


Ambient Air Quality Update for 2019

Small Business Compliance Advisory Committee

January 22, 2020

Harrisburg, PA

Tom Wolf, Governor

Patrick McDonnell, Secretary

Agenda

- Review of 2018-19 Weather and Air Quality
  - Ozone – 2019
  - Fine Particulate Matter ($PM_{2.5}$) – 2018
  - Sulfur Dioxide (SO_2) – 2018

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Review of 2018-19 Weather and Air Quality

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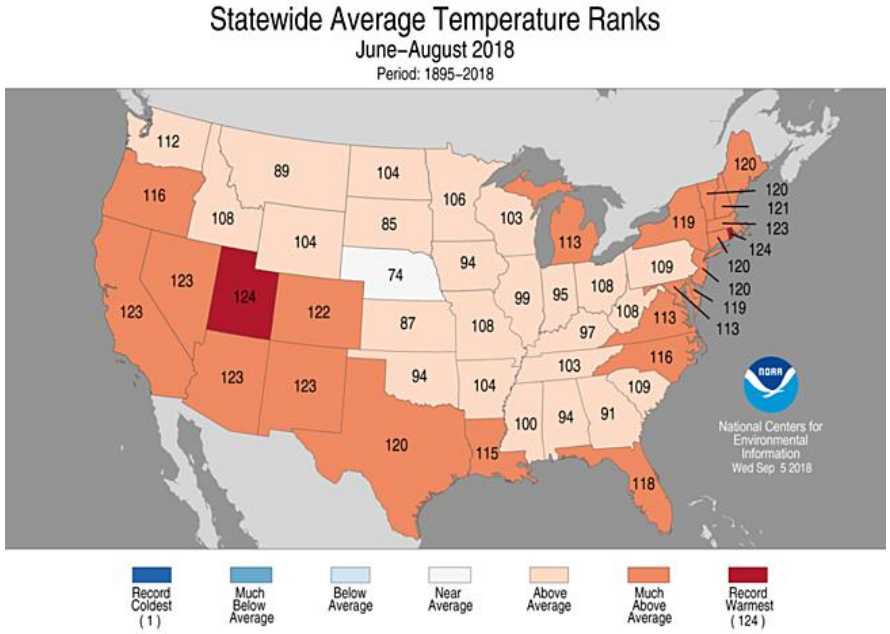
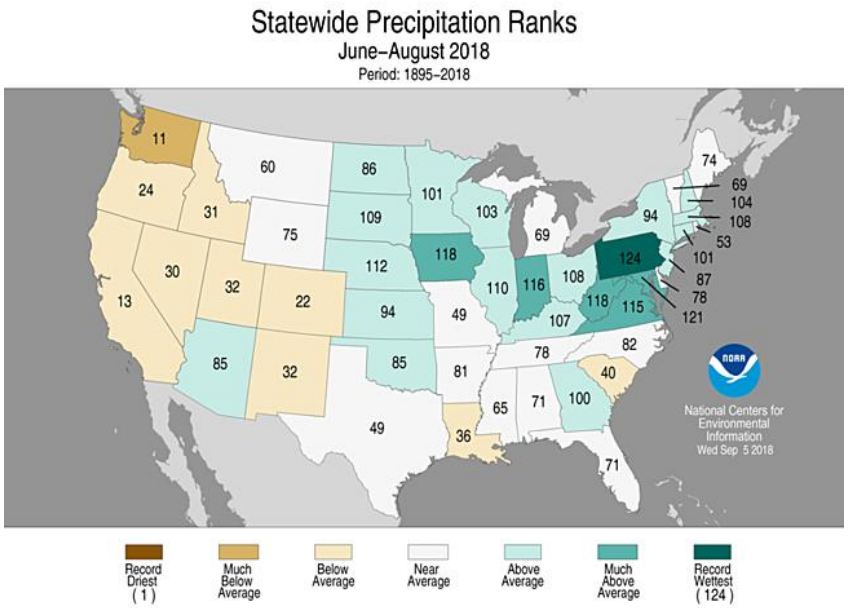
Meteorology - Summer 2018

Temperature



Precipitation



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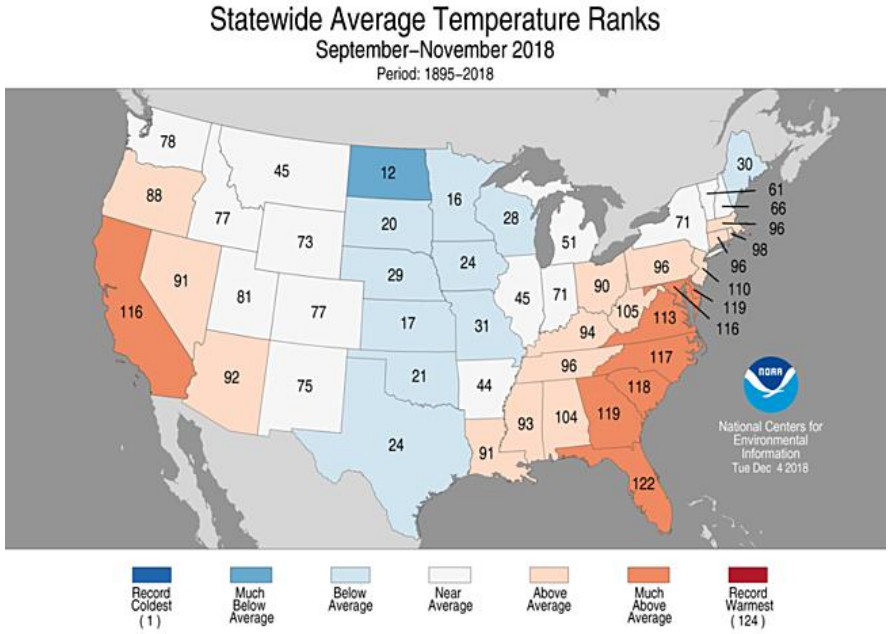
Meteorology – Fall 2018

