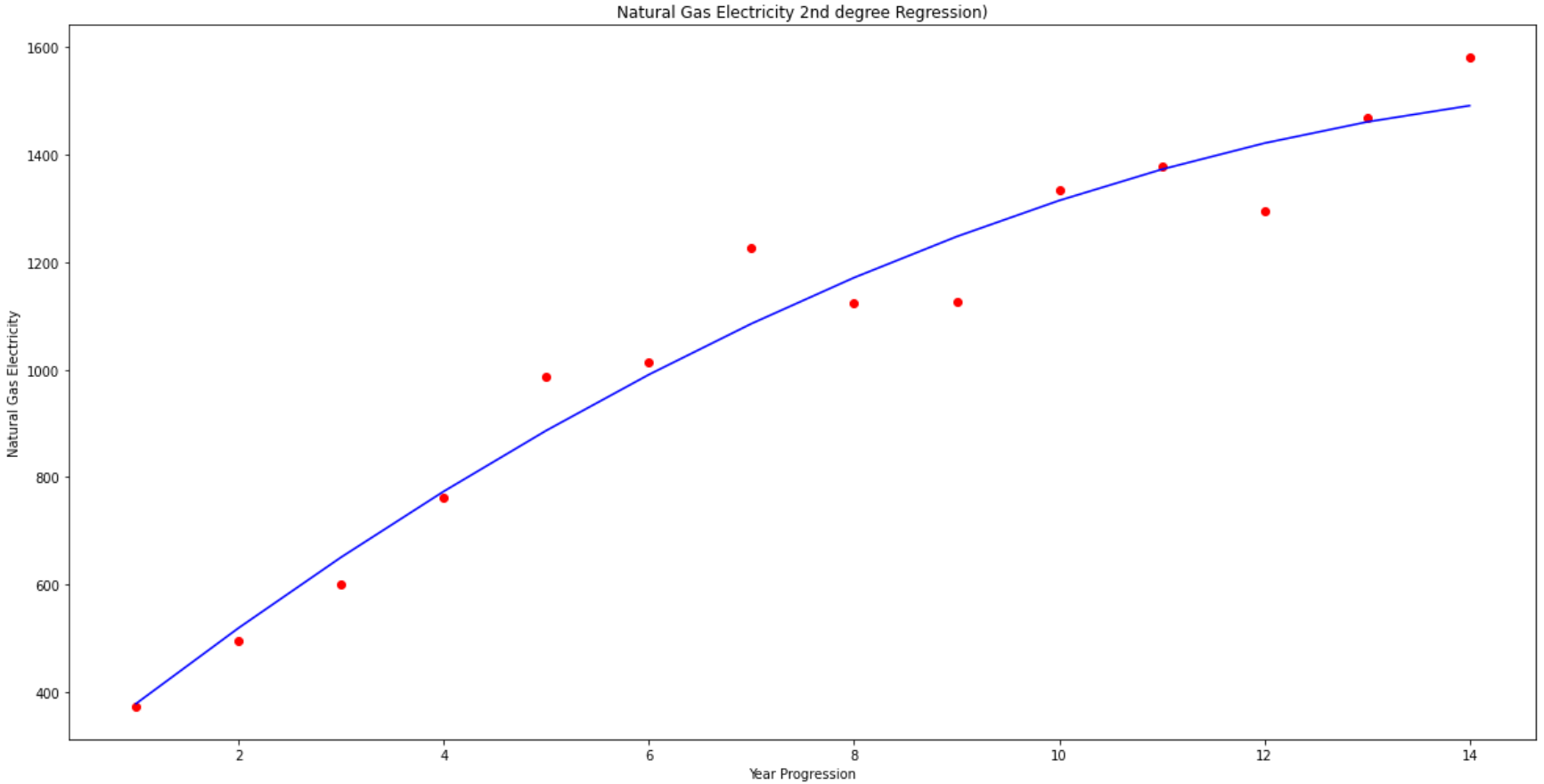



```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

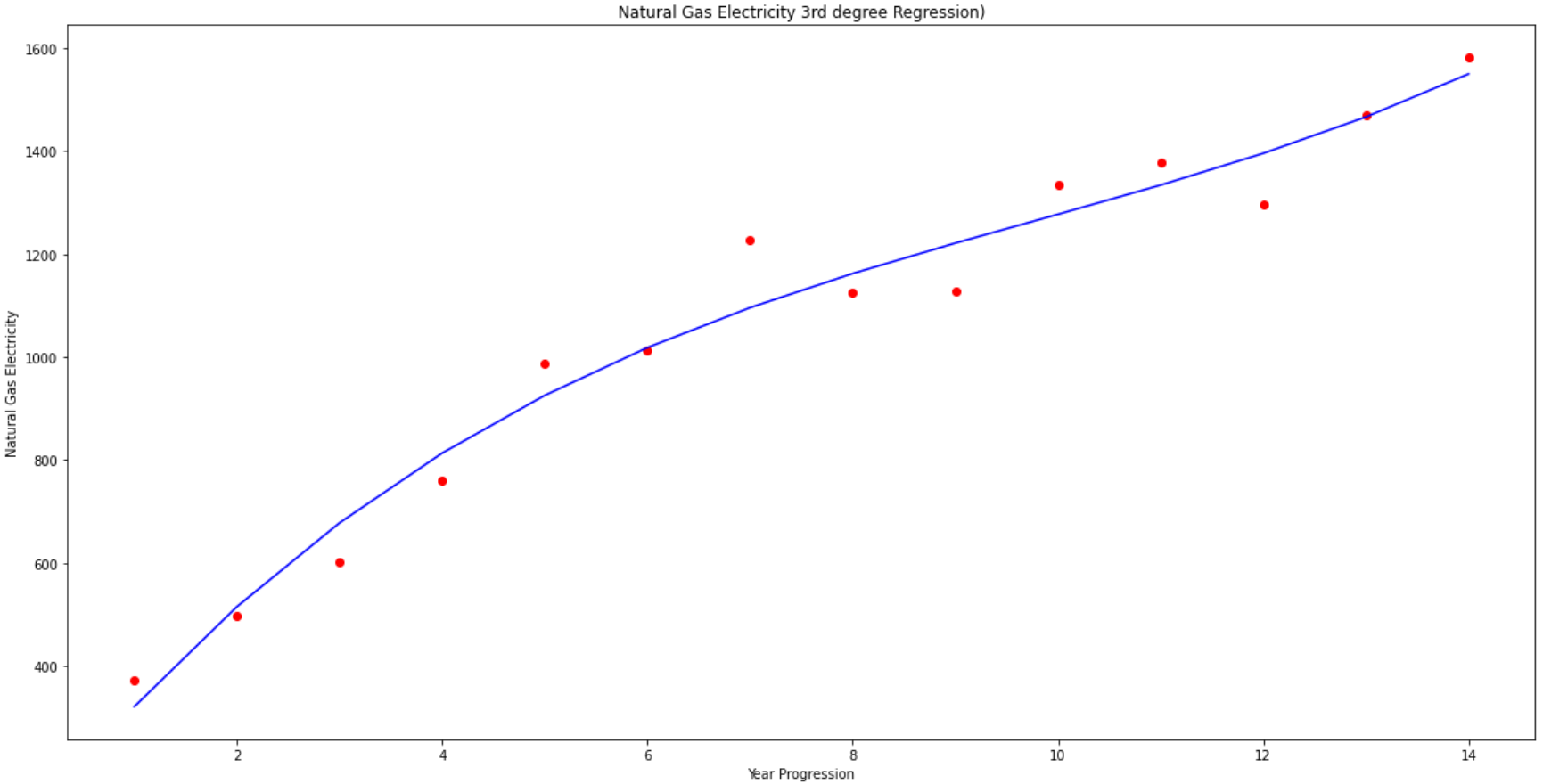

Nuclear Electricity 3rd degree Regression)
Nuclear Electricity
Year Progression
600
650
700
750
800
2
4
6
8
10
12
14

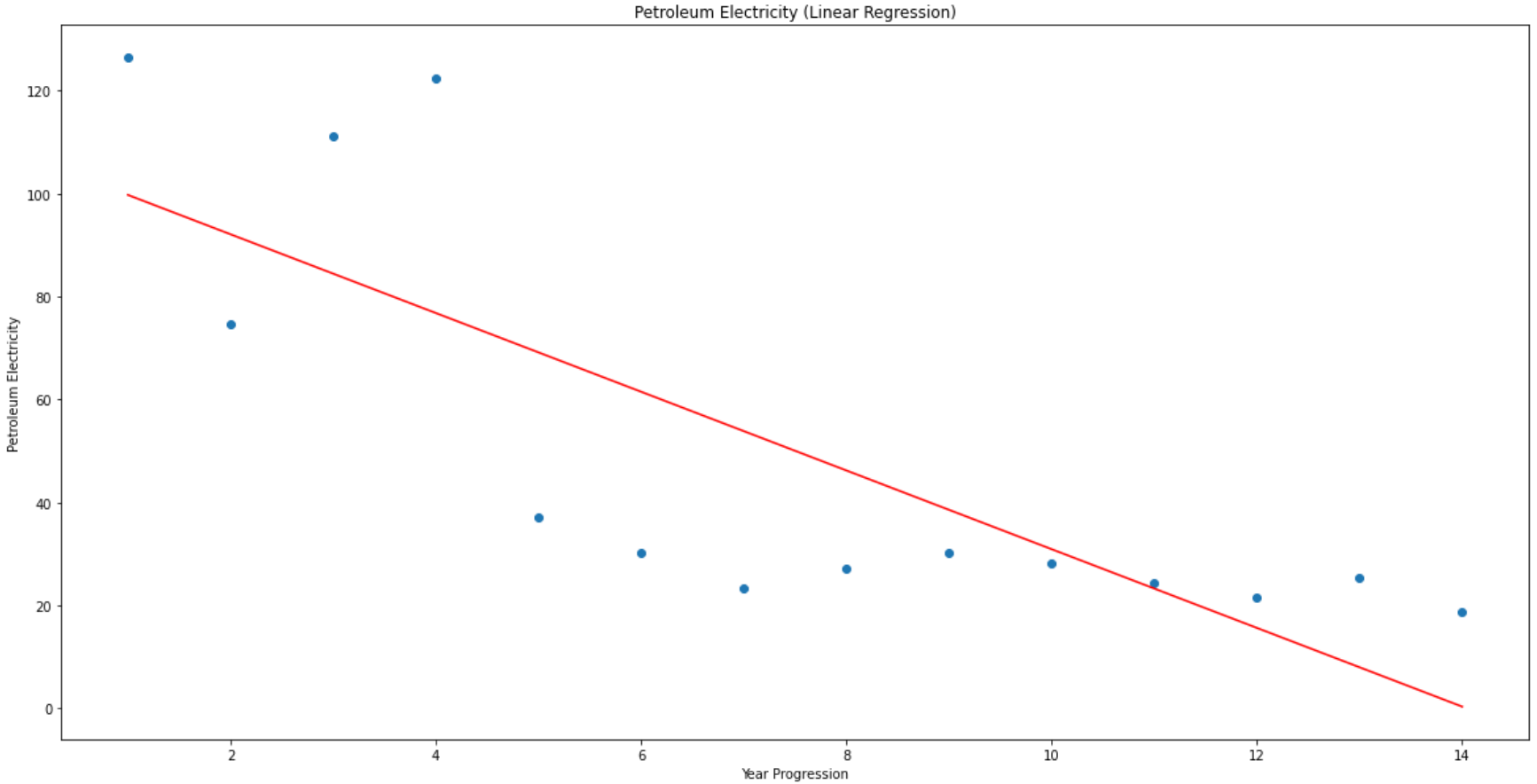



```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

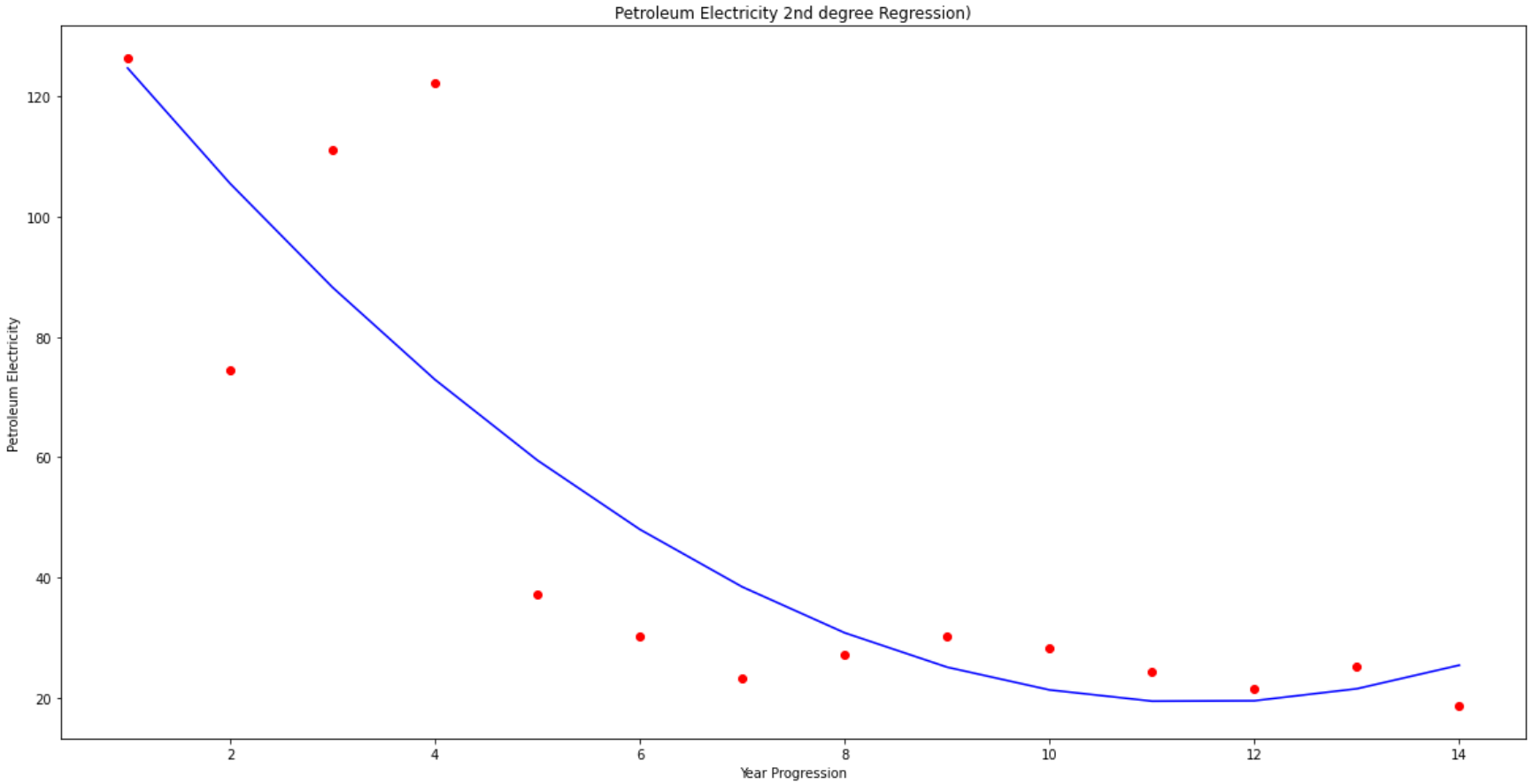



```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

