Appendix B:
Updated 2023 Transport Modeling
(October 2017)

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

October 27, 2017

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Supplemental Information on the Interstate Transport State Implementation Plan Submissions for the 2008 Ozone National Ambient Air Quality Standards under Clean Air Act Section 110(a)(2)(D)(i)(I)

FROM: Stephen D. Page
Director

TO: Regional Air Division Directors, Regions 1–10

The purpose of this memorandum is to provide supplemental information to states and the Environmental Protection Agency Regional offices as they develop or review state implementation plans (SIPs) that address section 110(a)(2)(D)(i)(I) of the Clean Air Act (CAA), also called the "good neighbor" provision, as it pertains to the 2008 ozone National Ambient Air Quality Standards (NAAQS) of 75 parts per billion (ppb).[1] Specifically, we are providing future year ozone design values and contribution modeling outputs for monitors in the United States based on updated air quality modeling (for 2023) and monitoring data.[2] The EPA's updated modeling indicates that there are no monitoring sites, outside of California, that are projected to have nonattainment or maintenance problems with respect to the 2008 ozone NAAQS of 75 ppb in 2023.

The EPA's goal in providing this information is to assist states' efforts to develop, supplement or resubmit good neighbor SIPs for the 2008 ozone NAAQS to fully address their interstate transport obligations. While the information in this memorandum and the associated air quality analysis data can inform the development of these SIPs, the information provided by this memorandum is not a final determination regarding states' remaining obligations under the good neighbor provision. Any such determination would be made through notice-and-comment rulemaking.

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[1] This memorandum supplements the EPA's original memorandum on this subject, *Information on the Interstate Transport "Good Neighbor" Provision for the 2008 Ozone National Ambient Air Quality Standards (NAAQS) under Clean Air Act (CAA) Section 110(a)(2)(D)(i)(I).* Memorandum from Stephen D. Page, Director, U.S. EPA Office of Air Quality Planning and Standards, to Regional Air Division Directors, Regions 1–10. January 22, 2015. Available at *https://www.epa.gov/sites/production/files/2015-10/documents/goodneighborprovision2008naaqs.pdf.* This memorandum also supplements analyses provided in the 2016 Cross-State Air Pollution Rule Update for the 2008 ozone NAAQS, 81 FR 74504 (October 26, 2016).

[2] Attachment A contains the projected 2023 ozone design values for monitors in the United States.

In addition to summarizing the EPA's review of relevant air quality projections as they relate to interstate transport obligations for the 2008 ozone NAAQS, this memorandum includes background on the good neighbor provision and the four-step interstate transport framework that the EPA has previously used, and continues to use, to address the good neighbor provision for regional pollutants, such as ozone. This background may further assist states in developing SIPs using these projections.

The Good Neighbor Provision

Under CAA sections 110(a)(l) and 110(a)(2), each state is required to submit a SIP that provides for the implementation, maintenance and enforcement of each primary or secondary NAAQS. Section 110(a)(1) requires each state to make this new SIP submission within 3 years after promulgation of a new or revised NAAQS. This type of SIP submission is commonly referred to as an "infrastructure SIP." Section 110(a)(2) identifies specific elements that each plan submission must meet. Conceptually, an infrastructure SIP provides assurance that the submitting state's SIP contains the necessary structural requirements to implement the new or revised NAAQS, whether by demonstrating that the state's SIP already contains or sufficiently addresses the necessary provisions, or by making a substantive SIP revision to update the plan provisions.

In particular, CAA section 110(a)(2)(D)(i)(I) requires each state to submit to the EPA new or revised SIPs that "contain adequate provisions ... prohibiting, consistent with the provisions of this subchapter, any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will ... contribute significantly to nonattainment in, or interfere with maintenance by, any other state with respect to any such national primary or secondary ambient air quality standard." The EPA often refers to section 110(a)(2)(D)(i)(I) as the "good neighbor" provision and to SIP revisions addressing this requirement as good neighbor SIPs. Where a state does not submit a good neighbor SIP, or if the EPA disapproves the SIP, the CAA obligates the EPA to promulgate a federal implementation plan (FIP).

In applying the good neighbor provision for the 2008 ozone NAAQS, the EPA finalized in 2016 the Cross-State Air Pollution Rule Update for the 2008 ozone NAAQS (CSAPR Update).[3] The CSAPR Update applied to 22 eastern states, each of which the EPA found had failed to submit an approvable SIP addressing the good neighbor provision for the 2008 ozone NAAQS.[4] Through the CSAPR Update, the EPA promulgated FIPs for these 22 states by requiring power plants in those states to participate in an allowance trading program to partially address the requirements of the good neighbor provision by implementing emissions reductions that were achievable for the 2017 ozone season. Some states have already submitted or may be developing SIPs to adopt the CSAPR Update regulations and replace the CSAPR Update FIPs. However, the EPA acknowledged in the CSAPR Update that the rule may not fully address the requirements of the good neighbor provision for the 2008 ozone NAAQS for most of the states included and that

[3] *See* 81 FR 74504 (October 26, 2016).

[4] The CSAPR Update provided a full FIP for Tennessee and partial FIPs for Alabama, Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Michigan, Mississippi, Missouri, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, Texas, Virginia, West Virginia, and Wisconsin. The CSAPR Update did not promulgate FIPs for western states.

further analysis was needed of air quality and oxides of nitrogen (NO_X) reductions after 2017.[5] Additionally, a few western states, not regulated in the CSAPR Update, do not yet have approved SIPs. As noted earlier, the EPA believes that the information conveyed through this memorandum can assist states in their efforts to develop, supplement or resubmit good neighbor SIPs for the 2008 ozone NAAQS to fully address their interstate transport obligations.

Framework to Address the Good Neighbor Provision

Through the development and implementation of several previous rulemakings,[6] the EPA, working in partnership with states, established the following four-step interstate transport framework to address the requirements of the good neighbor provision for ozone and fine particulate matter ($PM_{2.5}$) NAAQS: (1) identify downwind air quality problems, (2) identify upwind states that contribute enough to those downwind air quality problems to warrant further review and analysis, (3) identify the emissions reductions necessary to prevent an identified upwind state from contributing significantly to those downwind air quality problems, and (4) adopt permanent and enforceable measures needed to achieve those emissions reductions.

The EPA most recently applied each step in this framework to address the good neighbor provision requirements for the 2008 ozone NAAQS in the CSAPR Update.[7] Two aspects of the CSAPR Update (*i.e.*, selection of the analytic year and the scope of the CSAPR Update good neighbor remedy) are influential in the development of analyses discussed in this memorandum. First, in the CSAPR Update, the EPA selected 2017 as both the analytic year and the implementation year because the 2017 ozone season was the last full season from which data could be used to determine attainment with the 2008 ozone NAAQS by the July 20, 2018, attainment date for nonattainment areas classified as Moderate. Second, given the time constraints for implementing NO_X reduction strategies for the 2008 ozone NAAQS (*i.e.*, in the 2017 ozone season), the EPA, in the CSAPR Update, did not analyze or attempt to quantify further electric generating units (EGU) or non-EGU ozone season NO_X reductions available after 2017. Because the EPA's analysis showed persisting ozone transport problems after implementation of the CSAPR Update and because the EPA did not assess available emissions reductions after 2017, at the time of promulgation, the EPA could not definitively conclude, without further analysis, that the CSAPR Update fully addressed the requirements of the good neighbor provision. Therefore, the EPA explained in the final rule that the CSAPR Update may only provide a partial remedy to address interstate emissions transport for the 2008 ozone NAAQS for 21 of the covered states.[8] As a result, these states (or the EPA) must take additional

[5] The EPA also determined that the following 14 eastern states evaluated in the CSAPR Update had no emissions reduction obligations under the good neighbor provision for the 2008 ozone NAAQS: Connecticut, Florida, Georgia, Maine, Massachusetts, Minnesota, Nebraska, New Hampshire, North Carolina, North Dakota, Rhode Island, South Carolina, South Dakota, and Vermont. The EPA has already approved good neighbor SIPs for the 2008 ozone NAAQS for a number of these states and has pending actions to approve other SIPs.

[6] *See* for example, Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone (also known as the NO_X SIP Call). 63 FR 57356 (October 27, 1998); Clean Air Interstate Rule (CAIR) Final Rule. 70 FR 25162 (May 12, 2005); CSAPR Final Rule. 76 FR 48208 (August 8, 2011); CSAPR Update. 81 FR 74504 (October 26, 2016). Each of these rulemakings also incorporated allowance trading programs to implement emissions reductions.

[7] *See* details on the CSAPR Update analysis and methodology in the final rule at 81 FR 74504 (October 26, 2016).

[8] The CSAPR Update provided a FIP fully addressing the good neighbor provision for Tennessee and FIPs that may only partially address the good neighbor provision for Alabama, Arkansas, Illinois, Indiana, Iowa, Kansas,

steps to fully satisfy the good neighbor provision, or show why no additional emissions reductions are necessary. It is for this reason that the EPA is now conducting and releasing our additional modeling for an analytic year after 2017.