Temperature



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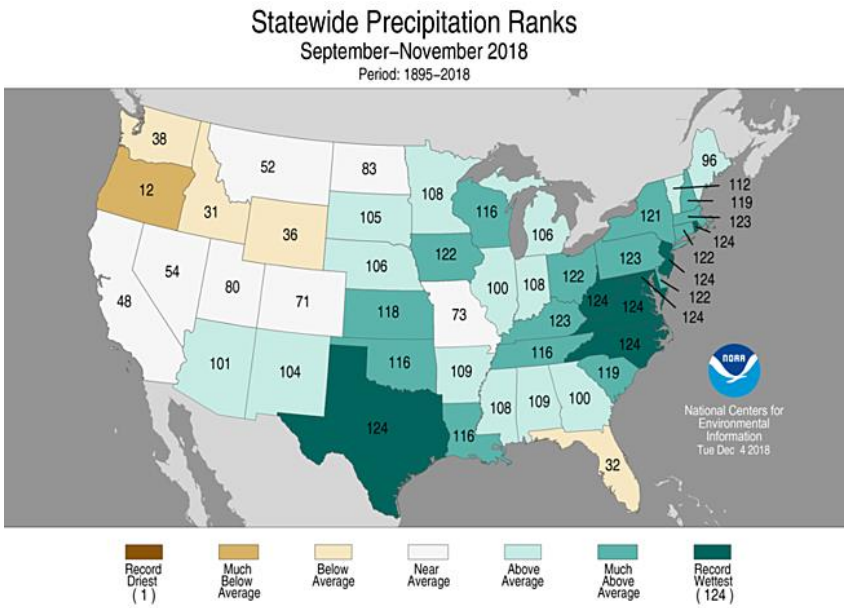

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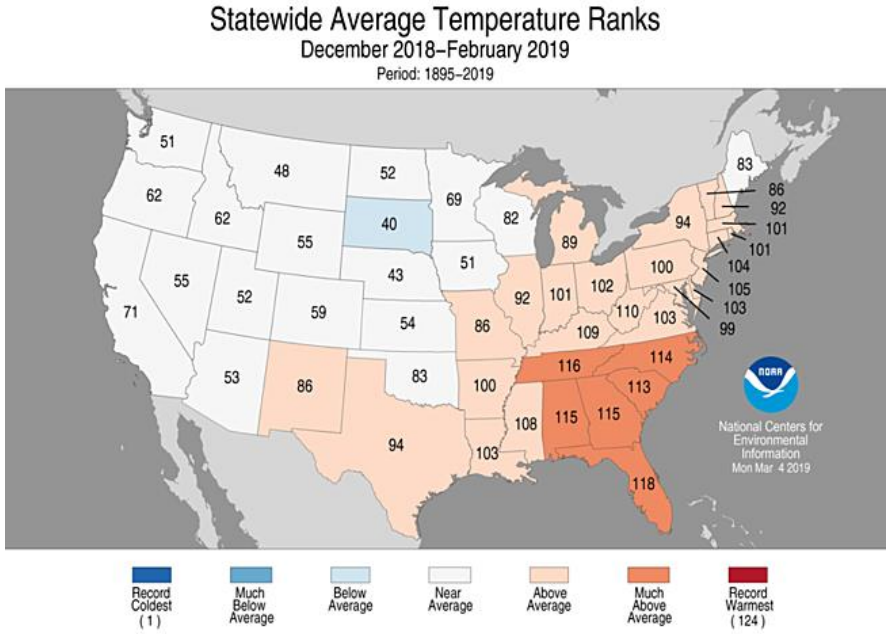
Meteorology – Winter 2018/19

Temperature



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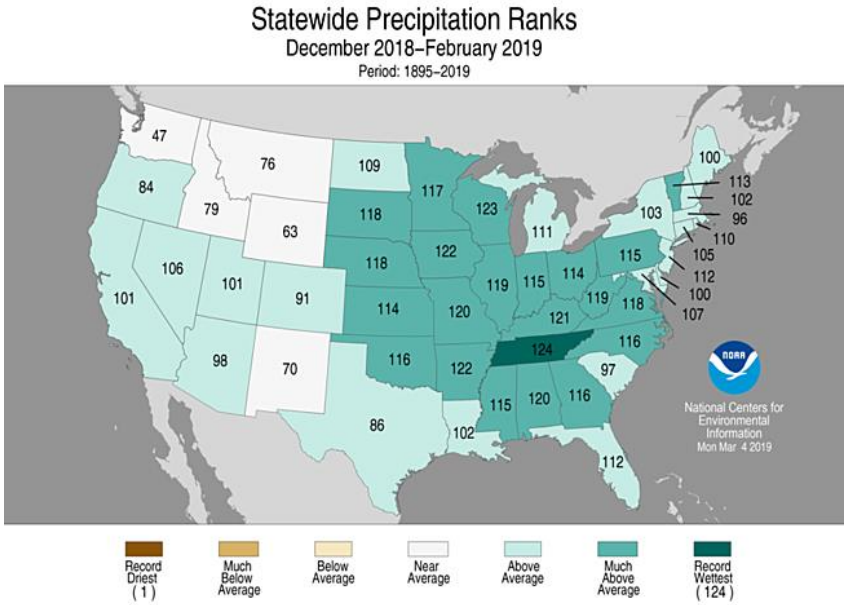

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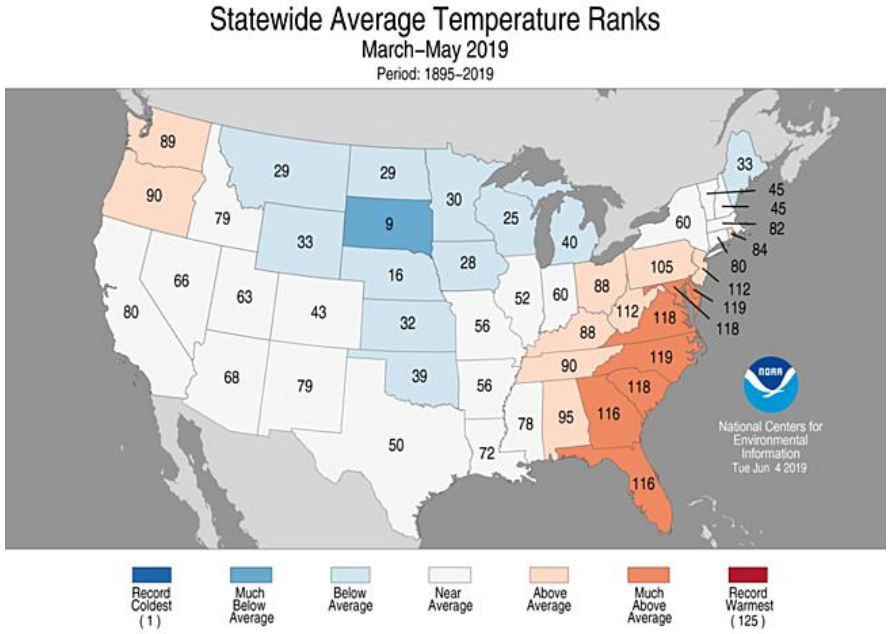
Meteorology - Spring 2019