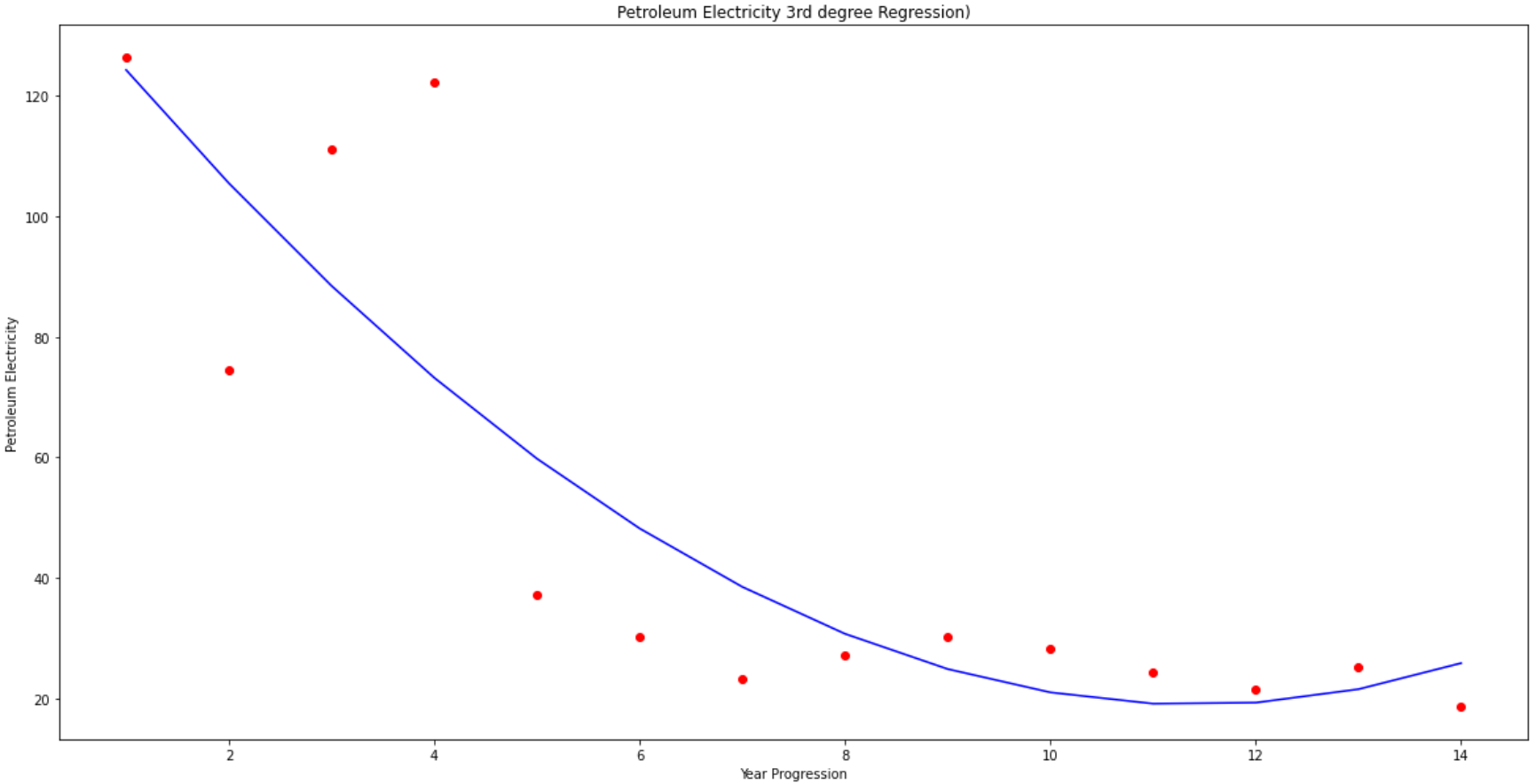

Natural Gas Electricity 3rd degree Regression)
Natural Gas Electricity
Year Progression
1600
1400
1200
1000
800
600
400
2
4
6
8
10
12
14

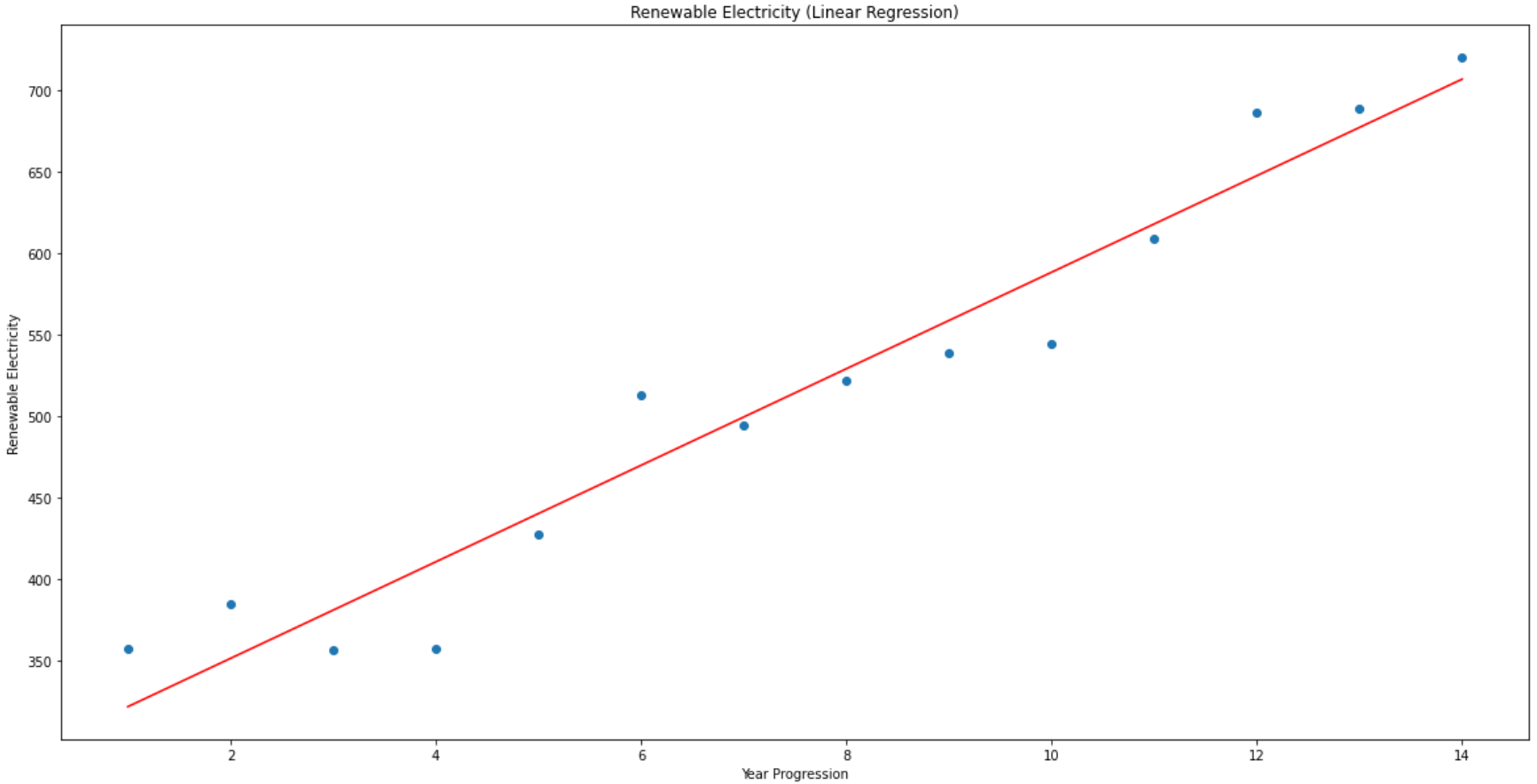



```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

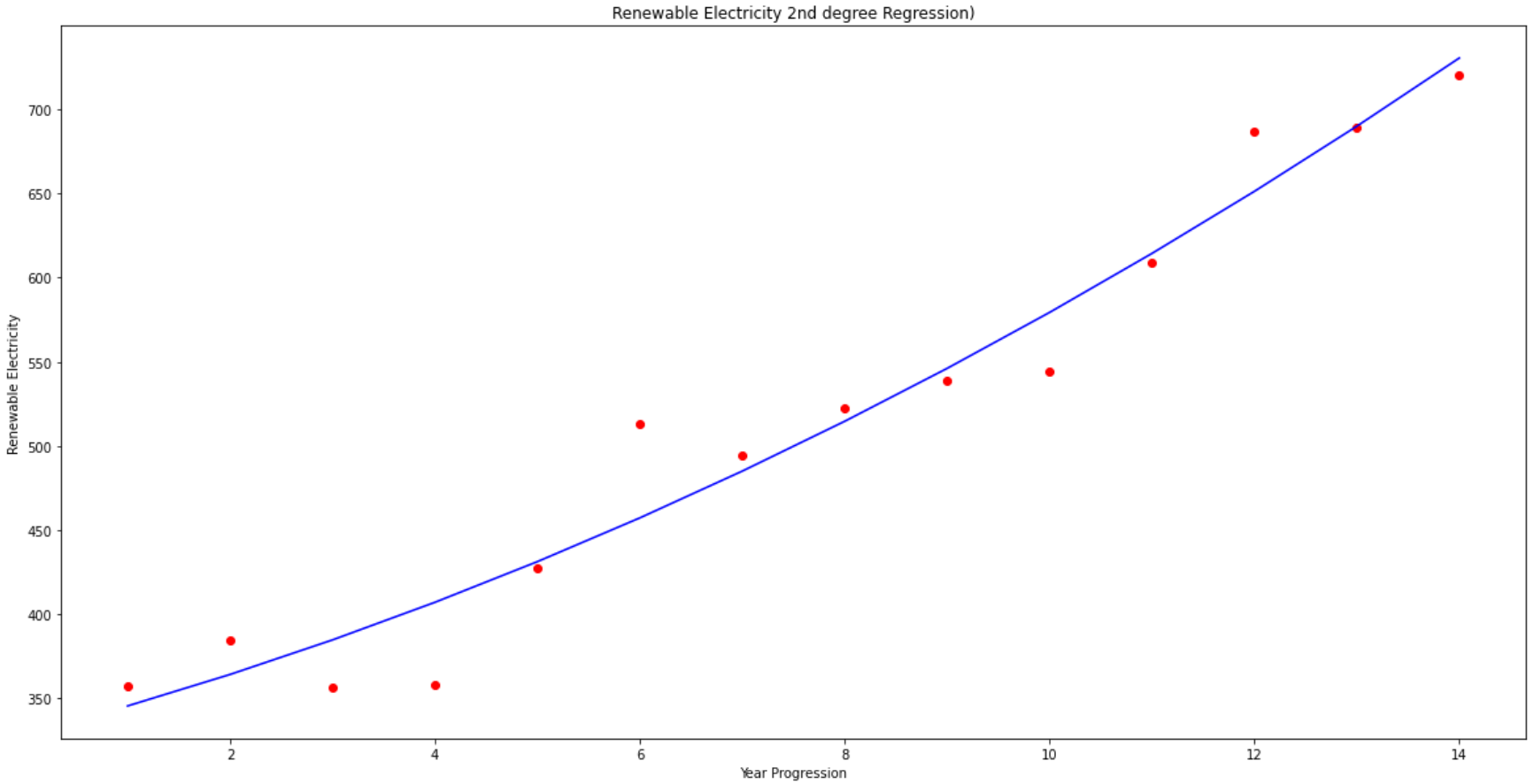



```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

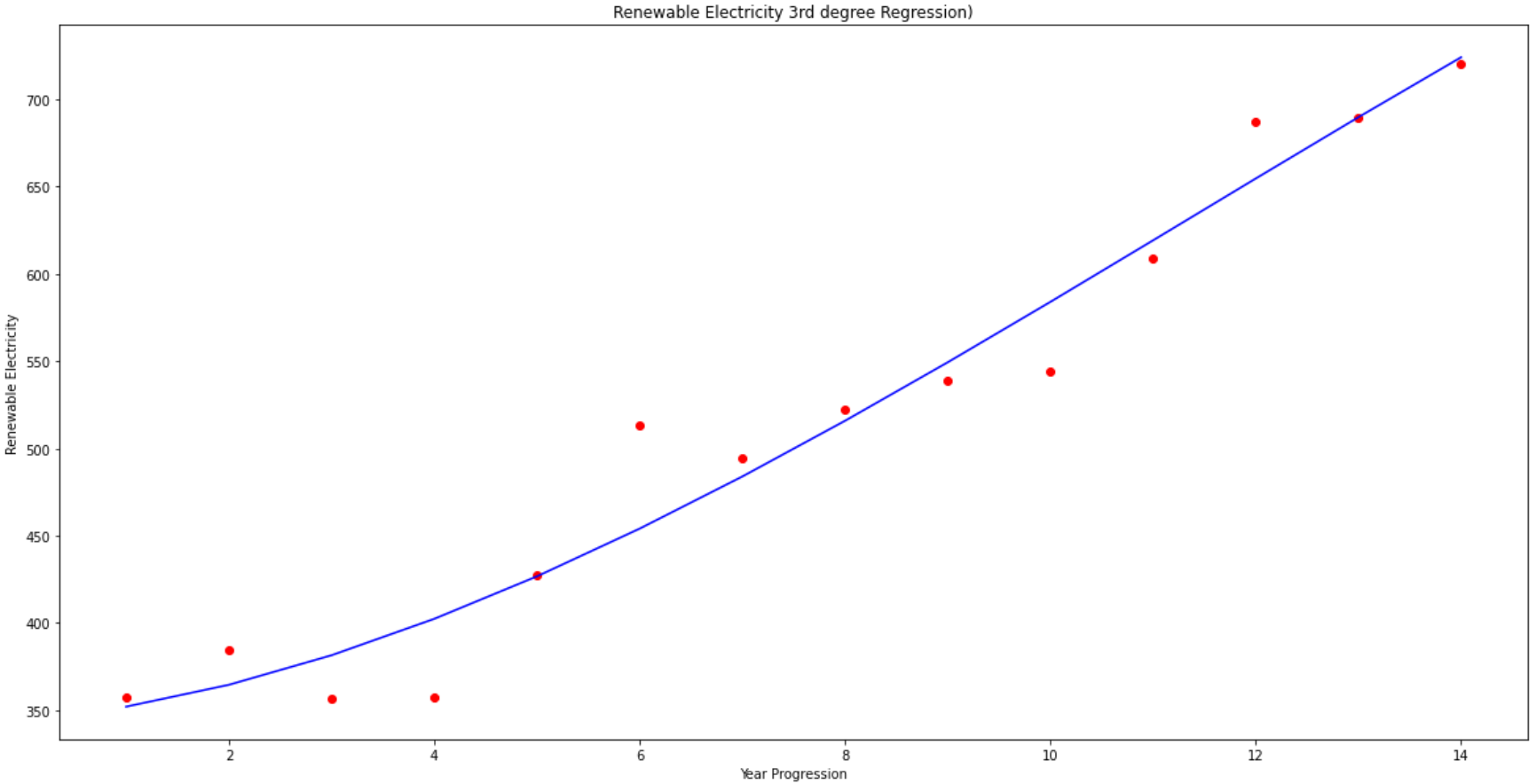

Petroleum Electricity 3rd degree Regression)
Petroleum Electricity
Year Progression