Applying the Interstate Transport Framework to the EPA's 2023 Modeling for the 2008 Ozone NAAQS

This section explains the EPA's choice of 2023 as the analytic year and our application of the interstate transport framework to our updated modeling. As we discuss in the following paragraphs, the EPA's analysis indicates that no areas in the United States, outside of California, are expected to have problems attaining and maintaining the 2008 ozone NAAQS in 2023.

Step 1. Identification of Potential Downwind Nonattainment and Maintenance Receptors

One of the first steps in the modeling process is selecting a future analytic year. In determining the appropriate future analytic year for purposes of assessing remaining interstate transport obligations for the 2008 ozone NAAQS, the EPA considered two primary factors. First, the EPA considered the downwind attainment dates for the 2008 ozone NAAQS. In *North Carolina v. EPA*, the D.C. Circuit held that emissions reductions required by the good neighbor provision should be evaluated considering the relevant attainment dates of downwind nonattainment areas impacted by interstate transport.[9] The next attainment dates for the 2008 ozone NAAQS will be July 20, 2021, for nonattainment areas classified as Serious and July 20, 2027, for nonattainment areas classified as Severe.[10] Because the various attainment deadlines are in July, which is in the middle of the ozone monitoring season for all states, data from the calendar year prior to the attainment date (*e.g.*, data from 2020 for the 2021 attainment date and from 2026 for the 2027 attainment date) are the last data that can be used to demonstrate attainment with the NAAQS. In all cases, the statute provides that areas should attain as expeditiously as practicable.[11]

Second, the EPA considered the timeframes that may be required for implementing further emissions reductions as expeditiously as practicable. Generally, emissions levels are expected to decline in the future through implementation of existing local, state and federal emissions reduction programs. This is an important consideration because the U.S. Supreme Court and the D.C. Circuit Court have both held that the EPA may not require emissions reductions greater than necessary to achieve attainment and maintenance of the NAAQS in downwind areas.[12] Therefore, if new controls cannot be implemented feasibly for several years when air quality will likely be cleaner, the EPA should evaluate air quality in a future year to ensure that any potential emissions reductions would not over-control relative to the identified ozone problem.

Kentucky, Louisiana, Maryland, Michigan, Mississippi, Missouri, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, Texas, Virginia, West Virginia, and Wisconsin. The CSAPR Update did not promulgate FIPs for western states.

[9] 531 F.3d 896, 911–12 (D.C. Cir. 2008) (holding that the EPA must coordinate interstate transport compliance deadlines with downwind attainment deadlines).

[10] While there are no areas (outside of California) that are classified as either Serious or Severe, these classifications (and the associated attainment dates) are required under the statute in the event that the many downwind Moderate nonattainment areas fail to attain by their attainment date of July 20, 2018.

[11] *See* CAA section 181(a)(1).

[12] *EPA v. EME Homer City Generation, L.P.,* 134 S. Ct. 1584, 1600–01 (2014); *EME Homer City Generation, L.P. v. EPA,* 795 F.3d 118, 127 (D.C. Cir. 2015).

Accordingly, it is reasonable to evaluate downwind air quality, and identify any remaining receptors, in the year in which the EPA expects additional emissions reductions, if any, to be implemented.

While the CSAPR Update included emissions reductions associated with EGU control strategies that could be implemented on a shorter timeframe (*i.e.*, by the 2017 ozone season), the EPA concluded that additional emissions reductions from EGUs would likely require the installation of new post-combustion controls. For this analysis, the EPA assumed that the analytic year should reflect the time needed to plan for, install, and test new EGU and non-EGU emissions controls across multiple states. This assumption was based on previous interstate ozone transport analyses showing that multiple upwind states are typically linked to downwind ozone problems.[13] Further, the EPA assumed that new emissions controls would likely be considered on multiple upwind source categories, including those that currently do not report emissions to the EPA under Part 75 and, therefore, may have relatively more uncertainty associated with their emissions levels, existing control efficiencies and further emissions reduction potential. The scope and uncertainty associated with potential new EGU and non-EGU controls led the EPA to assume that it could take up to 4 years for new controls to be fully operational following promulgation of a final rule. For example, the EPA believes that it is reasonable to assume that the installation of these new post-combustion controls for state- or regional-level fleets of EGUs or controls for non-EGU point sources may take up to 4 years following promulgation of a final rule.[14] In addition and not accounting for time needed for permitting or determining and installing appropriate monitoring equipment, the EPA's most recent assessment of non-EGU controls indicates the timing for installing controls is uncertain.[15]

For purposes of conducting updated modeling, to determine in what year future emissions reductions might be implemented, the EPA, therefore, considered the timeframe in which a future rulemaking that might require such emissions reductions would likely be finalized. The EPA is subject to several statutory and court-ordered deadlines to address the requirements of the good neighbor provision for the 2008 ozone NAAQS for several states. The next such deadline is a court-ordered deadline of June 30, 2018, for the EPA to address these requirements for Kentucky,[16] followed by several statutory deadlines in 2018 and 2019.[17] The notice-and-comment rulemakings that must be undertaken to address these requirements, whether in the context of SIPs or FIPs, are unlikely to be completed any earlier than mid-2018 and are likely to continue into 2019. Accordingly, given that the EPA believes that it is reasonable to assume that installation of new emissions controls for EGUs and non-EGUs that could be required under

[13] *See* 81 FR 74504 (October 26, 2016).
[14] *See* 81 FR 74562 (October 26, 2016).
[15] For the EPA's most current assessment of controls for non-EGU emissions sources, *see Assessment of Non-EGU NOx Emission Controls, Cost of Controls, and Time for Compliance Final Technical Support Document (TSD) for the Cross-State Air Pollution Rule for the 2008 Ozone NAAQS* (Docket ID No.: EPA-HQ-OAR-2015-0500) available at *https://www.epa.gov/sites/production/files/2017-05/documents/final_assessment_of_non-egu_nox_emission_controls_cost_of_controls_and_time_for _compliance_final_tsd.pdf).*
[16] Order, *Sierra Club v. EPA,* Case No. 3:15-cv-04328-JD (N.D. Cal. May 23, 2017).
[17] The EPA has deadlines to promulgate FIPs for Indiana, Ohio and New Jersey by July 15, 2018; for Maryland by August 19, 2018; for Louisiana, Texas and Wisconsin by September 12, 2018; for New York by September 26, 2018; for Utah by November 18, 2018, and for Wyoming by March 6, 2019.

these rulemaking efforts may take up to 4 years, the EPA believes that such reductions are unlikely to be implemented for a full ozone season until 2023.

While 2023 is later than the attainment date for nonattainment areas classified as Serious (July 20, 2021), as explained above, it is unlikely that emissions control requirements could be promulgated and implemented by the Serious area attainment date. Likewise, the EPA also believes that it would not be reasonable to assume that emissions reductions could be postponed to the attainment date for nonattainment areas classified as Severe (July 20, 2027) because the statute instructs states to attain the NAAQS as expeditiously as practicable. Accordingly, the EPA believes that 2023 is a reasonable year to assess downwind air quality to evaluate any remaining requirements under the good neighbor provision for the 2008 ozone NAAQS.[18] Thus, in selecting its future analytic year for the air quality modeling, the EPA balanced considerations such as attainment dates in downwind states, including the obligation to attain as expeditiously as practicable, the EPA's obligation to avoid unnecessary over-control of upwind state emissions, the timeframe in which any necessary emissions reductions could be feasibly implemented, and the timeframe required for rulemaking to impose any such emissions reductions that might be required.

After selecting 2023 as the appropriate analytic year, the EPA performed nationwide photochemical modeling for 2023 to identify nonattainment and maintenance receptors relevant for the 2008 ozone NAAQS. The EPA used as a starting point for this updated air quality modeling some of the data used in the January 2017 Notice of Data Availability (NODA).[19] Although the EPA initially provided the NODA to assist states in developing SIPs to address their good neighbor obligations for the 2015 ozone NAAQS, the emissions files and other modeling input files are independent of the level of the NAAQS.[20] As discussed below, because the EPA began its updated analyses with the data from the January 2017 NODA, we also were able to incorporate some of the stakeholder feedback provided through the public comment process on the NODA.