Temperature



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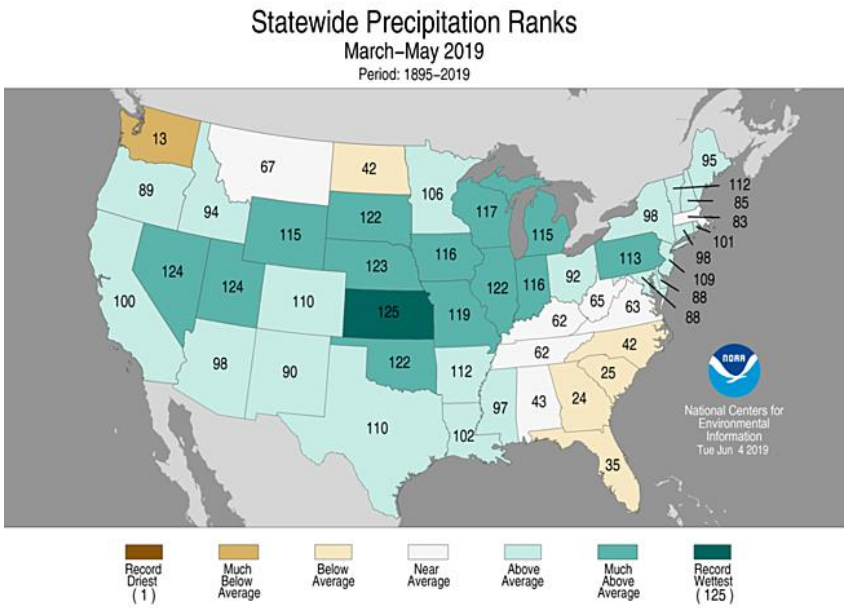

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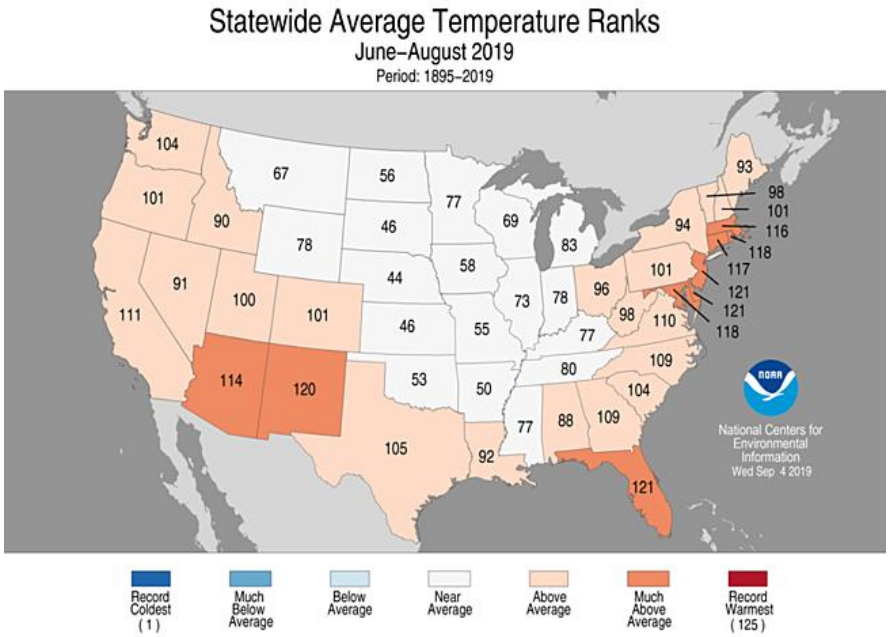
Meteorology - Summer 2019

Temperature



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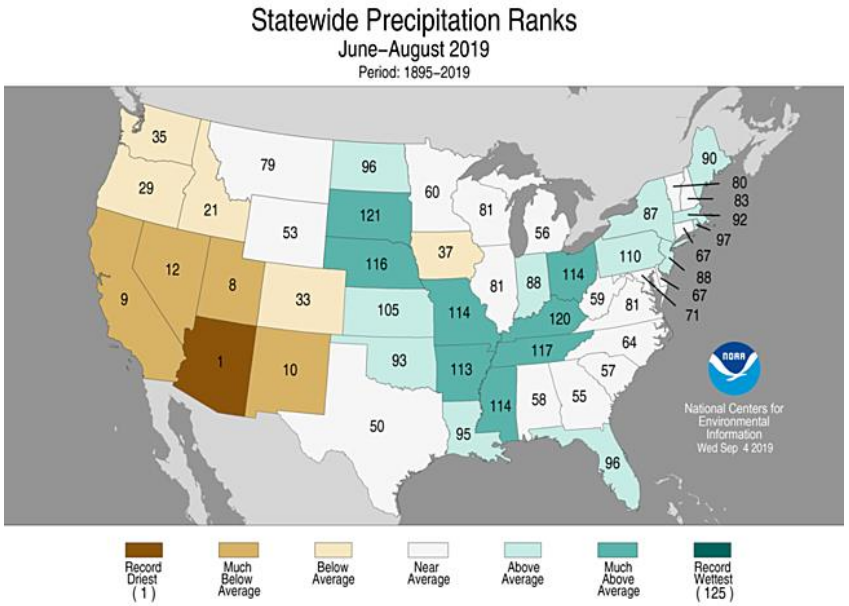

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2018-19 Ozone Monitoring Summary

- Ozone monitoring season – March to October (PA monitors ozone year-round)
- Overview of the projected 2018-19 design values (DV) for the 8-hour ozone national ambient air quality standard (NAAQS)
- 2018 DV calculation – 4th high from 2016, 2017, and 2018 averaged over a 3-year period
- 2019 DV calculation – 4th high from 2017, 2018, and 2019 averaged over a 3-year period

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Number of 8-hour Ozone Exceedances

- Number of 8-hour ozone exceedance days (of 2015 ozone NAAQS of 70 parts per billion) and total number of exceedances per year within Pennsylvania's monitoring network (51-53 ozone monitors):
  - 2017: 23 days | 70 total exceedances
  - 2018: 24 days | 104 total exceedances
  - 2019: 9 days | 24 total exceedances*

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* 2019 Ozone Data has not been fully QA/QC'd

2018-19 8-Hour Ozone NAAQS Attainment Status

- In 2018, eight samplers in the Commonwealth monitored nonattainment of the 2015 8-hour ozone NAAQS (0.070 parts per million or 70 parts per billion).

- In 2019*, four samplers in the Commonwealth are monitoring nonattainment of the 2015 8-hour ozone NAAQS.