120
100
80
60
40
20
2
4
6
8
10
12
14



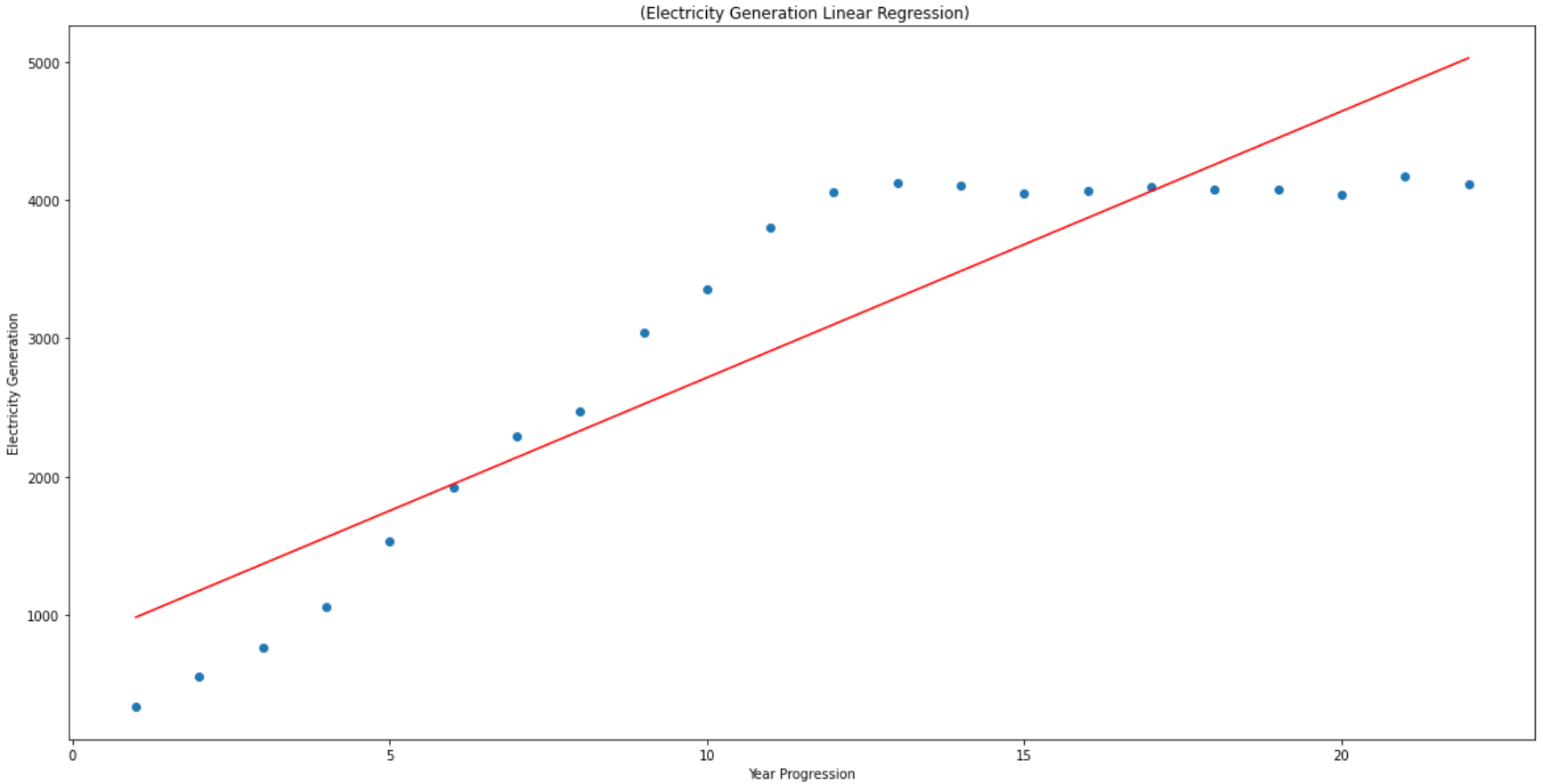

```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```



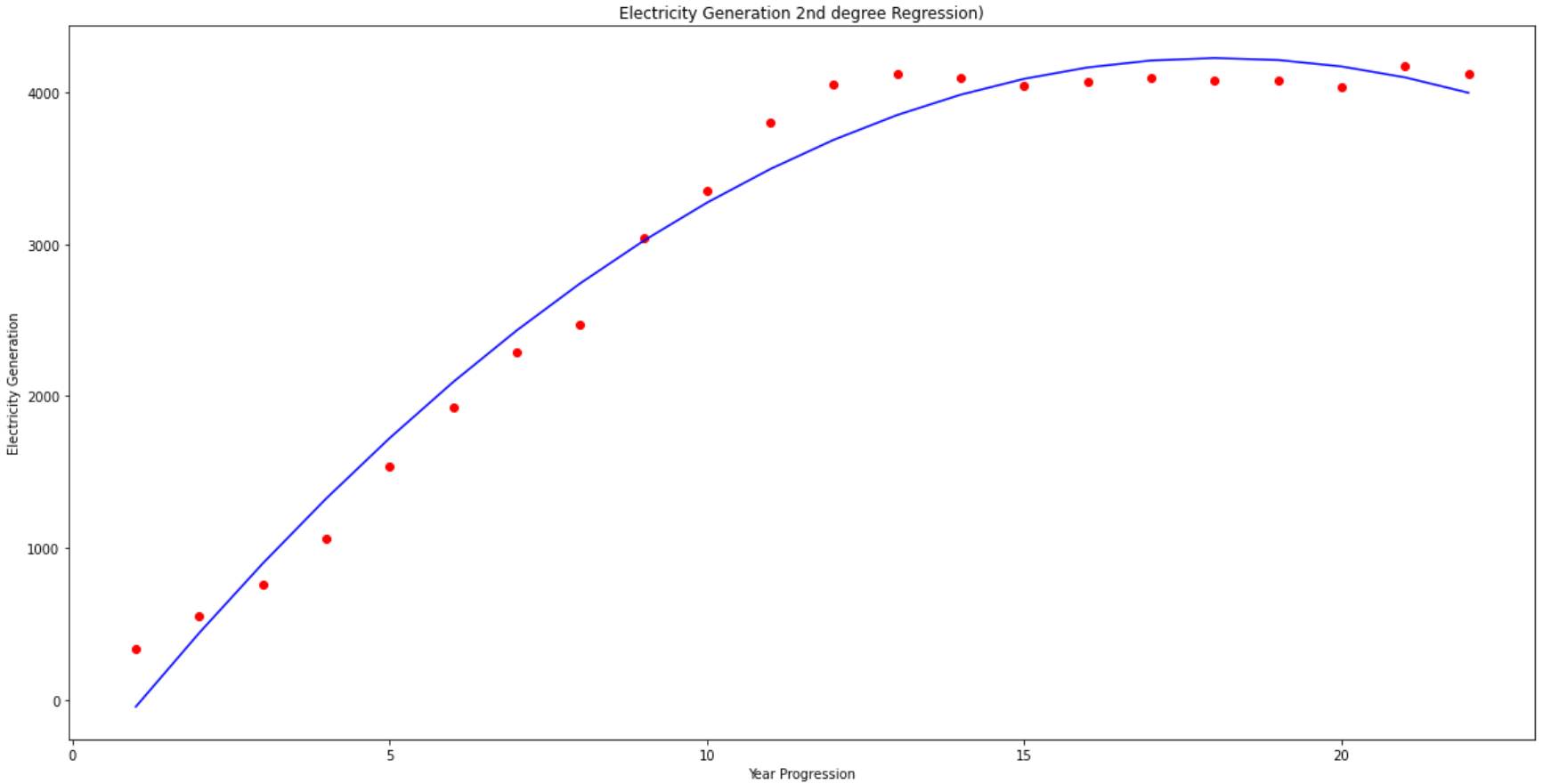

```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```


Renewable Electricity 3rd degree Regression)
Renewable Electricity
Year Progression
700
650
600
550
500
450
400
350
2
4
6
8
10
12
14

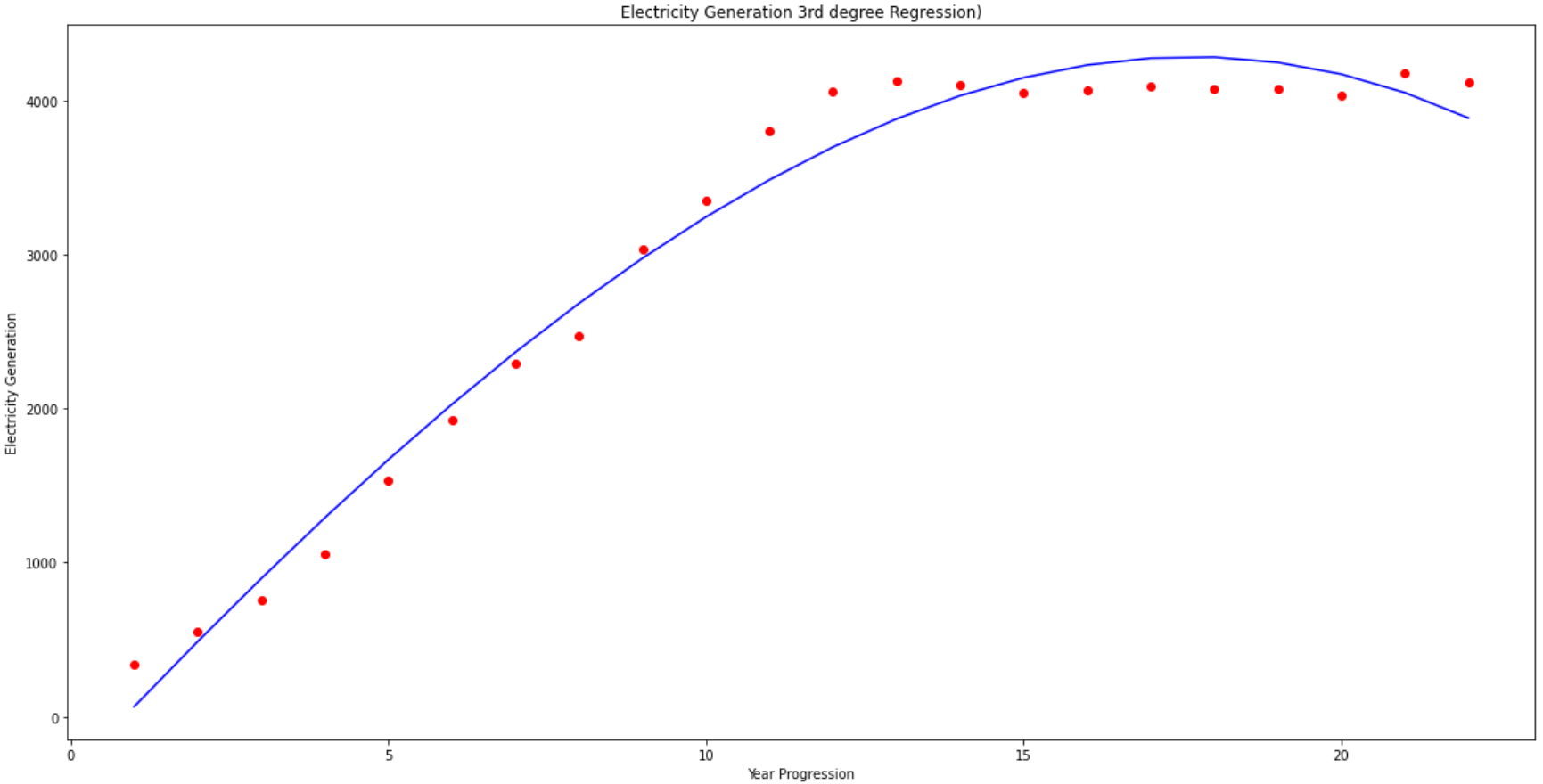
	year	generation
0	1950	334
1	1955	550
2	1960	759
3	1965	1058