We are providing an overview of the January 2017 NODA files to help states and the EPA Regional offices better understand the updated air quality modeling for potential application to the 2008 ozone NAAQS. The transport assessment discussed in the January 2017 NODA used a 2011-based modeling platform to develop base year and future year emissions inventories as inputs into the air quality model. The platform also included meteorology for 2011, base year emissions for 2011 and future year base case emissions for 2023. The EPA performed air quality modeling to project ozone design values for 2023 and used these projections to identify nonattainment and maintenance receptors. The EPA then used ozone source apportionment modeling for 2023 to quantify contributions from emissions in each state to ozone concentrations at each of the projected nonattainment and maintenance receptors in that future year. As part of the NODA process and the ensuing 90-day comment period, the EPA made available and took

[18] Using the 2023 analytic year also allowed the EPA to begin the updated analysis using the data sets originally developed for the January 2017 NODA, which we revised in response to stakeholder feedback. Accordingly, the EPA initiated its analysis more quickly than if a different year had been chosen, which might have delayed subsequent rulemaking actions and therefore emissions reductions.
[19] 82 FR 1733 (January 6, 2017).
[20] Good neighbor SIPs for the 2015 ozone NAAQS are due within 3 years of promulgation of the revised NAAQS, or by October 2018.

comment on (1) the emissions inventories for 2011 and 2023, supporting data used to develop those inventories, methods and data used to process emissions inventories into a form that can be used for air quality modeling and (2) air quality modeling results for 2011 and 2023, base period (*i.e.*, 2009-2013) average and maximum design value concentrations, projected 2023 average and maximum ozone design value concentrations and projected 2023 ozone contributions from state-specific anthropogenic emissions and other contribution categories to ozone concentrations at individual ozone monitoring sites. The EPA received comments on the transport modeling NODA from nearly 50 commenters, including 21 state air agencies, 3 multi-state groups and 23 industry groups.

Following the close of the NODA public comment period on April 6, 2017, the EPA began incorporating stakeholder feedback into its EGU and non-EGU emissions projections and its modeling platform. After incorporating many of the suggested updates, the EPA hosted conference calls with these same stakeholders to announce our intent to update the ozone transport air quality modeling and to review updates to the 2011 and projected 2023 emissions inventories (including specific changes to the oil and gas projection methodology),[21] describe incorporated changes to the EGU emissions projections[22] and changes to the modeling platform described here.

Regarding emissions inventories, the updated 2023 modeling reflects revisions to the January 2017 NODA approach for projecting future year emissions from EGUs. The approach used in this modeling is consistent with the EGU projections that the EPA used in the CSAPR Update, specifically the EGU projection called the "budget-setting base case."[23] In brief, the EPA used the CSAPR Update budget-setting approach to develop this projection in support of the updated 2023 ozone transport modeling that is the subject of this memorandum. The EGU projection begins with 2016 reported Part 75 sulfur dioxide (SO_2) and NO_X data for units reporting under the Acid Rain and CSAPR programs. These were the most recent ozone season data available at the time of the EPA's analysis. The EPA then extended these observed emissions levels forward to 2023, and made unit-specific adjustments to emissions to account for upcoming retirements, post-combustion control retrofits, coal-to-gas conversions, combustion controls upgrades, new units, CSAPR Update compliance, state rules and Best Available Retrofit Technology (BART) requirements.[24] The resulting estimated EGU emissions values for this application of 2023 air quality modeling are based on the latest reported operational data combined with known and anticipated fleet and pollution controls changes. For emissions from units not reporting under

[21] *See* the TSD: *Additional Updates to Emissions Inventories for the Version 6.3, 2011 Emissions Modeling Platform for the Year* 2023, October 2017. Available at *https://www.epa.gov/air-emissions-modeling/2011-version-63-platform*.
[22] *See* Section 4.1 of the TSD: *Additional Updates to Emissions Inventories for the Version 6.3, 2011 Emissions Modeling Platform for the Year 2023, October 2017* for details on the development of the EGU engineering analytics emissions estimates for the 2023 Flat File.
[23] *See* the preamble to the final CSAPR Update for more details on the development and use of the budget-setting base case.
[24] The EPA uses the U.S. Energy Information Association (EIA) Form 860 as a source for upcoming controls, retirements, and new units.

Part 75, the EPA largely relied on unadjusted 2011 National Emissions Inventory (NEI) data for its 2023 assumptions.[25]

Another important emissions inventory update includes a revised methodology for estimating 2023 emissions from the oil and gas sector. The projection factors used in the updated 2023 oil and gas emissions incorporate state-level factors based on historic growth from 2011-2015 and region-specific factors that represent the projected growth from 2015 to 2023. The 2011-2015 state-level factors were based on historic state oil and gas production data published by the EIA, while the 2015-2023 factors are based on projected oil and gas production in EIA's 2017 Annual Energy Outlook (AEO) Reference Case without the Clean Power Plan for the six EIA supply regions. Details on the revised methodology that the EPA used to project oil and gas emissions to 2023, as well as changes to the base year 2011 and future year 2023 emissions inventories for other sectors, can be found in the technical support document, titled *Additional Updates to Emissions Inventories for the Version 6.3, 2011 Emissions Modeling Platform for the Year 2023, October 2017*.[26]

The EPA used the Comprehensive Air Quality Model with Extensions (CAMx v6.40)[27] for modeling the updated emissions in 2011 and 2023.[28] The EPA used outputs from the 2011 and 2023 model simulations to project base period 2009-2013 average and maximum ozone design values to 2023 at monitoring sites nationwide. The EPA's modeling guidance[29] recommends that model predictions from the "3 x 3" array of grid cells surrounding the location of the monitoring site be used in the projection of future year design values. The EPA used this approach for projecting design values for the updated 2023 modeling. In addition, in light of comments on the January 2017 NODA and other analyses, the EPA also projected 2023 design values based on a modified version of this approach for those monitoring sites located in coastal areas. In brief, in the alternative approach, the EPA eliminated from the design value calculations those modeling data in grid cells not containing a monitoring site that are dominated by water (*i.e.*, more than 50 percent of the land use in the grid cell is water).[30] The base period and 2023 average and maximum design values at individual monitoring sites for both the "3 x 3" approach and the alternative approach affecting coastal sites are available at *https://www.epa.gov/airmarkets/october-2017-memo-and-information-*

[25] For non-SO_2 and non-NO_X pollutants for units reporting under Part 75, the EPA used 2016 reported heat input to create a scaler for 2011 data. For instance, if heat input increased by 10 percent during that time frame for a particular unit, then its emissions for these pollutants were assumed to do the same.
[26] Available at *https://www.epa.gov/air-emissions-modeling/2011-version-63-platform*.
[27] CAMx v6.40 was the most recent public release version of CAMx at the time the EPA updated its modeling in fall 2017. ("Comprehensive Air Quality Model with Extensions version 6.40 User's Guide" Ramboll Environ, December 2016. *http://www.camx.com/*.)
[28] For the updated modeling, the EPA used the construct of the modeling platform (*i.e.*, modeling domain and non-emissions inputs) that we used for the NODA modeling, except that the photolysis rates files were updated to be consistent with CAMx v6.40. The NODA Air Quality Modeling Technical Support Document describing the modeling platform is available at *https://www.epa.gov/airmarkets/notice-data-availability-preliminary-interstate-ozone-transport-modeling-data-2015-ozone*.
[29] *http://www.epa.gov/ttn/scram/guidance/guide/Draft_O3-PM-RH_Modeling_Guidance-2014.pdf.*
[30] A model grid cell is identified as a "water" cell if more than 50 percent of the grid cell is water based on the 2006 National Land Cover Database. Grid cells that meet this criterion are treated as entirely over water in the Weather Research Forecast (WRF) modeling used to develop the 2011 meteorology for the EPA's air quality modeling.

interstate-transport-sips-2008-ozone-naaqs. This file also contains 2014-2016 measured design values.

When identifying areas with potential downwind air quality problems, the EPA's updated modeling used the same "receptor" definitions as those developed during the CSAPR rulemaking process and used in the CSAPR Update.[31] That is, the EPA identified nonattainment receptors as those monitoring sites with current measured values exceeding the NAAQS that also have projected (*i.e.*, in 2023) average design values exceeding the NAAQS. The EPA identified maintenance receptors as those monitoring sites with current measured values below the NAAQS and projected average and maximum design values exceeding the NAAQS. The EPA also identified as maintenance receptors those monitoring sites with projected average design values below the NAAQS but with projected maximum design values exceeding the NAAQS. As with past application of receptor definitions, the EPA considered all nonattainment receptors to also be maintenance receptors because a monitoring site with a projected average design value above the standard necessarily also has a projected maximum design value above the standard. Attachment A contains the projected 2023 ozone design value for monitors in the United States.

The EPA's 2023 updated modeling, using either the "3 x 3" approach or the alternative approach affecting coastal sites, indicates that there are no monitoring sites, outside of California, that are projected to have nonattainment or maintenance problems with respect to the 2008 ozone NAAQS in 2023.[32]

Step 2. Identification of States Contributing to Potential Downwind Nonattainment and Maintenance Receptors

Although the EPA has completed nationwide contribution modeling for 2023, this information may not be necessary for most states to develop good neighbor SIPs for the 2008 ozone NAAQS in light of the information described previously. The EPA does, however, plan to make its contribution modeling outputs available to the states and will coordinate with multi-jurisdictional organizations regarding the release of this information.