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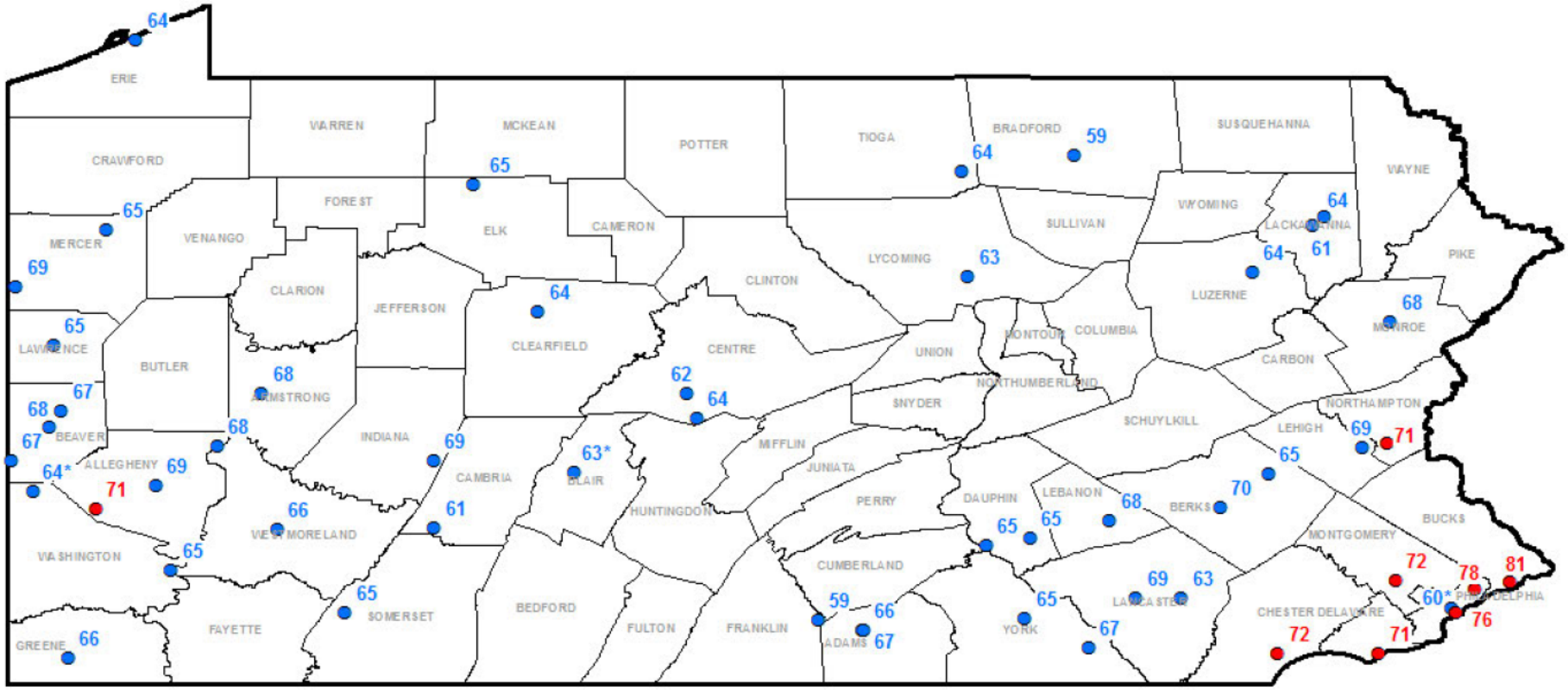
* 2019 Ozone Data has not been fully QA/QC'd

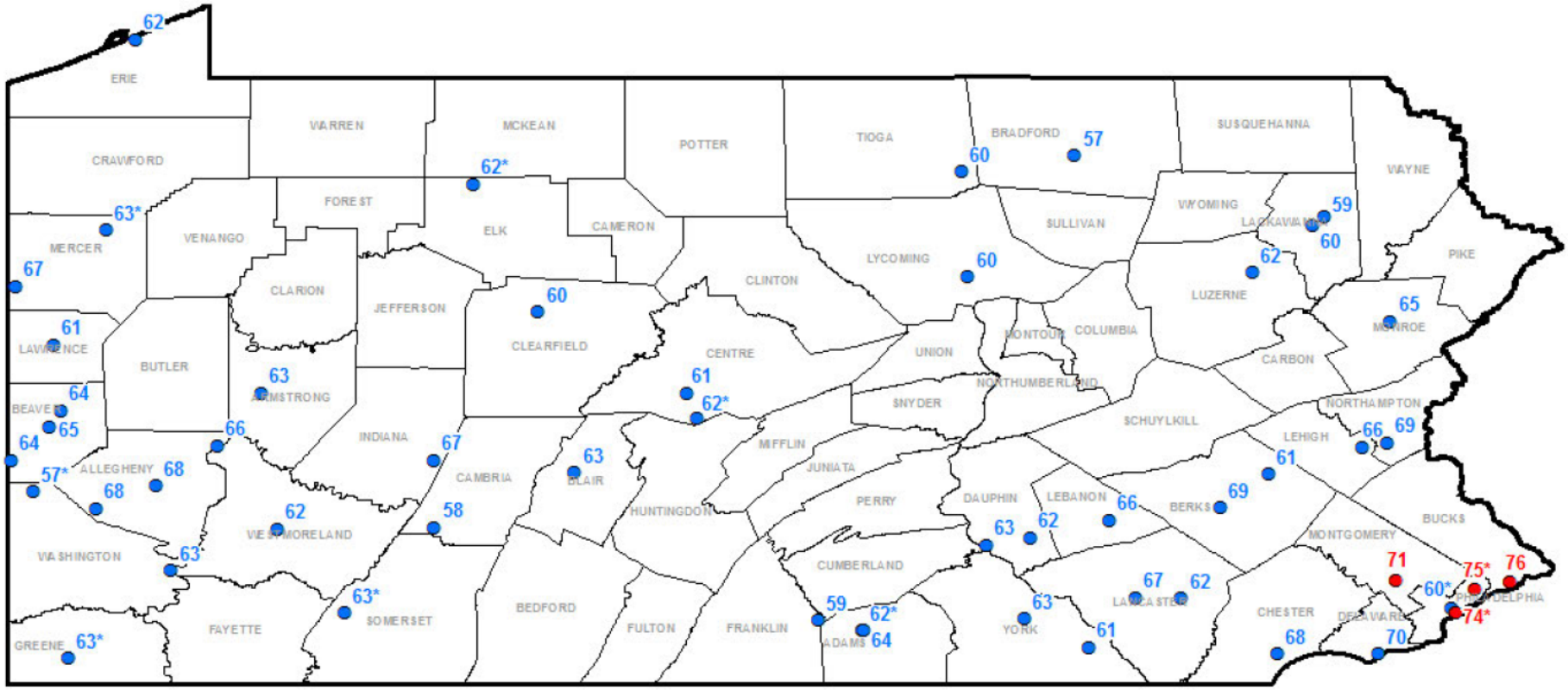
2018 8-Hour Ozone Design Values



Appearing in Red - 2018 8-Hour Ozone Design Value above 70 ppb (2015 Ozone Standard)