4	1970	1535
5	1975	1921
6	1980	2290
7	1985	2473
8	1990	3038
9	1995	3354
10	2000	3802
11	2005	4055
12	2010	4125
13	2011	4100
14	2012	4048
15	2013	4066
16	2014	4094
17	2015	4078
18	2016	4077
19	2017	4034
20	2018	4174
21	2019	4118



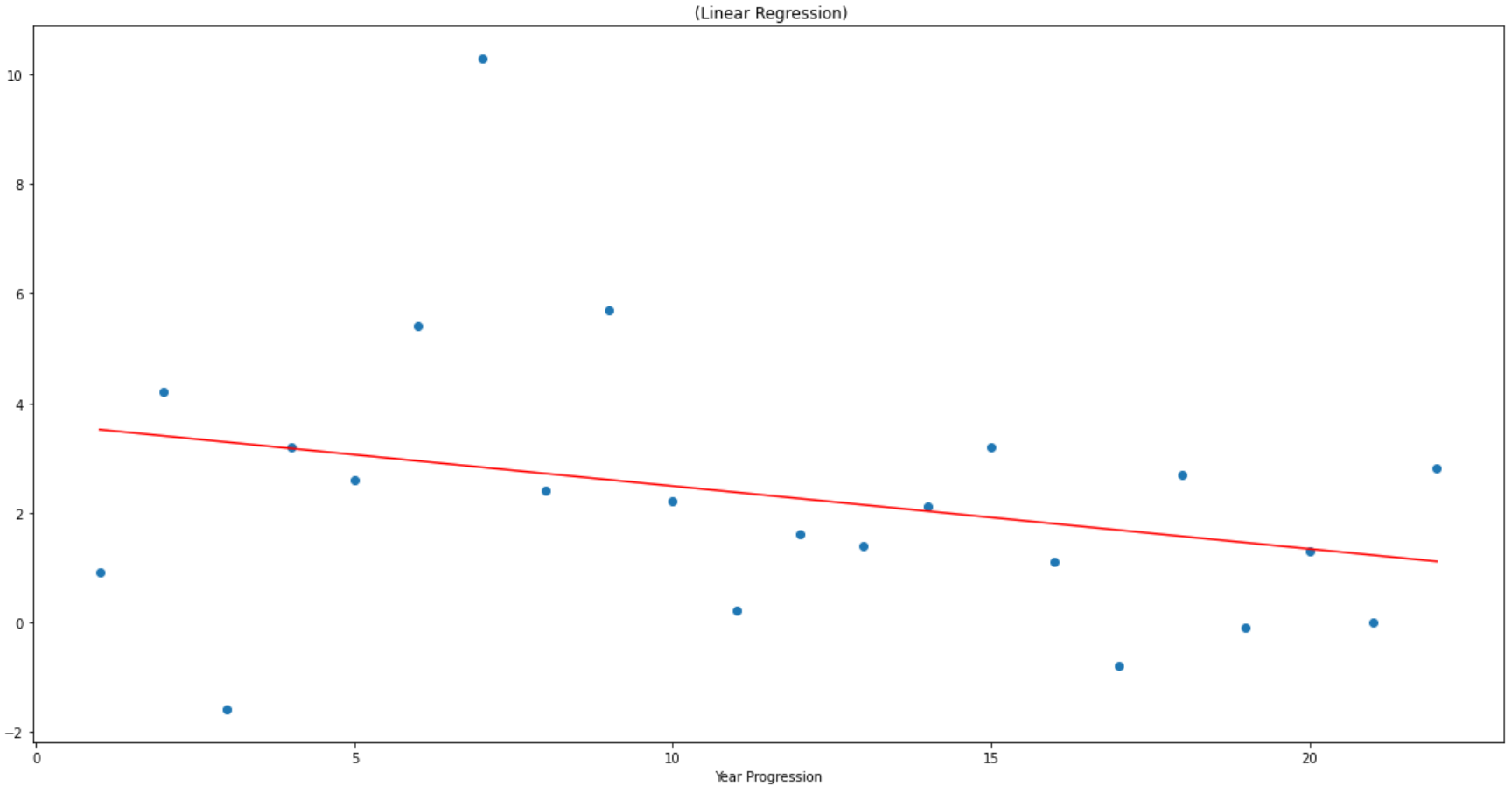

```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```



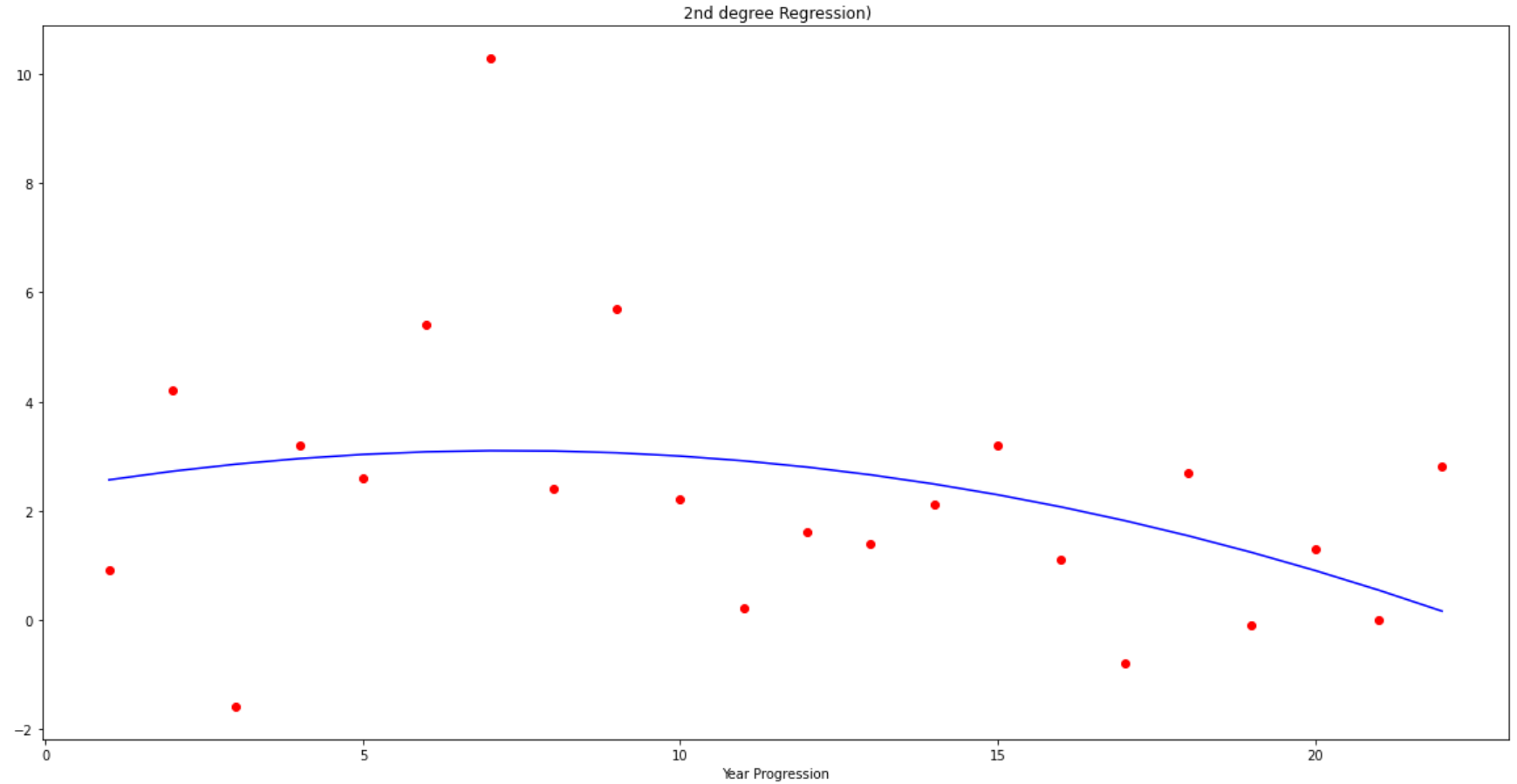

```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```


Electricity Generation 3rd degree Regression)