Conclusion

The EPA believes that states may consider using this national modeling to develop SIPs that fully address requirements of the good neighbor provision for the 2008 ozone NAAQS.[33] States may also be able to use this information to address other CAA obligations. States could include in any such submission state-specific information to support their reliance on the 2023 modeling data. Further, states may supplement the information provided in this memorandum with any additional information that they believe is relevant to addressing the good neighbor provision requirements. States may also choose to use information different from that provided in this document or on the EPA's website to identify nonattainment and maintenance receptors relevant

[31] *See* 81 FR 74530-74532 (October 26, 2016).

[32] This information is available at *https://www.epa.gov/airmarkets/october-2017-memo-and-information-interstate-transport-sips-2008-ozone-naaqs*.

[33] For a state already subject to a CSAPR Update FIP to get full SIP approval, the state would need to address in their SIP submission the reductions that it would achieve by implementing the FIP. One way states could accomplish this would be by submitting a CSAPR Update SIP using the guidance provided in the preamble to the CSAPR Update at 81 FR 74569 (October 26, 2016).

to development of their good neighbor SIPs. If this is the case, states should submit that information along with a full explanation and technical analysis for the EPA's evaluation. The EPA Regional offices and states should work together to accomplish the goal of developing, submitting and reviewing approvable SIPs that fully address the good neighbor provision for the 2008 ozone NAAQS.

Please share this information with the air agencies in your Region.

For Further Information

If you have any questions concerning this memorandum, please contact Norm Possiel at (919) 541-5692, *possiel.norm@epa.gov* for modeling information or Beth Palma at (919) 541-5432, *palma.elizabeth@epa.gov* for any other information.

Attachment

Attachment A

Projected Ozone Design Values at Individual Monitoring Sites Based on the EPA's Updated 2023 Transport Modeling

This attachment contains projected ozone design values at individual monitoring sites nationwide based on EPA's updated transport modeling for 2023. The scenario name for the updated modeling is "2023en." All of the data are in units of "ppb."

The following data are provided in the table below.

(1) Base period 2009 – 2013 average and maximum design values based on 2009 – 2013 measured data.

(2) Projected 2023 average and maximum design values based on the "3x3" approach recommended in EPA's photochemical modeling guidance.

(3) Projected 2023 average and maximum design values based on a modified "3x3" approach in which model predictions in grid cells without monitors that are predominately water are excluded from the projection calculations ("No Water"). Note that the modified approach only affects the projection of design values for monitoring sites in or near coastal areas.

(4) 2016 ozone design values based on 2014 – 2016 measured data (N/A indicates that a 2016 design value is not available). The following web site has additional information on the 2016 design values: *https://www.epa.gov/air-trends/air-quality-design-values#report*.

Note, a value of 75.9 ppb (or less) is considered to be in attainment of the 2008 ozone NAAQS, and a value of 76.0 ppb (or higher) is considered to be in violation of the 2008 ozone NAAQS.

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
10030010	AL	Baldwin	70.0	72	53.4	54.9	55.4	57.0	65
10331002	AL	Colbert	65.0	67	45.5	46.9	45.5	46.9	59
10499991	AL	DeKalb	66.0	66	50.7	50.7	50.7	50.7	63
10510001	AL	Elmore	66.3	68	49.5	50.7	49.5	50.7	N/A
10550011	AL	Etowah	61.7	62	46.2	46.4	46.2	46.4	61
10690004	AL	Houston	63.7	65	49.2	50.2	49.2	50.2	59
10730023	AL	Jefferson	72.3	75	54.9	56.9	54.9	56.9	68
10731003	AL	Jefferson	72.0	75	55.2	57.5	55.2	57.5	66
10731005	AL	Jefferson	75.3	77	56.8	58.1	56.8	58.1	N/A
10731009	AL	Jefferson	72.0	74	56.1	57.7	56.1	57.7	N/A
10731010	AL	Jefferson	73.7	76	55.4	57.2	55.4	57.2	64
10732006	AL	Jefferson	75.0	77	55.7	57.1	55.7	57.1	66
10735002	AL	Jefferson	72.0	74	54.2	55.7	54.2	55.7	N/A
10735003	AL	Jefferson	71.0	73	55.0	56.5	55.0	56.5	N/A
10736002	AL	Jefferson	76.7	80	58.8	61.3	58.8	61.3	68
10890014	AL	Madison	70.7	73	52.8	54.5	52.8	54.5	64
10970003	AL	Mobile	69.0	71	53.2	54.7	53.2	54.7	63

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
10972005	AL	Mobile	73.0	73	56.6	56.6	57.3	57.3	65
11011002	AL	Montgomery	67.3	69	49.6	50.8	49.6	50.8	62
11030011	AL	Morgan	68.7	71	54.2	56.0	54.2	56.0	64
11130002	AL	Russell	66.0	67	49.9	50.6	49.9	50.6	62
11170004	AL	Shelby	73.3	75	54.0	55.3	54.0	55.3	67
11190002	AL	Sumter	61.0	61	49.2	49.2	49.2	49.2	N/A
11250010	AL	Tuscaloosa	58.7	59	45.1	45.4	45.1	45.4	60
40038001	AZ	Cochise	72.0	73	69.4	70.4	69.4	70.4	65
40051008	AZ	Coconino	69.0	69	64.2	64.2	64.2	64.2	69
40058001	AZ	Coconino	71.0	72	66.3	67.2	66.3	67.2	67
40070010	AZ	Gila	74.5	75	64.2	64.6	64.2	64.6	71
40130019	AZ	Maricopa	76.7	79	69.3	71.4	69.3	71.4	73
40131004	AZ	Maricopa	79.7	81	69.8	71.0	69.8	71.0	75
40131010	AZ	Maricopa	69.7	72	60.4	62.3	60.4	62.3	73
40132001	AZ	Maricopa	74.7	76	66.1	67.2	66.1	67.2	68
40132005	AZ	Maricopa	76.0	77	65.3	66.2	65.3	66.2	77
40133002	AZ	Maricopa	73.3	75	65.6	67.2	65.6	67.2	70
40133003	AZ	Maricopa	75.7	77	66.2	67.3	66.2	67.3	70
40134003	AZ	Maricopa	74.7	76	67.8	69.0	67.8	69.0	70
40134004	AZ	Maricopa	72.7	74	63.7	64.8	63.7	64.8	69
40134005	AZ	Maricopa	69.7	71	61.3	62.4	61.3	62.4	N/A
40134008	AZ	Maricopa	76.3	77	65.2	65.8	65.2	65.8	71
40134010	AZ	Maricopa	71.0	72	60.8	61.7	60.8	61.7	66
40134011	AZ	Maricopa	65.0	66	57.6	58.5	57.6	58.5	59
40137003	AZ	Maricopa	70.7	72	62.4	63.6	62.4	63.6	67
40137020	AZ	Maricopa	73.7	75	64.4	65.5	64.4	65.5	72
40137021	AZ	Maricopa	76.7	77	65.9	66.2	65.9	66.2	76
40137022	AZ	Maricopa	73.3	75	63.0	64.4	63.0	64.4	74
40137024	AZ	Maricopa	73.3	74	64.1	64.7	64.1	64.7	71
40139508	AZ	Maricopa	74.0	76	62.5	64.2	62.5	64.2	73
40139702	AZ	Maricopa	74.7	77	63.9	65.9	63.9	65.9	72
40139704	AZ	Maricopa	74.5	76	64.0	65.3	64.0	65.3	N/A
40139706	AZ	Maricopa	74.0	75	63.6	64.5	63.6	64.5	70
40139997	AZ	Maricopa	76.0	77	68.1	69.0	68.1	69.0	75
40170119	AZ	Navajo	68.7	70	60.2	61.3	60.2	61.3	64
40190021	AZ	Pima	71.3	73	61.4	62.9	61.4	62.9	68
40191011	AZ	Pima	67.0	68	57.3	58.1	57.3	58.1	62
40191018	AZ	Pima	68.3	69	59.4	60.0	59.4	60.0	64
40191020	AZ	Pima	69.7	71	59.2	60.3	59.2	60.3	64