Appearing in Blue - 2018 8-Hour Ozone Design Value at or below 70 ppb (2015 Ozone Standard)

2019 8-Hour Ozone Design Values*



Appearing in Red - Projected 2019 8-Hour Ozone Design Value above 70 ppb (2015 Ozone Standard)

Appearing in Blue - Projected 2019 8-Hour Ozone Design Value at or below 70 ppb (2015 Ozone Standard)

* 2019 Ozone Data has not been fully QA/QC'd

Evolution of a Ozone Episode

- Ozone episode ran from Wednesday, June 26, 2019 to Saturday, June 29, 2019
- Exceedances of the ozone standard occur during the summer months because of the potential for favorable meteorological conditions.
- Recipe for high ozone – high pressure, sunshine, and warm temperatures, high sun angle (length of day longer)

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2018 $PM_{2.5}$ Monitoring Summary

- $PM_{2.5}$ monitoring season – Year-round
- Overview of the 2018 design value (DV) for the 24-hour $PM_{2.5}$ national ambient air quality standard (NAAQS) continuous monitors
- 2018 24-hour DV calculation – 98th percentile value from 2016, 2017, and 2018 averaged over a 3-year period

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Number of 24-hour $PM_{2.5}$ Exceedances

- Number of $PM_{2.5}$ exceedance days and total number of exceedances per year within Pennsylvania's $PM_{2.5}$ monitoring network (40 total monitors):
  - 2016: 16 days | 24 total exceedances
  - 2017: 13 days | 20 total exceedances
  - 2018: 7 days | 7 total exceedances

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2006 24-hour $PM_{2.5}$ NAAQS Attainment Status

- In 2017, one $PM_{2.5}$ sampler (Liberty) in Allegheny County was monitoring nonattainment of the 2006 24-hour $PM_{2.5}$ standard (35 µg/m^3).

- In 2018, no $PM_{2.5}$ sampler was monitoring nonattainment of the 2006 24-hour $PM_{2.5}$ standard (35 µg/m^3) in Pennsylvania.

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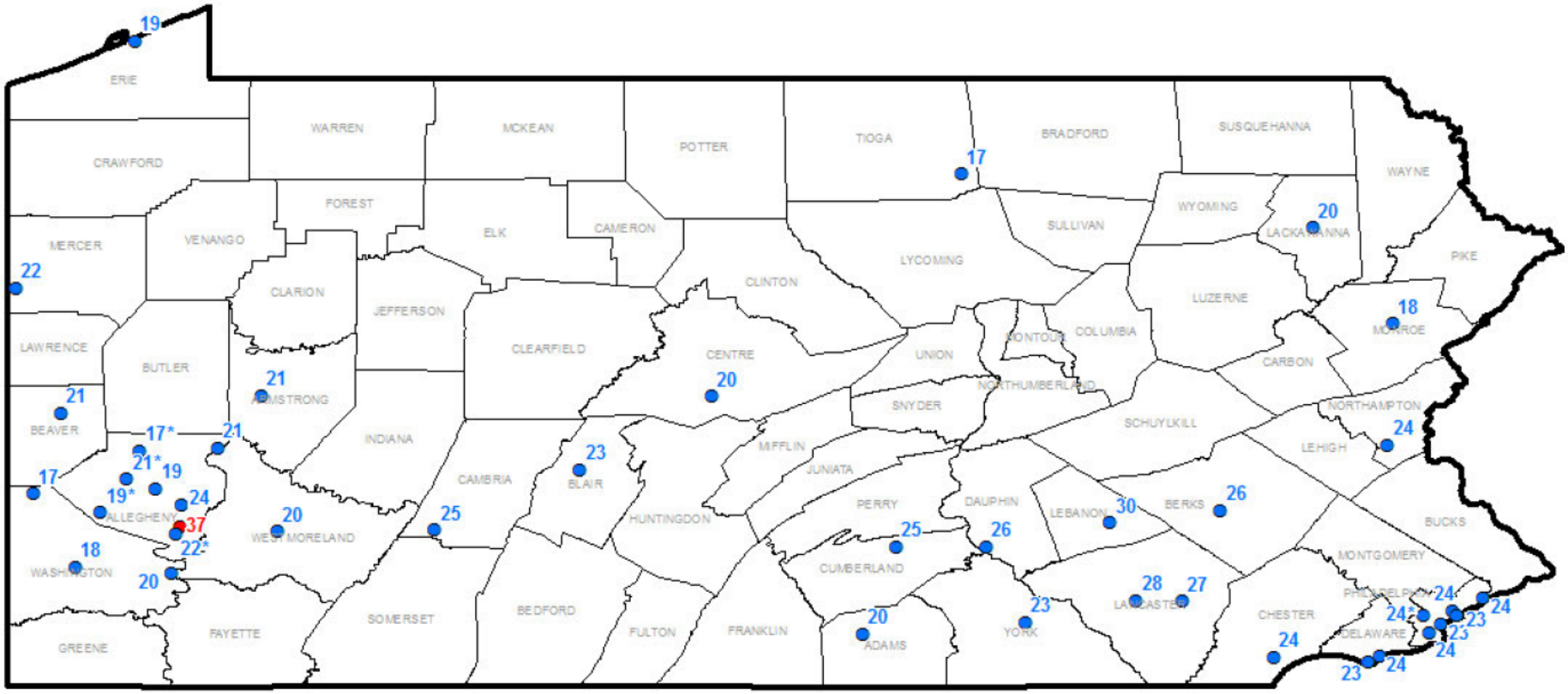
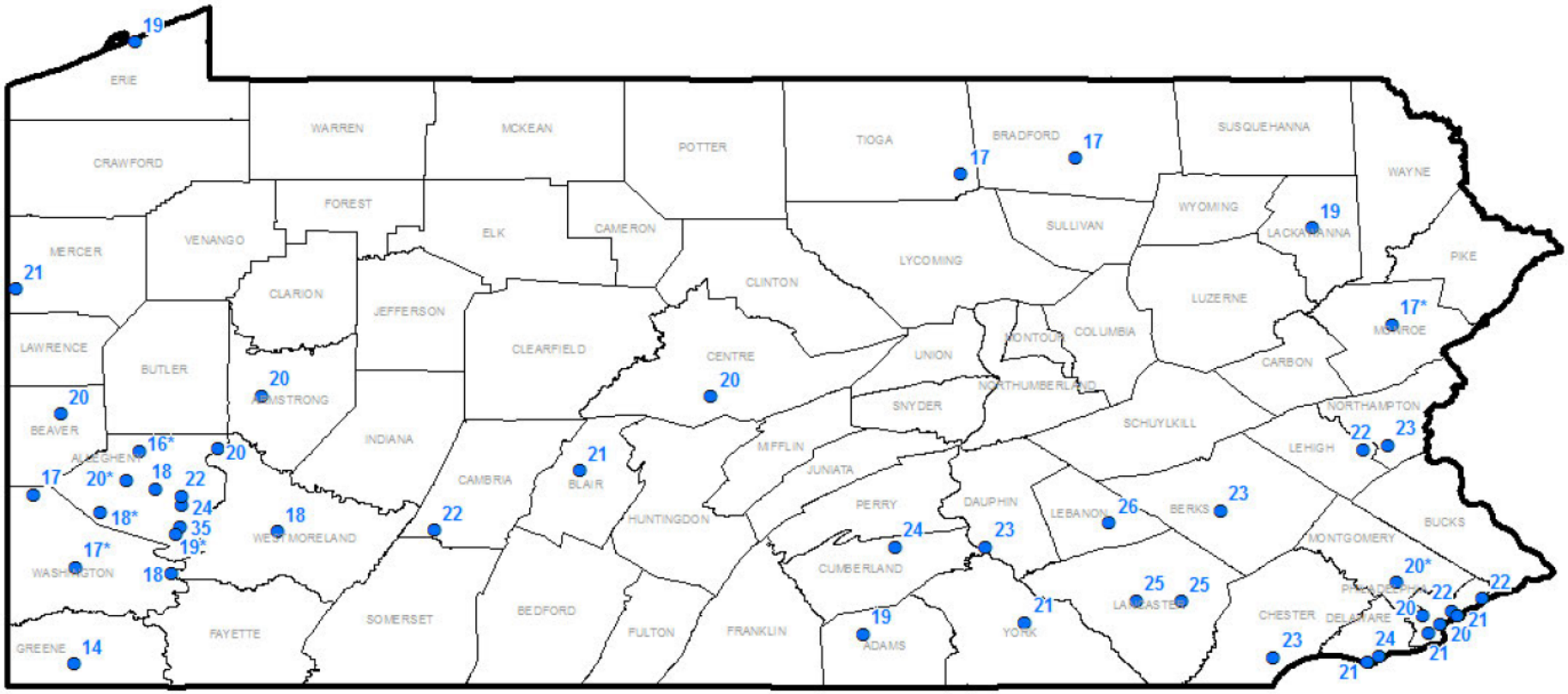
2017 24-hour $PM_{2.5}$ Design Values