Electricity Generation
Year Progression
0
1000
2000
3000
4000
0
5
10
15
20

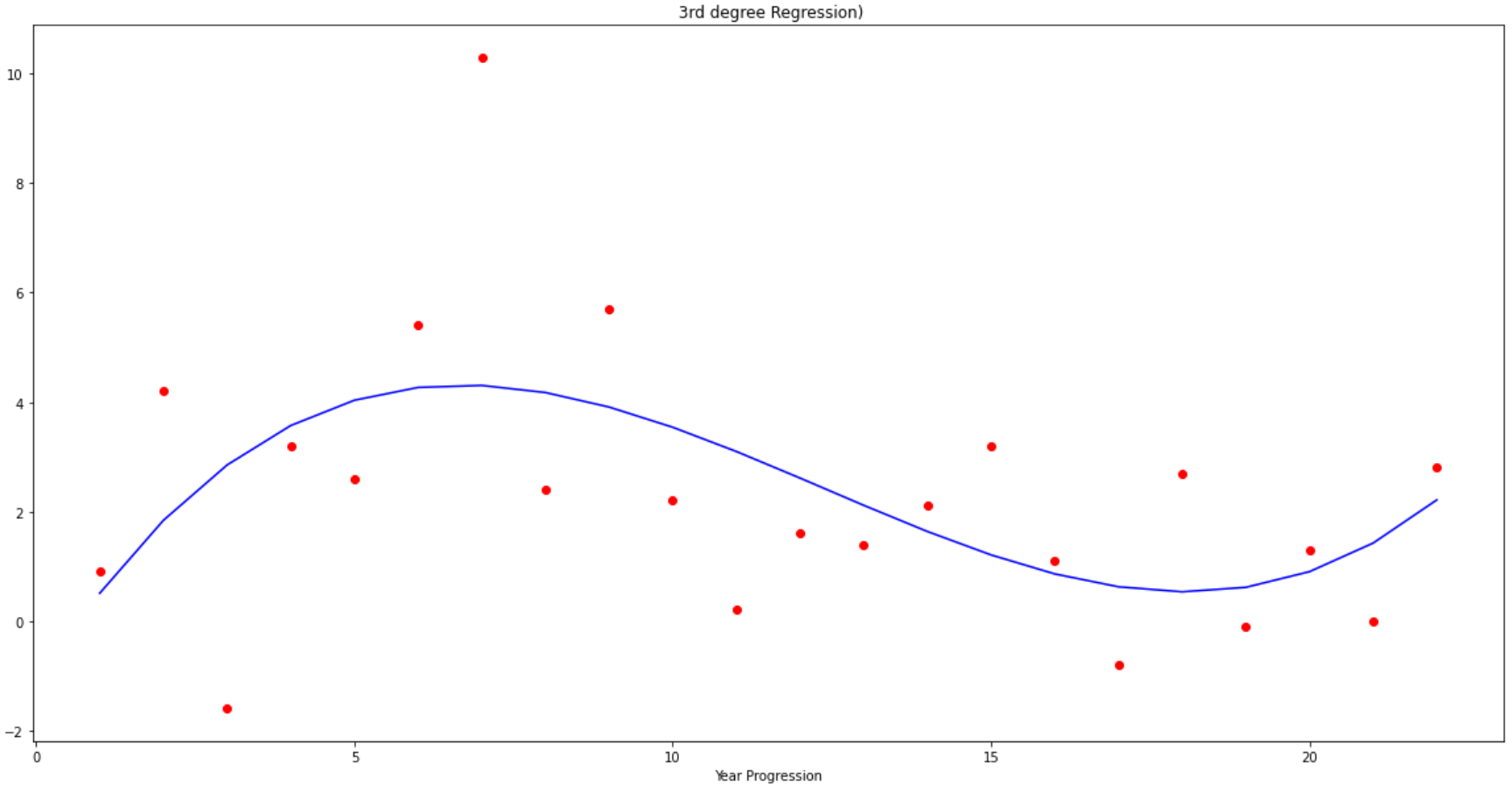
	year	price change %
0	2000	0.9
1	2001	4.2
2	2002	-1.6
3	2003	3.2
4	2004	2.6
5	2005	5.4
6	2006	10.3
7	2007	2.4
8	2008	5.7
9	2009	2.2
10	2010	0.2
11	2011	1.6
12	2012	1.4
13	2013	2.1
14	2014	3.2
15	2015	1.1
16	2016	-0.8
17	2017	2.7
18	2018	-0.1
19	2019	1.3
20	2020	0.0
21	2021	2.8




```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

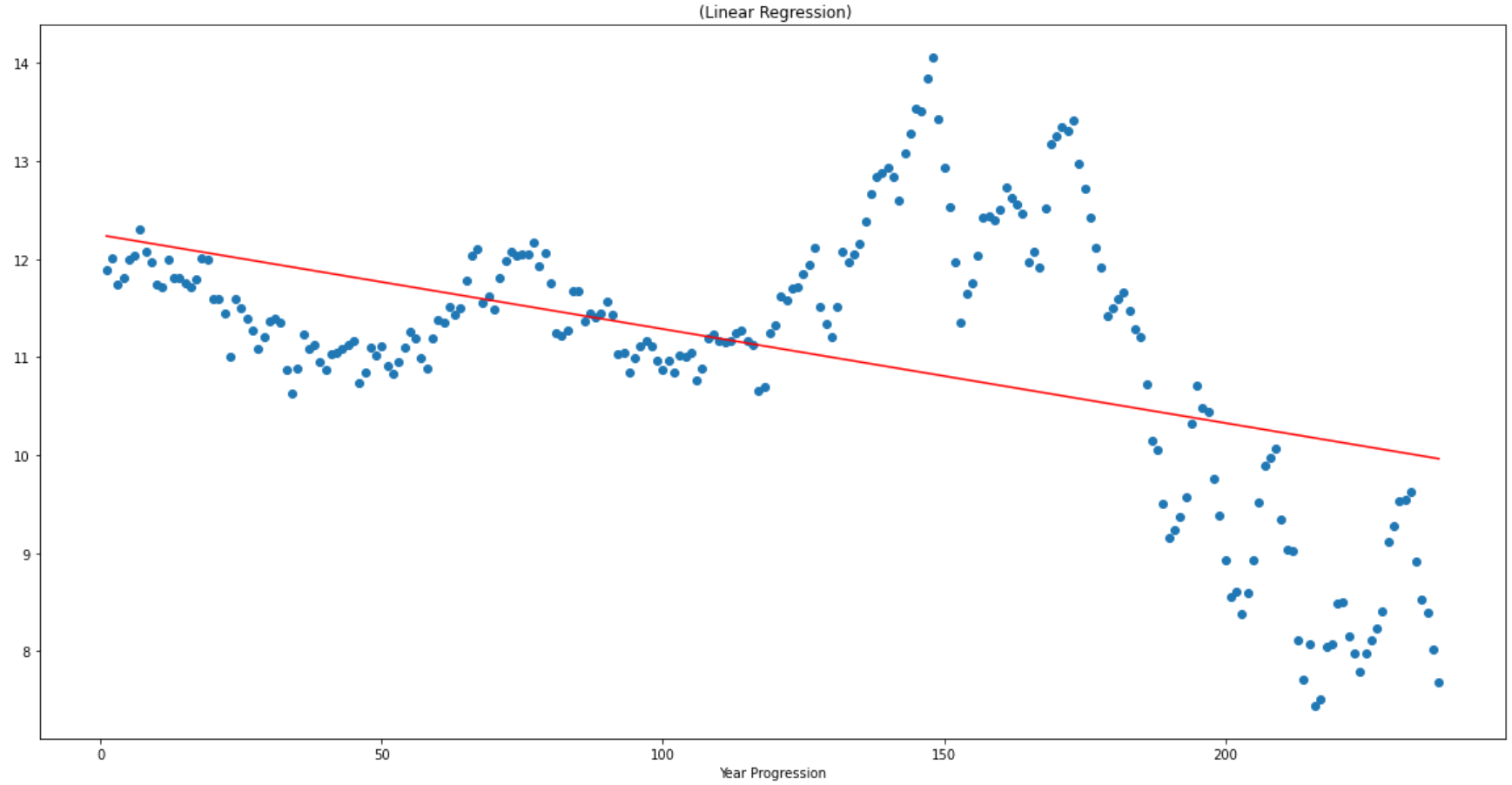