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
40191028	AZ	Pima	67.0	68	57.5	58.3	57.5	58.3	64
40191030	AZ	Pima	68.7	70	59.2	60.3	59.2	60.3	63
40191032	AZ	Pima	66.3	67	57.0	57.6	57.0	57.6	64
40191034	AZ	Pima	64.0	65	56.8	57.6	56.8	57.6	61
40213001	AZ	Pinal	73.0	74	62.6	63.4	62.6	63.4	70
40213003	AZ	Pinal	68.3	69	59.7	60.3	59.7	60.3	65
40213007	AZ	Pinal	68.3	69	61.5	62.1	61.5	62.1	65
40217001	AZ	Pinal	70.3	72	61.2	62.6	61.2	62.6	65
40218001	AZ	Pinal	76.0	76	65.3	65.3	65.3	65.3	71
40278011	AZ	Yuma	76.5	77	70.4	70.8	70.4	70.8	74
50350005	AR	Crittenden	77.3	79	60.3	61.6	60.3	61.6	67
51010002	AR	Newton	68.0	69	53.1	53.9	53.1	53.9	59
51130003	AR	Polk	72.3	73	60.8	61.3	60.8	61.3	62
51190007	AR	Pulaski	72.3	73	53.0	53.5	53.0	53.5	64
51191002	AR	Pulaski	75.7	77	55.6	56.6	55.6	56.6	64
51191008	AR	Pulaski	73.0	75	55.0	56.5	55.0	56.5	N/A
51430005	AR	Washington	71.0	73	57.1	58.8	57.1	58.8	59
60010007	CA	Alameda	73.3	76	64.2	66.6	64.2	66.6	74
60010009	CA	Alameda	45.7	49	44.3	47.5	44.3	47.5	55
60010011	CA	Alameda	45.0	45	44.0	44.0	44.0	44.0	49
60012001	CA	Alameda	56.0	56	52.9	52.9	52.9	52.9	66
60050002	CA	Amador	72.0	74	58.6	60.3	58.6	60.3	73
60070007	CA	Butte	76.3	77	62.0	62.6	62.0	62.6	75
60070008	CA	Butte	65.0	66	53.4	54.2	53.4	54.2	66
60090001	CA	Calaveras	75.0	77	61.1	62.7	61.1	62.7	76
60111002	CA	Colusa	61.0	62	52.5	53.4	52.5	53.4	63
60130002	CA	Contra Costa	70.7	73	62.9	64.9	62.9	64.9	67
60131002	CA	Contra Costa	71.7	74	62.7	64.8	62.7	64.8	68
60131004	CA	Contra Costa	51.0	51	49.7	49.7	49.7	49.7	54
60170010	CA	El Dorado	81.0	82	64.4	65.2	64.4	65.2	85
60170012	CA	El Dorado	68.3	69	60.7	61.4	60.7	61.4	N/A
60170020	CA	El Dorado	82.7	84	65.9	66.9	65.9	66.9	82
60190007	CA	Fresno	94.7	95	79.2	79.4	79.2	79.4	86
60190011	CA	Fresno	93.0	96	78.6	81.2	78.6	81.2	89
60190242	CA	Fresno	91.7	95	79.4	82.2	79.4	82.2	86
60192009	CA	Fresno	77.0	77	65.1	65.1	65.1	65.1	76
60194001	CA	Fresno	90.7	92	73.3	74.4	73.3	74.4	91
60195001	CA	Fresno	97.0	99	79.6	81.2	79.6	81.2	94
60210003	CA	Glenn	64.3	65	56.0	56.6	56.0	56.6	64

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
60250005	CA	Imperial	74.7	76	73.3	74.6	73.3	74.6	76
60251003	CA	Imperial	81.0	82	79.0	80.0	79.0	80.0	76
60254003	CA	Imperial	72.0	73	67.6	68.5	68.4	69.4	N/A
60254004	CA	Imperial	71.3	73	63.1	64.6	66.3	67.9	67
60270101	CA	Inyo	71.7	72	67.3	67.6	67.3	67.6	70
60290007	CA	Kern	91.7	96	77.7	81.3	77.7	81.3	87
60290008	CA	Kern	86.3	88	71.3	72.8	71.3	72.8	81
60290011	CA	Kern	80.0	81	69.5	70.4	69.5	70.4	84
60290014	CA	Kern	87.7	89	74.1	75.2	74.1	75.2	84
60290232	CA	Kern	87.3	89	73.7	75.2	73.7	75.2	77
60295002	CA	Kern	90.0	91	75.9	76.8	75.9	76.8	87
60296001	CA	Kern	84.3	86	70.9	72.4	70.9	72.4	81
60311004	CA	Kings	87.0	90	71.7	74.2	71.7	74.2	84
60370002	CA	Los Angeles	80.0	82	73.3	75.1	73.3	75.1	88
60370016	CA	Los Angeles	94.0	97	86.1	88.9	86.1	88.9	96
60370113	CA	Los Angeles	65.0	68	60.3	63.1	60.3	63.1	70
60371002	CA	Los Angeles	80.0	81	69.4	70.3	69.4	70.3	N/A
60371103	CA	Los Angeles	63.7	65	59.1	60.3	59.1	60.3	71
60371201	CA	Los Angeles	90.0	90	79.8	79.8	79.8	79.8	85
60371302	CA	Los Angeles	58.0	58	57.2	57.2	57.2	57.2	67
60371602	CA	Los Angeles	63.5	64	61.6	62.1	61.6	62.1	76
60371701	CA	Los Angeles	84.0	85	78.1	79.1	78.1	79.1	90
60372005	CA	Los Angeles	79.5	82	72.3	74.6	72.3	74.6	83
60374002	CA	Los Angeles	58.5	59	56.1	56.6	56.1	56.6	N/A
60376012	CA	Los Angeles	97.3	99	85.9	87.4	85.9	87.4	96
60379033	CA	Los Angeles	90.0	91	76.3	77.2	76.3	77.2	88
60390004	CA	Madera	79.3	81	68.6	70.1	68.6	70.1	83
60392010	CA	Madera	85.0	86	72.1	72.9	72.1	72.9	83
60410001	CA	Marin	52.3	53	47.6	48.2	47.2	47.9	61
60430003	CA	Mariposa	77.3	78	69.8	70.4	69.8	70.4	74
60430006	CA	Mariposa	77.0	78	64.6	65.5	64.6	65.5	75
60470003	CA	Merced	82.7	84	69.9	71.0	69.9	71.0	82
60530002	CA	Monterey	57.0	58	49.0	49.9	49.0	49.9	59
60530008	CA	Monterey	58.0	60	48.6	50.3	48.6	50.3	60
60531003	CA	Monterey	52.3	54	45.1	46.5	45.1	46.5	55
60550003	CA	Napa	62.3	65	51.9	54.2	51.9	54.2	62
60570005	CA	Nevada	77.7	79	62.3	63.3	62.3	63.3	83
60570007	CA	Nevada	76.0	78	60.7	62.3	60.7	62.3	N/A
60590007	CA	Orange	63.7	64	61.1	61.4	61.1	61.4	70

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
60591003	CA	Orange	61.3	62	58.1	58.8	57.8	58.4	69
60592022	CA	Orange	72.0	74	60.3	61.9	60.3	61.9	77
60595001	CA	Orange	69.7	71	68.3	69.6	68.3	69.6	74
60610003	CA	Placer	83.0	85	66.1	67.7	66.1	67.7	83
60610004	CA	Placer	74.0	75	58.9	59.7	58.9	59.7	76
60610006	CA	Placer	84.0	86	68.6	70.2	68.6	70.2	80
60650004	CA	Riverside	85.0	85	76.7	76.7	76.7	76.7	N/A
60650012	CA	Riverside	97.3	99	83.6	85.1	83.6	85.1	93
60650016	CA	Riverside	77.0	77	62.8	62.8	62.8	62.8	77
60651016	CA	Riverside	100.7	101	85.2	85.5	85.2	85.5	97
60652002	CA	Riverside	84.3	85	72.4	73.0	72.4	73.0	81
60655001	CA	Riverside	92.3	93	79.5	80.1	79.5	80.1	87
60656001	CA	Riverside	94.0	98	78.3	81.6	78.3	81.6	91
60658001	CA	Riverside	97.0	98	87.0	87.9	87.0	87.9	94
60658005	CA	Riverside	92.7	94	83.2	84.4	83.2	84.4	91
60659001	CA	Riverside	88.3	91	73.7	75.9	73.7	75.9	86
60659003	CA	Riverside	67.0	68	60.2	61.1	60.2	61.1	66
60670002	CA	Sacramento	76.7	77	64.8	65.0	64.8	65.0	77
60670006	CA	Sacramento	78.7	81	66.6	68.6	66.6	68.6	77
60670010	CA	Sacramento	70.3	71	60.4	61.0	60.4	61.0	69
60670011	CA	Sacramento	72.5	74	61.3	62.6	61.3	62.6	68
60670012	CA	Sacramento	93.3	95	74.5	75.9	74.5	75.9	83
60670014	CA	Sacramento	69.3	70	58.8	59.4	58.8	59.4	71
60675003	CA	Sacramento	86.3	88	69.9	71.3	69.9	71.3	79
60690002	CA	San Benito	62.0	66	52.0	55.4	52.0	55.4	63
60690003	CA	San Benito	70.0	70	59.9	59.9	59.9	59.9	69
60710001	CA	San Bernardino	77.0	78	68.0	68.9	68.0	68.9	80
60710005	CA	San Bernardino	105.0	107	96.2	98.1	96.2	98.1	108
60710012	CA	San Bernardino	95.0	97	84.1	85.8	84.1	85.8	91
60710306	CA	San Bernardino	83.7	85	76.2	77.4	76.2	77.4	86
60711004	CA	San Bernardino	96.7	98	89.8	91.0	89.8	91.0	101
60711234	CA	San Bernardino	69.0	69	64.1	64.1	64.1	64.1	69
60712002	CA	San Bernardino	101.0	103	93.1	95.0	93.1	95.0	97
60714001	CA	San Bernardino	94.3	97	86.0	88.5	86.0	88.5	90
60714003	CA	San Bernardino	105.0	107	94.1	95.8	94.1	95.8	101
60719002	CA	San Bernardino	92.3	94	80.0	81.4	80.0	81.4	86
60719004	CA	San Bernardino	98.7	99	88.4	88.7	88.4	88.7	104
60730001	CA	San Diego	61.3	63	58.0	59.6	58.0	59.6	61
60731001	CA	San Diego	63.0	64	56.4	57.3	56.2	57.0	67