Appearing in Red - 2017 24-hour $PM_{2.5}$ Design Values Above the Standard of 35 ug/m^3

Appearing in Blue - 2017 24-hour $PM_{2.5}$ Design Values Below the Standard of 35 ug/m^3

2018 24-hour $PM_{2.5}$ Design Values



Appearing in Red - 2018 24-hour $PM_{2.5}$ Design Values Above the Standard of 35 ug/m^3

Appearing in Blue - 2018 24-hour $PM_{2.5}$ Design Values Below the Standard of 35 ug/m^3

2012 Annual $PM_{2.5}$ NAAQS Attainment Status

- In 2017, one $PM_{2.5}$ samplers (Liberty) in the Commonwealth was monitoring nonattainment of the 2012 annual $PM_{2.5}$ standard (12.0 µg/m^3).

- In 2018, one $PM_{2.5}$ sampler (Liberty) was monitoring nonattainment of the 2012 annual $PM_{2.5}$ standard (12.0 µg/m^3) in Pennsylvania.

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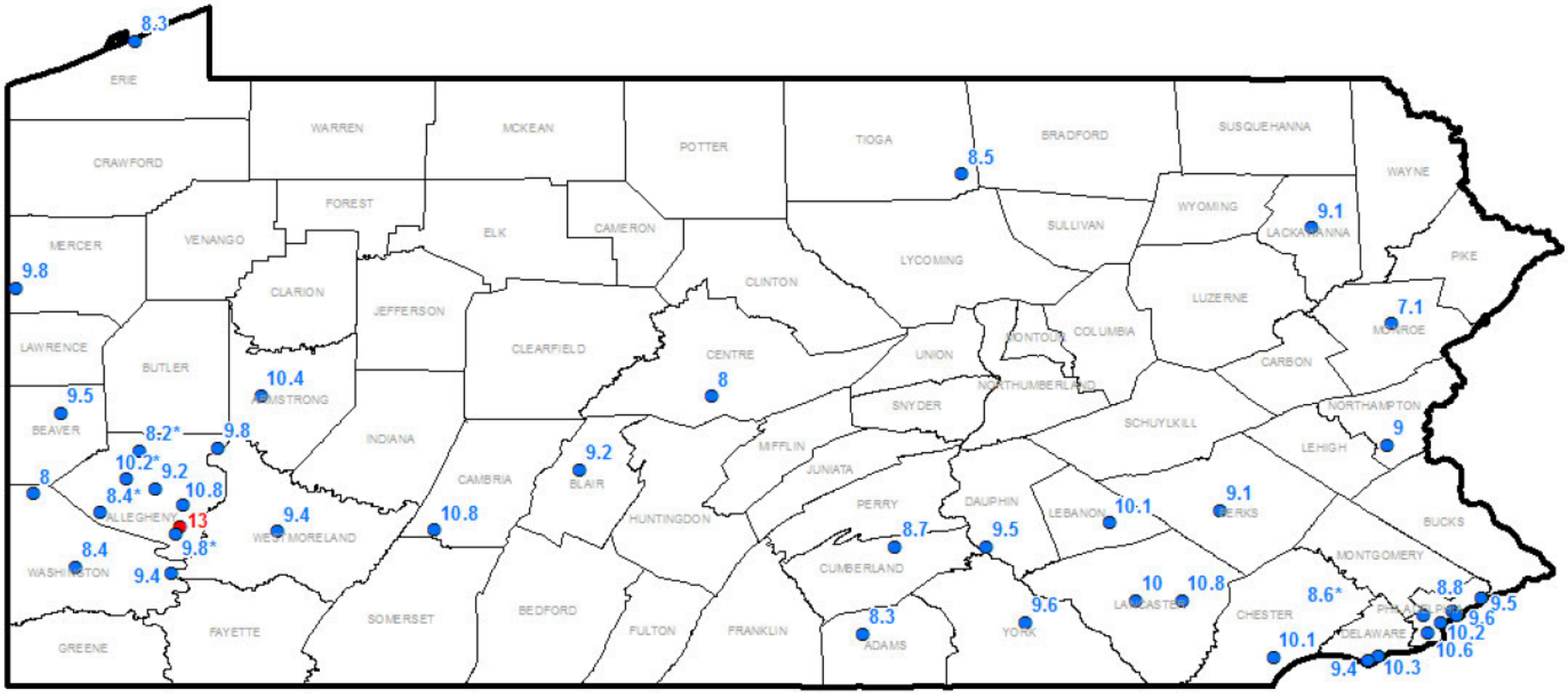
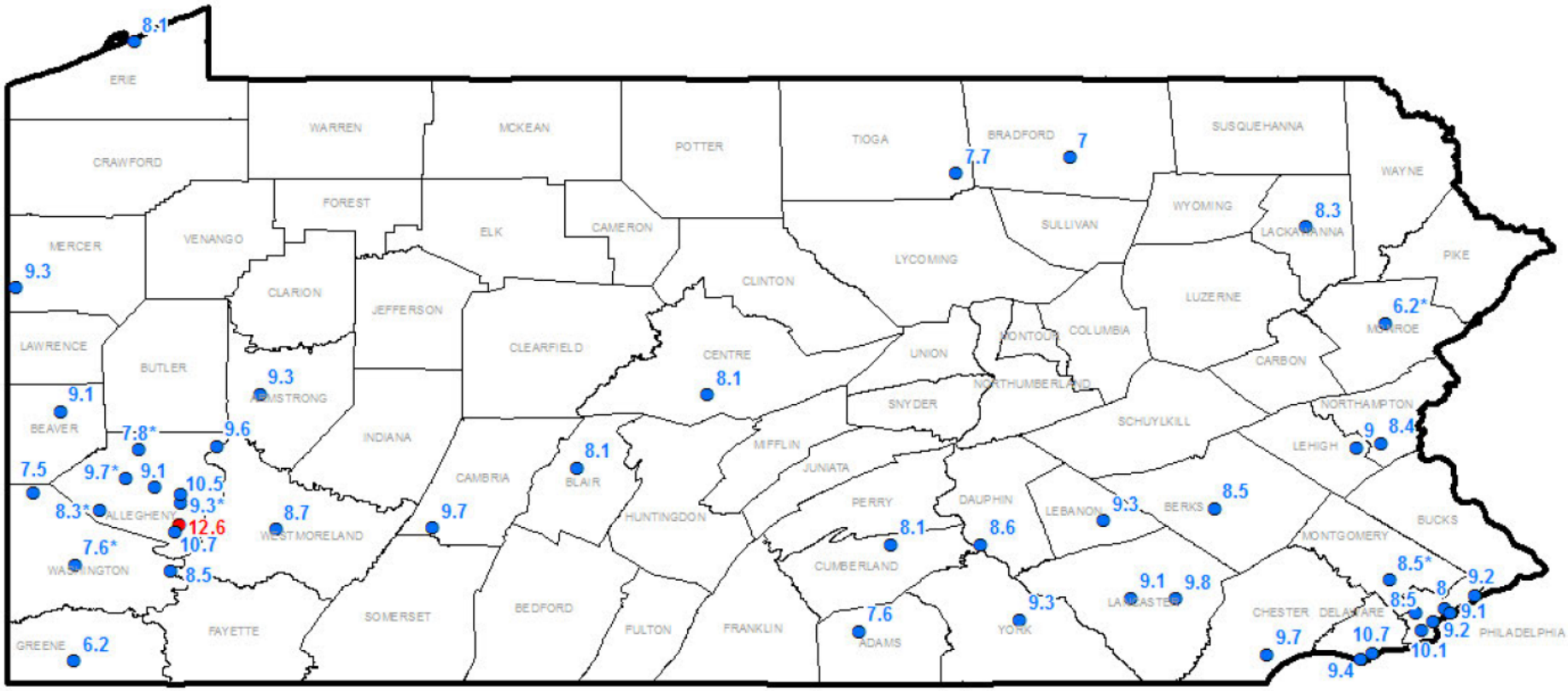
2017 Annual $PM_{2.5}$ Design Values



Appearing in Red - 2017 Annual $PM_{2.5}$ Design Values Above the Standard of 12.0 ug/m^3

Appearing in Blue - 2017 Annual $PM_{2.5}$ Design Values Below the Standard of 12.0 ug/m^3

2018 Annual $PM_{2.5}$ Design Values



Appearing in Red - 2018 Annual $PM_{2.5}$ Design Values Above the Standard of 12.0 ug/m^3

Appearing in Blue - 2018 Annual $PM_{2.5}$ Design Values Below the Standard of 12.0 ug/m^3