```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

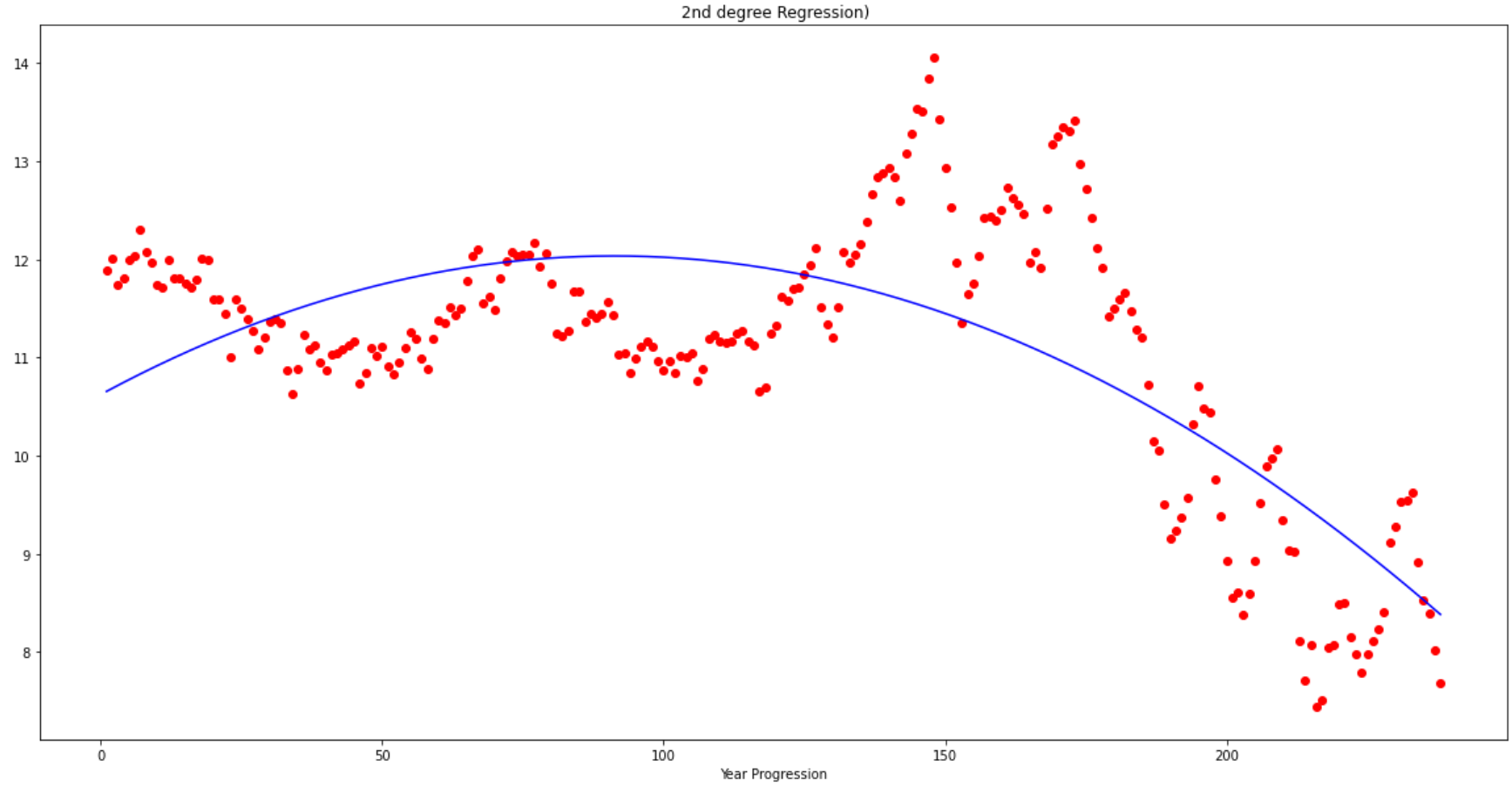

3rd degree Regression)
10
8
6
4
2
0
−2
0
5
10
15
20
Year Progression

	Month	all sectors cents per kilowatthour	residential cents per kilowatthour	commercial cents per kilowatthour	industrial cents per kilowatthour
0	Oct-20	8.30	11.89	7.63	5.19
1	Sep-20	8.91	12.01	7.94	5.20
2	Aug-20	9.00	11.74	7.78	5.57
3	Jul-20	8.84	11.81	7.48	5.18
4	Jun-20	8.78	12.00	7.69	5.06