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
60731002	CA	San Diego	70.3	72	55.9	57.3	55.9	57.3	N/A
60731006	CA	San Diego	81.0	82	69.4	70.2	69.4	70.2	81
60731008	CA	San Diego	64.7	67	55.1	57.1	54.9	56.8	70
60731010	CA	San Diego	56.3	59	53.2	55.8	53.2	55.8	62
60731016	CA	San Diego	68.0	69	59.8	60.7	59.8	60.7	68
60731018	CA	San Diego	69.7	71	59.2	60.3	59.2	60.3	N/A
60732007	CA	San Diego	57.7	58	54.0	54.2	54.0	54.2	N/A
60771002	CA	San Joaquin	68.0	69	59.1	60.0	59.1	60.0	68
60773005	CA	San Joaquin	79.0	80	67.2	68.1	67.2	68.1	79
60790005	CA	San Luis Obispo	64.3	66	54.1	55.5	54.1	55.5	62
60792006	CA	San Luis Obispo	54.3	57	45.4	47.7	45.4	47.7	57
60793001	CA	San Luis Obispo	53.3	55	45.4	46.9	45.4	46.9	55
60794002	CA	San Luis Obispo	58.7	62	49.0	51.7	49.0	51.7	62
60798002	CA	San Luis Obispo	62.3	63	52.3	52.9	52.3	52.9	63
60798005	CA	San Luis Obispo	78.0	79	66.0	66.8	66.0	66.8	73
60798006	CA	San Luis Obispo	75.0	76	64.0	64.9	64.0	64.9	68
60811001	CA	San Mateo	54.0	56	54.0	56.1	54.0	56.1	59
60830008	CA	Santa Barbara	57.7	59	50.1	51.3	50.2	51.4	61
60830011	CA	Santa Barbara	56.0	57	49.0	49.9	48.6	49.4	63
60831008	CA	Santa Barbara	50.3	52	42.1	43.5	42.1	43.5	54
60831013	CA	Santa Barbara	62.7	64	53.2	54.3	53.2	54.3	62
60831014	CA	Santa Barbara	67.0	69	57.5	59.2	57.5	59.2	64
60831018	CA	Santa Barbara	55.0	56	47.5	48.3	47.1	47.9	60
60831021	CA	Santa Barbara	66.7	71	58.6	62.4	57.6	61.3	63
60831025	CA	Santa Barbara	68.3	73	59.4	63.4	59.5	63.6	67
60832004	CA	Santa Barbara	53.0	54	45.5	46.4	45.5	46.4	56
60832011	CA	Santa Barbara	55.7	57	48.9	50.0	48.6	49.7	63
60833001	CA	Santa Barbara	59.7	62	51.1	53.0	51.1	53.0	62
60834003	CA	Santa Barbara	60.3	61	52.2	52.8	51.9	52.5	60
60850002	CA	Santa Clara	68.3	71	56.7	58.9	56.7	58.9	66
60850005	CA	Santa Clara	60.7	63	57.3	59.5	57.3	59.5	63
60851001	CA	Santa Clara	66.0	70	60.0	63.7	60.0	63.7	67
60852006	CA	Santa Clara	71.3	74	60.1	62.3	60.1	62.3	70
60852009	CA	Santa Clara	62.0	62	57.9	57.9	57.9	57.9	N/A
60870007	CA	Santa Cruz	53.0	55	47.1	48.9	47.1	48.9	57
60890004	CA	Shasta	60.0	64	48.8	52.0	48.8	52.0	70
60890007	CA	Shasta	67.0	69	55.1	56.7	55.1	56.7	68
60890009	CA	Shasta	68.0	69	55.3	56.2	55.3	56.2	N/A
60893003	CA	Shasta	66.3	68	57.2	58.7	57.2	58.7	65

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
60950004	CA	Solano	59.0	61	52.0	53.8	52.0	53.8	63
60950005	CA	Solano	67.3	69	56.0	57.4	56.0	57.4	64
60953003	CA	Solano	68.0	69	56.7	57.5	56.7	57.5	67
60970003	CA	Sonoma	48.0	50	39.0	40.6	39.0	40.6	N/A
60990005	CA	Stanislaus	75.0	75	65.2	65.2	65.2	65.2	81
60990006	CA	Stanislaus	87.0	88	74.8	75.7	74.8	75.7	83
61010003	CA	Sutter	65.0	66	53.4	54.3	53.4	54.3	65
61030004	CA	Tehama	75.3	76	62.3	62.9	62.3	62.9	79
61030007	CA	Tehama	72.5	73	59.7	60.1	59.7	60.1	67
61070006	CA	Tulare	81.7	85	69.1	71.9	69.1	71.9	84
61070009	CA	Tulare	94.7	96	76.1	77.2	76.1	77.2	89
61072002	CA	Tulare	85.0	88	68.9	71.4	68.9	71.4	80
61072010	CA	Tulare	89.0	90	73.1	73.9	73.1	73.9	83
61090005	CA	Tuolumne	73.3	74	60.6	61.2	60.6	61.2	79
61110007	CA	Ventura	71.7	76	62.9	66.7	62.9	66.7	69
61110009	CA	Ventura	74.0	77	63.7	66.2	63.7	66.2	74
61111004	CA	Ventura	76.7	77	66.1	66.4	66.1	66.4	74
61112002	CA	Ventura	81.0	83	70.5	72.2	70.5	72.2	77
61113001	CA	Ventura	60.7	63	53.3	55.3	53.3	55.3	63
61130004	CA	Yolo	68.7	70	56.5	57.6	56.5	57.6	64
61131003	CA	Yolo	69.0	69	59.5	59.5	59.5	59.5	69
80013001	CO	Adams	76.0	76	70.8	70.8	70.8	70.8	67
80050002	CO	Arapahoe	76.7	79	69.3	71.3	69.3	71.3	N/A
80050006	CO	Arapahoe	73.5	74	65.0	65.4	65.0	65.4	67
80130011	CO	Boulder	74.7	77	65.5	67.5	65.5	67.5	N/A
80310014	CO	Denver	71.0	73	66.2	68.0	66.2	68.0	N/A
80310025	CO	Denver	65.0	65	61.8	61.8	61.8	61.8	N/A
80350004	CO	Douglas	80.7	83	71.1	73.2	71.1	73.2	77
80410013	CO	El Paso	71.0	74	64.0	66.7	64.0	66.7	66
80410016	CO	El Paso	72.7	74	65.4	66.6	65.4	66.6	64
80450012	CO	Garfield	65.0	66	62.4	63.3	62.4	63.3	63
80590002	CO	Jefferson	74.0	74	66.7	66.7	66.7	66.7	N/A
80590005	CO	Jefferson	75.7	78	67.5	69.5	67.5	69.5	72
80590006	CO	Jefferson	80.3	83	71.3	73.7	71.3	73.7	77
80590011	CO	Jefferson	78.7	82	70.9	73.9	70.9	73.9	80
80590013	CO	Jefferson	74.5	75	65.6	66.1	65.6	66.1	70
80671004	CO	La Plata	73.0	74	66.0	66.9	66.0	66.9	N/A
80677001	CO	La Plata	68.7	69	61.9	62.2	61.9	62.2	68
80690007	CO	Larimer	75.7	77	66.8	68.0	66.8	68.0	69