Evolution of a PM2.5 Episode

- PM2.5 episode ran from Saturday, February 2, 2019 to Monday, February 4, 2019
- Most exceedances of PM2.5 standard occur during the winter months because of the potential for favorable meteorological conditions.
- Recipe for high PM2.5 – high pressure, snow cover, light winds, strong inversion

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2018 SO_2 Monitoring Summary

- SO_2 monitoring season – Year-round
- Overview of the 2018 design values (DV) for the 1-hour SO_2 NAAQS of 75 parts per billion.
- 2018 DV calculation – 99th percentile from 2016, 2017, and 2018 averaged over a 3-year period

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Number of 1-hour SO_2 Exceedances

- Number of SO_2 exceedance days and total number of exceedances per year within Pennsylvania's SO_2 monitoring network (24 total monitors):
  - 2016: 3 days | 3 total exceedances
  - 2017: 21 days | 21 total exceedances
  - 2018: 3 days | 12 total exceedances

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2010 1-hour SO_2 NAAQS Attainment Status

- In 2017, one SO_2 sampler in the Commonwealth (Liberty) was monitoring nonattainment of the 2010 1-hour SO_2 standard (75 parts per billion).
- In 2018, one SO_2 sampler in Pennsylvania (Liberty) was monitoring nonattainment of the 2010 1-hour SO_2 NAAQS.