...	...	...	...	...	...
233	May-01	7.34	8.91	7.96	5.38
234	Apr-01	7.04	8.52	7.83	5.10
235	Mar-01	7.02	8.39	7.83	5.10
236	Feb-01	6.91	8.02	7.61	5.11
237	Jan-01	6.90	7.68	7.65	5.12

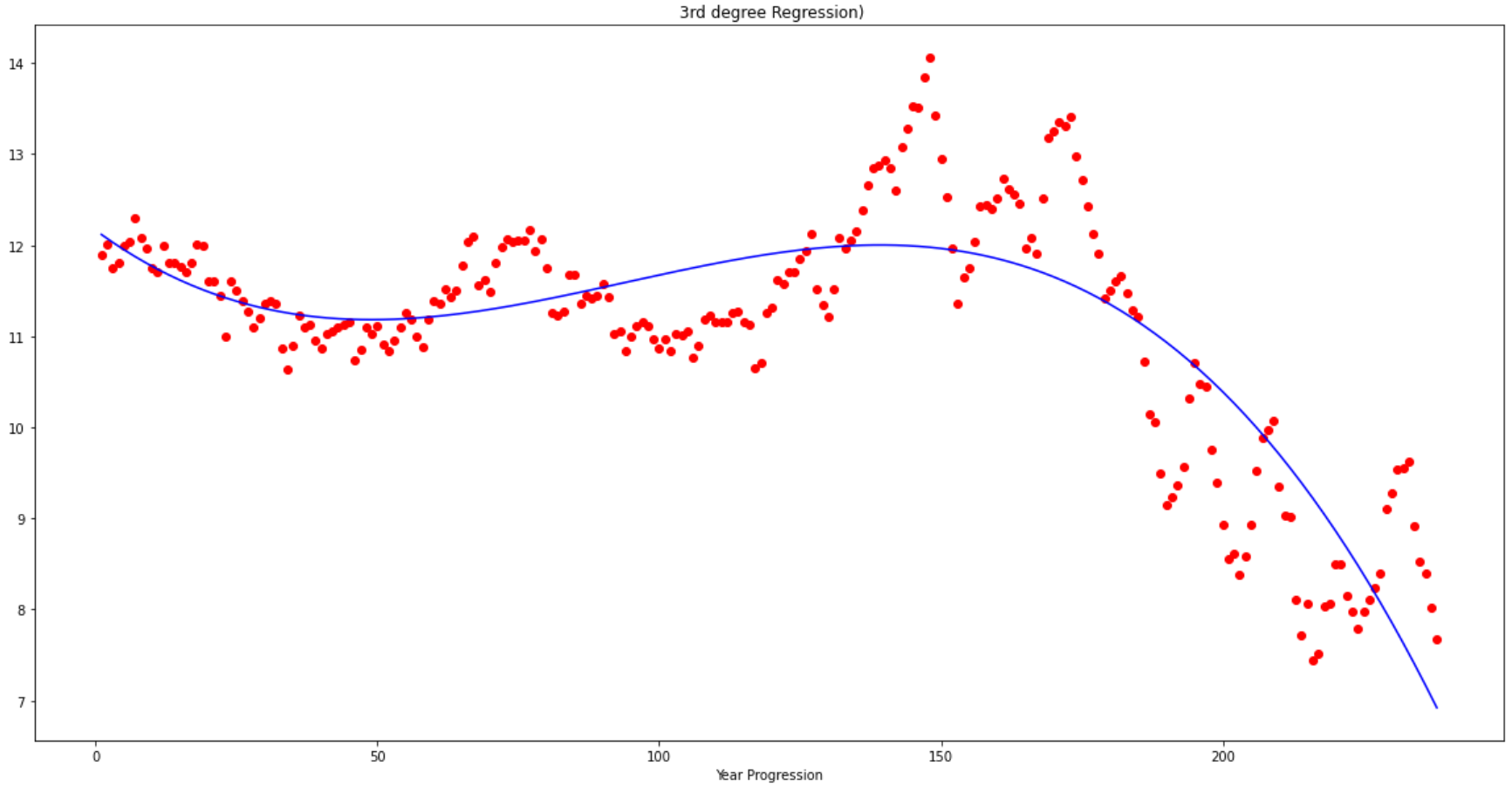
238 rows × 5 columns



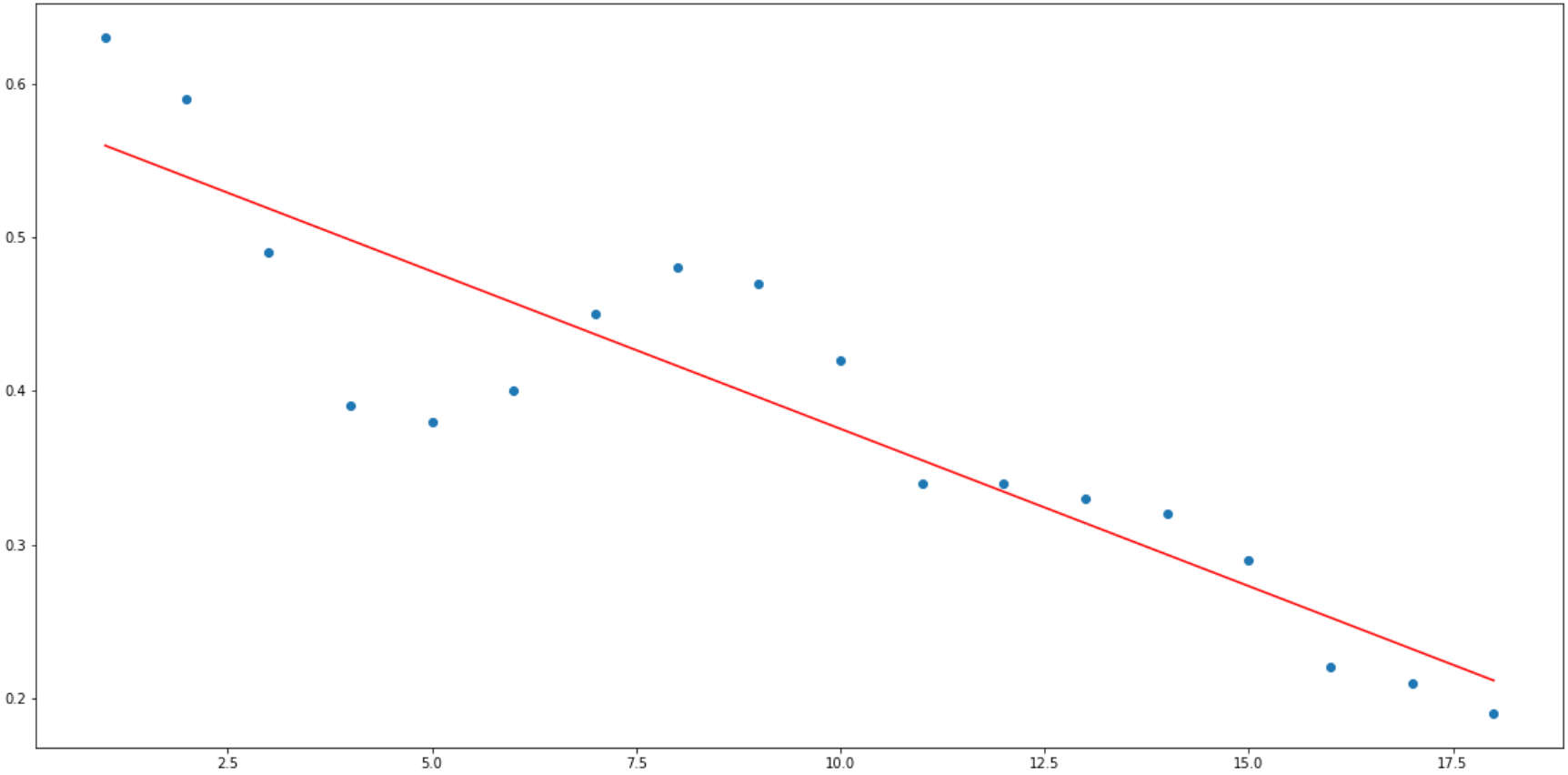

```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

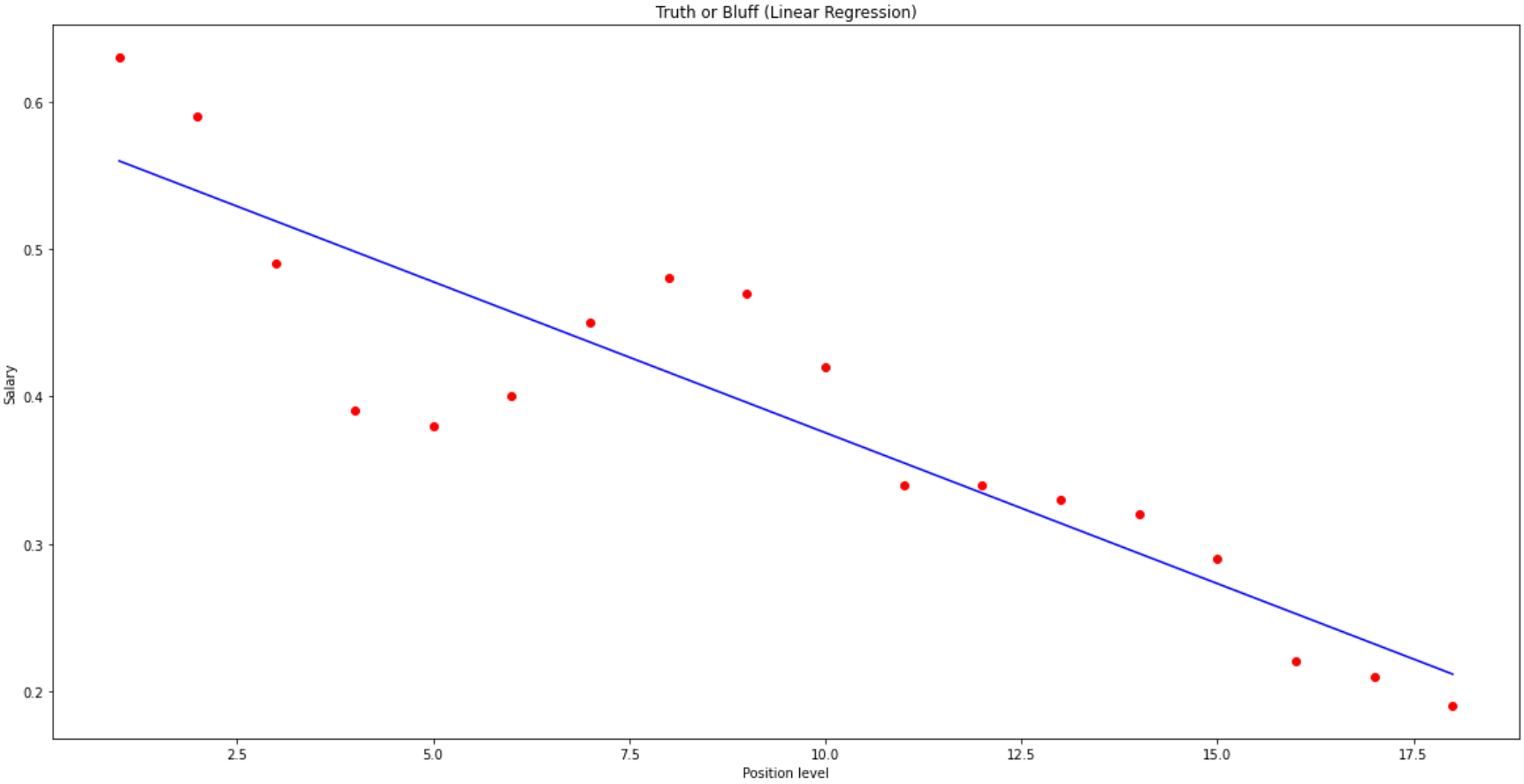



```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```


3rd degree Regression)
14
13
12
11
10
9
8
7
0
50
100
150
200
Year Progression

	quarter	dollar per watt
0	Q1 '16	0.63
1	Q2 '16	0.59
2	Q3 '16	0.49
3	Q4 '16	0.39
4	Q1 '17	0.38
5	Q2 '17	0.40
6	Q3 '17	0.45
7	Q4 '17	0.48
8	Q1 '18	0.47
9	Q2 '18	0.42
10	Q3 '18	0.34
11	Q4 '18	0.34
12	Q1 '19	0.33
13	Q2 '19	0.32
14	Q3 '19	0.29
15	Q4 '19	0.22
16	Q1 '20	0.21
17	Q2 '20	0.19


0.6
0.5
0.4
0.3
0.2
2.5
5.0
7.5
10.0
12.5
15.0
17.5


Truth or Bluff (Linear Regression)
Salary
Position level
0.6
0.5
0.4
0.3
0.2
2.5
5.0
7.5
10.0
12.5
15.0
17.5