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
80690011	CO	Larimer	78.0	80	71.2	73.0	71.2	73.0	75
80690012	CO	Larimer	71.0	71	64.2	64.2	64.2	64.2	N/A
80691004	CO	Larimer	68.7	72	63.3	66.3	63.3	66.3	70
80770020	CO	Mesa	67.0	68	63.1	64.1	63.1	64.1	63
80830006	CO	Montezuma	67.3	68	59.8	60.4	59.8	60.4	62
80830101	CO	Montezuma	68.3	69	59.3	59.9	59.3	59.9	65
81030005	CO	Rio Blanco	63.5	64	59.8	60.3	59.8	60.3	61
81230009	CO	Weld	74.7	76	70.2	71.4	70.2	71.4	70
90010017	CT	Fairfield	80.3	83	69.8	72.1	68.9	71.2	80
90011123	CT	Fairfield	81.3	83	66.4	67.8	66.4	67.8	78
90013007	CT	Fairfield	84.3	89	71.2	75.2	71.0	75.0	81
90019003	CT	Fairfield	83.7	87	72.7	75.6	73.0	75.9	85
90031003	CT	Hartford	73.7	75	60.7	61.7	60.7	61.7	75
90050005	CT	Litchfield	70.3	71	57.2	57.8	57.2	57.8	74
90070007	CT	Middlesex	79.3	81	64.7	66.1	64.7	66.1	79
90090027	CT	New Haven	74.3	78	62.3	65.4	61.9	65.0	76
90099002	CT	New Haven	85.7	89	71.2	73.9	69.9	72.6	76
90110124	CT	New London	80.3	84	66.4	69.5	67.3	70.4	72
90131001	CT	Tolland	75.3	77	61.4	62.8	61.4	62.8	73
100010002	DE	Kent	74.3	78	58.3	61.2	57.6	60.5	66
100031007	DE	New Castle	76.3	80	59.2	62.0	59.2	62.0	68
100031010	DE	New Castle	78.0	78	61.2	61.2	61.2	61.2	74
100031013	DE	New Castle	77.7	80	60.8	62.6	60.8	62.6	70
100051002	DE	Sussex	77.3	81	59.7	62.6	59.7	62.6	65
100051003	DE	Sussex	77.7	81	62.4	65.1	61.1	63.7	69
110010041	DC	DC	76.0	80	58.7	61.7	58.7	61.7	N/A
110010043	DC	DC	80.7	84	62.3	64.8	62.3	64.8	70
120013011	FL	Alachua	63.7	65	51.0	52.0	51.0	52.0	58
120030002	FL	Baker	61.7	63	50.5	51.6	50.5	51.6	59
120050006	FL	Bay	68.0	69	51.7	52.4	52.6	53.4	62
120090007	FL	Brevard	64.0	64	52.2	52.2	51.6	51.6	58
120094001	FL	Brevard	64.0	65	52.6	53.4	51.7	52.5	61
120110033	FL	Broward	58.0	59	53.6	54.5	53.6	54.5	59
120112003	FL	Broward	58.0	58	50.7	50.7	52.6	52.6	N/A
120118002	FL	Broward	59.3	60	53.1	53.7	55.7	56.3	62
120210004	FL	Collier	59.5	60	49.8	50.2	51.2	51.6	57
120230002	FL	Columbia	62.7	64	51.6	52.7	51.6	52.7	N/A
120310077	FL	Duval	63.3	66	49.8	51.9	51.2	53.3	N/A
120310100	FL	Duval	64.3	67	50.3	52.5	50.4	52.5	N/A

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
120310106	FL	Duval	63.0	64	51.4	52.2	51.4	52.2	N/A
120330004	FL	Escambia	68.7	70	54.0	55.0	55.8	56.8	64
120330018	FL	Escambia	72.0	73	56.2	57.0	58.8	59.6	64
120550003	FL	Highlands	63.3	64	52.8	53.4	52.8	53.4	60
120570081	FL	Hillsborough	71.7	73	60.6	61.7	60.8	61.9	68
120571035	FL	Hillsborough	68.3	69	57.5	58.1	58.4	59.0	66
120571065	FL	Hillsborough	70.7	72	59.9	61.0	60.7	61.8	66
120573002	FL	Hillsborough	71.5	72	58.5	58.9	58.5	58.9	66
120590004	FL	Holmes	62.3	63	47.8	48.3	47.8	48.3	60
120619991	FL	Indian River	65.0	65	53.3	53.3	54.1	54.1	61
120690002	FL	Lake	65.7	66	53.5	53.7	54.1	54.3	63
120712002	FL	Lee	63.7	64	53.4	53.7	53.6	53.8	60
120713002	FL	Lee	61.3	62	50.7	51.3	51.7	52.3	59
120730012	FL	Leon	64.3	66	49.3	50.6	49.3	50.6	60
120730013	FL	Leon	64.0	65	49.2	50.0	49.2	50.0	N/A
120813002	FL	Manatee	64.0	65	53.3	54.2	53.0	53.8	59
120814012	FL	Manatee	67.0	67	55.4	55.4	55.5	55.5	N/A
120830003	FL	Marion	65.0	66	52.7	53.5	52.7	53.5	61
120830004	FL	Marion	62.0	63	49.6	50.4	49.6	50.4	58
120860027	FL	Miami-Dade	64.0	65	58.5	59.4	60.3	61.2	62
120860029	FL	Miami-Dade	63.3	64	56.4	57.0	57.7	58.4	61
120910002	FL	Okaloosa	66.0	67	51.2	52.0	51.3	52.1	62
120950008	FL	Orange	71.0	72	58.0	58.8	58.0	58.8	62
120952002	FL	Orange	71.7	73	60.0	61.1	60.0	61.1	62
120972002	FL	Osceola	66.0	66	53.2	53.2	53.2	53.2	63
120990009	FL	Palm Beach	62.7	63	54.1	54.4	54.1	54.4	N/A
120990020	FL	Palm Beach	61.7	62	54.0	54.2	54.3	54.5	N/A
121010005	FL	Pasco	66.7	67	53.9	54.1	53.9	54.1	61
121012001	FL	Pasco	65.3	67	55.6	57.1	55.7	57.1	62
121030004	FL	Pinellas	66.7	67	57.1	57.3	57.1	57.3	61
121030018	FL	Pinellas	65.3	66	57.8	58.4	56.9	57.5	61
121035002	FL	Pinellas	64.3	65	54.9	55.5	54.8	55.4	59
121056005	FL	Polk	67.3	68	55.1	55.7	55.1	55.7	63
121056006	FL	Polk	68.3	69	56.0	56.6	56.0	56.6	62
121130015	FL	Santa Rosa	71.7	74	55.4	57.2	55.3	57.1	64
121151005	FL	Sarasota	71.3	72	58.7	59.3	58.7	59.2	62
121151006	FL	Sarasota	67.7	68	55.2	55.4	55.2	55.5	62
121152002	FL	Sarasota	66.0	67	54.5	55.3	54.6	55.5	61
121171002	FL	Seminole	67.3	69	55.1	56.5	55.1	56.5	61

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
121272001	FL	Volusia	59.7	60	46.6	46.9	48.3	48.6	59
121275002	FL	Volusia	63.3	64	50.4	51.0	51.6	52.1	59
121290001	FL	Wakulla	63.7	65	50.8	51.8	50.0	51.0	N/A
130210012	GA	Bibb	72.3	73	51.3	51.8	51.3	51.8	65
130510021	GA	Chatham	63.3	64	49.7	50.3	49.7	50.3	57
130550001	GA	Chattooga	66.3	67	50.1	50.7	50.1	50.7	62
130590002	GA	Clarke	70.7	73	50.6	52.3	50.6	52.3	64
130670003	GA	Cobb	76.0	78	55.4	56.9	55.4	56.9	N/A
130730001	GA	Columbia	68.7	70	50.6	51.5	50.6	51.5	61
130770002	GA	Coweta	65.0	67	46.4	47.8	46.4	47.8	66
130850001	GA	Dawson	66.3	68	47.7	48.9	47.7	48.9	65
130890002	GA	DeKalb	77.3	80	56.1	58.1	56.1	58.1	71
130970004	GA	Douglas	73.3	75	52.9	54.2	52.9	54.2	68
131210055	GA	Fulton	81.0	83	59.2	60.6	59.2	60.6	75
131270006	GA	Glynn	60.0	61	47.4	48.2	47.6	48.4	56
131350002	GA	Gwinnett	76.7	78	54.5	55.4	54.5	55.4	72
131510002	GA	Henry	80.0	82	57.7	59.2	57.7	59.2	74
132130003	GA	Murray	70.3	72	51.2	52.5	51.2	52.5	65
132150008	GA	Muscogee	66.0	67	50.2	50.9	50.2	50.9	62
132230003	GA	Paulding	70.7	72	54.3	55.3	54.3	55.3	63
132450091	GA	Richmond	70.0	72	51.9	53.4	51.9	53.4	62
132470001	GA	Rockdale	77.0	79	54.4	55.8	54.4	55.8	74
132611001	GA	Sumter	64.7	66	50.4	51.4	50.4	51.4	60
160010017	ID	Ada	67.5	68	59.4	59.8	59.4	59.8	67
160010019	ID	Ada	62.0	62	54.2	54.2	54.2	54.2	N/A
160230101	ID	Butte	62.3	63	59.6	60.2	59.6	60.2	60
160550003	ID	Kootenai	56.0	56	47.9	47.9	47.9	47.9	N/A
170010007	IL	Adams	67.0	69	54.5	56.2	54.5	56.2	62
170190007	IL	Champaign	71.0	71	57.7	57.7	57.7	57.7	63
170230001	IL	Clark	66.0	66	53.8	53.8	53.8	53.8	64
170310001	IL	Cook	72.0	74	63.2	64.9	63.2	64.9	69
170310032	IL	Cook	77.7	81	58.8	61.3	66.6	69.5	70
170310064	IL	Cook	71.3	75	53.9	56.7	61.1	64.3	N/A
170310076	IL	Cook	71.7	74	62.7	64.7	62.7	64.7	69
170311003	IL	Cook	69.7	72	53.3	55.1	62.4	64.4	69
170311601	IL	Cook	71.3	74	61.5	63.9	61.5	63.9	69
170314002	IL	Cook	71.7	74	55.8	57.6	62.3	64.3	66
170314007	IL	Cook	65.7	68	49.2	50.9	58.0	60.0	71
170314201	IL	Cook	75.7	78	56.7	58.4	66.8	68.8	71