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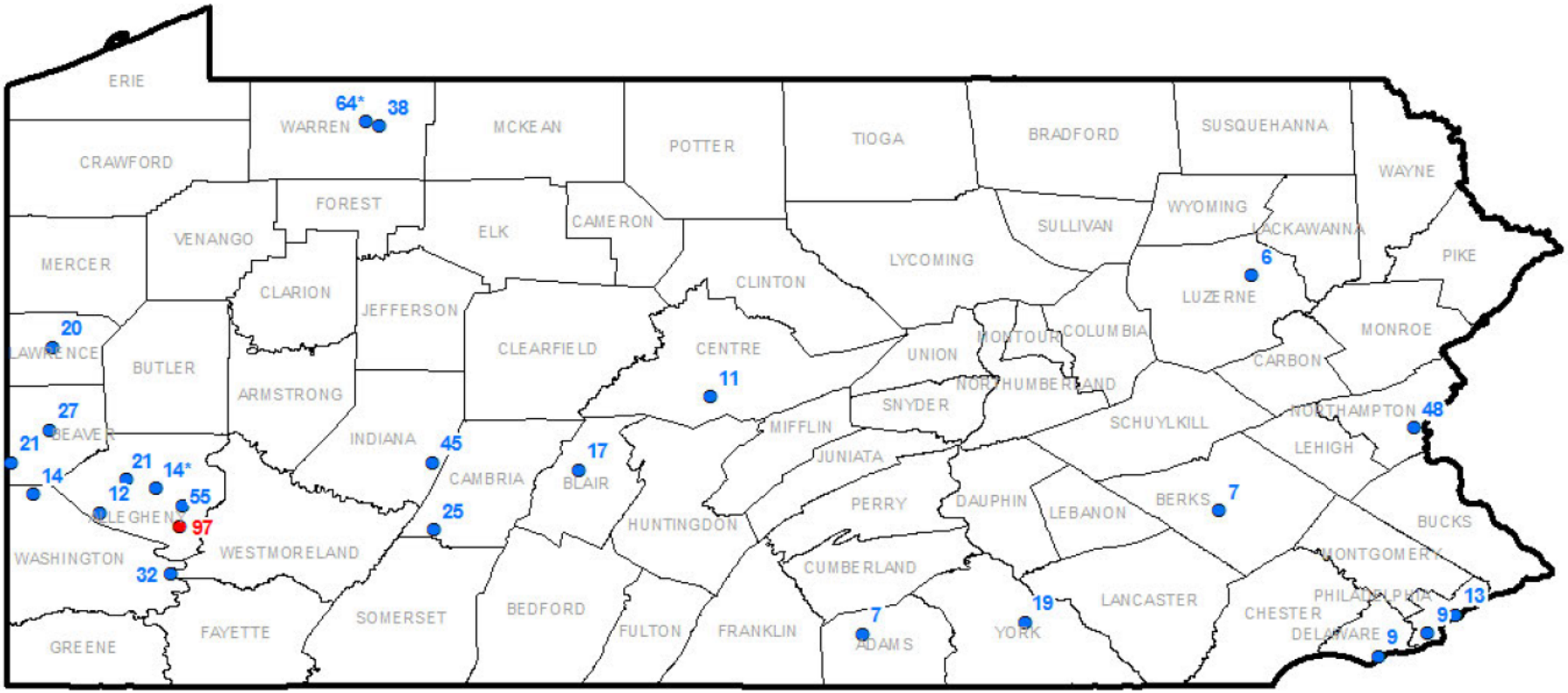
2017 1-hour SO_2 Design Values

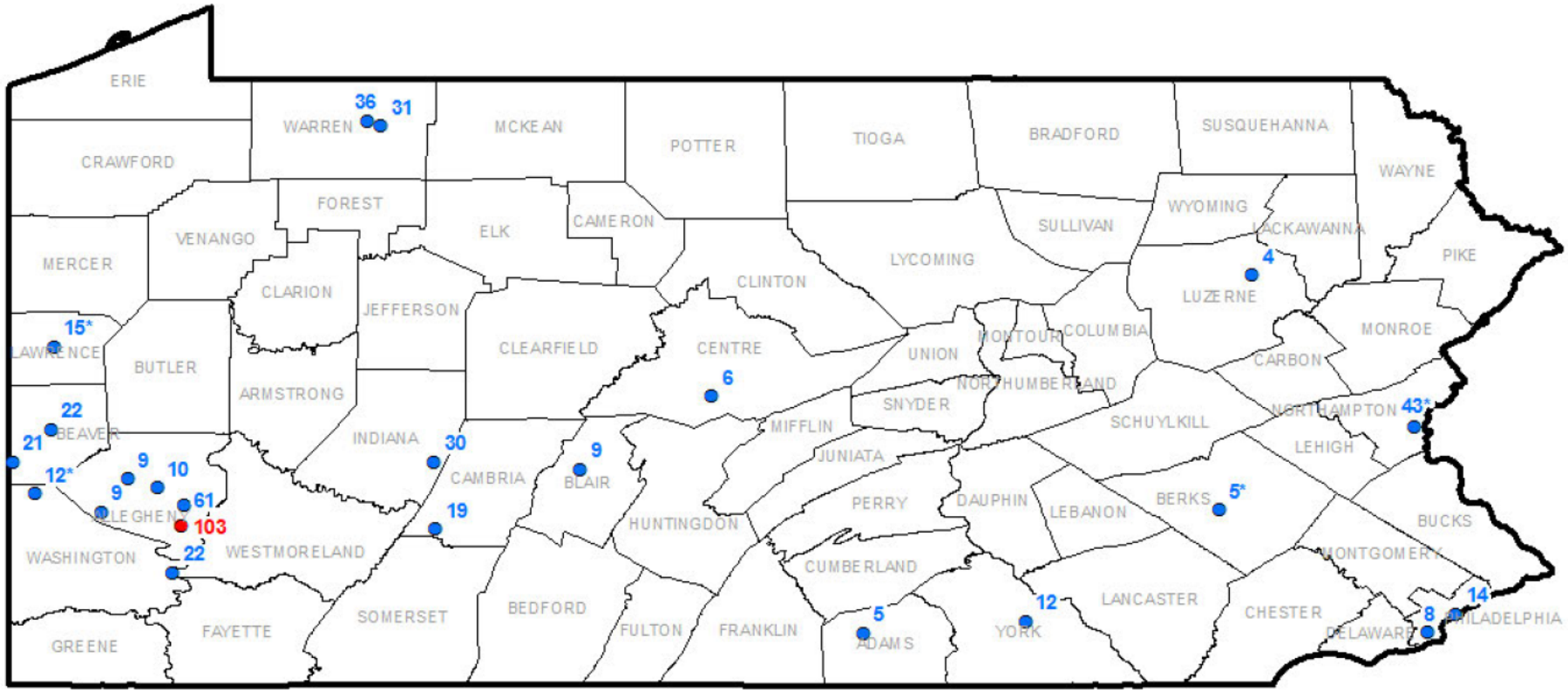


Appearing in Red - 2017 1-Hour SO_2 Design Value above 75 ppb (2010 SO_2 Standard)

Appearing in Blue - 2017 1-Hour SO_2 Design Value at or below 75 ppb (2010 SO_2 Standard)

Asterick (*) Appearing Behind the 2017 1-Hour SO_2 Design Value Means the Data is Incomplete During 3-Year Period

2018 1-hour SO_2 Design Values



Appearing in Red - 2018 1-Hour SO_2 Design Value above 75 ppb (2010 SO_2 Standard)

Appearing in Blue - 2018 1-Hour SO_2 Design Value at or below 75 ppb (2010 SO_2 Standard)

Asterick (*) Appearing Behind the 2018 1-Hour SO_2 Design Value Means the Data is Incomplete During 3-Year Period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