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170317002	IL	Cook	76.0	80	55.7	58.6	66.8	70.3	72
170436001	IL	DuPage	66.3	68	57.9	59.4	57.9	59.4	68
170491001	IL	Effingham	68.3	70	55.5	56.9	55.5	56.9	64
170650002	IL	Hamilton	74.3	78	60.7	63.8	60.7	63.8	65
170831001	IL	Jersey	76.0	79	58.4	60.7	58.4	60.7	68
170859991	IL	Jo Daviess	68.0	68	56.4	56.4	56.4	56.4	65
170890005	IL	Kane	69.7	71	62.8	63.9	62.8	63.9	68
170971007	IL	Lake	79.3	82	57.5	59.5	63.4	65.6	73
171110001	IL	McHenry	69.7	71	61.8	62.9	61.8	62.9	68
171132003	IL	McLean	70.3	72	56.0	57.4	56.0	57.4	64
171150013	IL	Macon	71.3	73	58.0	59.4	58.0	59.4	66
171170002	IL	Macoupin	71.3	73	53.8	55.1	53.8	55.1	64
171190008	IL	Madison	77.0	80	59.5	61.8	59.5	61.8	71
171191009	IL	Madison	78.3	80	59.9	61.2	59.9	61.2	67
171193007	IL	Madison	76.7	79	59.3	61.0	59.3	61.0	71
171199991	IL	Madison	76.0	76	56.7	56.7	56.7	56.7	67
171430024	IL	Peoria	61.7	63	51.3	52.4	51.3	52.4	64
171431001	IL	Peoria	70.7	72	58.8	59.8	58.8	59.8	N/A
171570001	IL	Randolph	67.7	70	54.7	56.6	54.7	56.6	67
171613002	IL	Rock Island	58.3	60	49.2	50.6	49.2	50.6	62
171630010	IL	Saint Clair	74.7	77	56.9	58.7	56.9	58.7	68
171670014	IL	Sangamon	72.0	72	56.8	56.8	56.8	56.8	63
171971011	IL	Will	64.0	65	55.6	56.5	55.6	56.5	64
172012001	IL	Winnebago	67.3	68	57.5	58.0	57.5	58.0	68
180030002	IN	Allen	68.3	70	55.2	56.6	55.2	56.6	63
180030004	IN	Allen	69.3	71	56.1	57.4	56.1	57.4	63
180110001	IN	Boone	72.3	74	59.4	60.8	59.4	60.8	66
180150002	IN	Carroll	69.0	71	56.8	58.5	56.8	58.5	64
180190008	IN	Clark	78.0	81	62.1	64.5	62.1	64.5	70
180350010	IN	Delaware	68.7	70	54.4	55.5	54.4	55.5	59
180390007	IN	Elkhart	67.7	70	54.6	56.5	54.6	56.5	61
180431004	IN	Floyd	76.0	79	61.7	64.1	61.7	64.1	69
180550001	IN	Greene	77.0	78	63.5	64.3	63.5	64.3	66
180570006	IN	Hamilton	71.0	72	57.2	58.0	57.2	58.0	63
180590003	IN	Hancock	66.7	69	53.4	55.2	53.4	55.2	N/A
180630004	IN	Hendricks	67.0	68	55.5	56.3	55.5	56.3	60
180690002	IN	Huntington	65.0	66	53.0	53.8	53.0	53.8	58
180710001	IN	Jackson	66.0	67	53.0	53.8	53.0	53.8	66
180810002	IN	Johnson	69.0	70	56.0	56.8	56.0	56.8	60

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
180839991	IN	Knox	73.0	73	59.2	59.2	59.2	59.2	65
180890022	IN	Lake	66.7	69	55.2	57.1	58.3	60.3	67
180890030	IN	Lake	69.7	73	58.9	61.7	61.9	64.8	N/A
180892008	IN	Lake	68.0	68	57.5	57.5	60.4	60.4	65
180910005	IN	LaPorte	79.3	83	65.4	68.5	67.2	70.4	N/A
180910010	IN	LaPorte	69.7	72	59.2	61.2	58.9	60.9	63
180950010	IN	Madison	68.3	70	54.2	55.5	54.2	55.5	57
180970050	IN	Marion	72.7	74	59.1	60.2	59.1	60.2	69
180970057	IN	Marion	69.0	71	57.8	59.4	57.8	59.4	65
180970073	IN	Marion	72.0	74	59.1	60.7	59.1	60.7	65
180970078	IN	Marion	69.7	72	58.3	60.3	58.3	60.3	N/A
181090005	IN	Morgan	69.0	70	55.1	55.9	55.1	55.9	64
181230009	IN	Perry	72.7	75	53.6	55.3	53.6	55.3	67
181270024	IN	Porter	70.3	72	57.6	59.0	61.8	63.3	69
181270026	IN	Porter	63.0	64	54.4	55.3	54.4	55.3	66
181290003	IN	Posey	70.3	71	56.5	57.0	56.5	57.0	66
181410010	IN	St. Joseph	62.7	64	51.2	52.3	51.2	52.3	62
181410015	IN	St. Joseph	69.3	73	56.9	59.9	56.9	59.9	68
181411007	IN	St. Joseph	64.0	64	52.5	52.5	52.5	52.5	N/A
181450001	IN	Shelby	74.0	75	60.6	61.4	60.6	61.4	62
181630013	IN	Vanderburgh	71.7	73	56.2	57.3	56.2	57.3	69
181630021	IN	Vanderburgh	74.0	74	58.6	58.6	58.6	58.6	70
181670018	IN	Vigo	65.7	68	52.5	54.3	52.5	54.3	65
181670024	IN	Vigo	64.0	64	51.3	51.3	51.3	51.3	61
181730008	IN	Warrick	71.0	73	54.9	56.5	54.9	56.5	68
181730009	IN	Warrick	69.7	72	55.0	56.8	55.0	56.8	66
181730011	IN	Warrick	71.0	74	54.2	56.5	54.2	56.5	67
190170011	IA	Bremer	64.0	65	50.9	51.7	50.9	51.7	60
190450021	IA	Clinton	66.7	68	55.9	57.0	55.9	57.0	63
190850007	IA	Harrison	66.7	68	53.9	54.9	53.9	54.9	62
190851101	IA	Harrison	67.7	69	54.7	55.7	54.7	55.7	62
191130028	IA	Linn	64.3	66	54.1	55.5	54.1	55.5	61
191130033	IA	Linn	64.0	65	51.9	52.7	51.9	52.7	61
191130040	IA	Linn	62.7	64	52.8	53.9	52.8	53.9	61
191370002	IA	Montgomery	65.3	67	54.1	55.5	54.1	55.5	60
191471002	IA	Palo Alto	66.7	68	55.2	56.3	55.2	56.3	61
191530030	IA	Polk	59.7	61	48.1	49.2	48.1	49.2	60
191630014	IA	Scott	63.0	63	52.4	52.4	52.4	52.4	63
191630015	IA	Scott	66.0	67	55.7	56.5	55.7	56.5	60

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191690011	IA	Story	61.3	62	49.1	49.7	49.1	49.7	60
191770006	IA	Van Buren	65.7	68	53.0	54.9	53.0	54.9	60
191810022	IA	Warren	63.7	65	51.8	52.9	51.8	52.9	58
200910010	KS	Johnson	72.7	76	59.0	61.7	59.0	61.7	60
201030003	KS	Leavenworth	72.0	74	56.3	57.8	56.3	57.8	63
201070002	KS	Linn	70.0	72	55.4	57.0	55.4	57.0	N/A
201730010	KS	Sedgwick	76.3	78	61.9	63.2	61.9	63.2	65
201730018	KS	Sedgwick	75.7	77	61.6	62.6	61.6	62.6	65
201770013	KS	Shawnee	71.7	74	56.0	57.8	56.0	57.8	63
201910002	KS	Sumner	76.3	78	63.0	64.4	63.0	64.4	64
201950001	KS	Trego	72.3	74	64.3	65.9	64.3	65.9	63
202090021	KS	Wyandotte	65.7	70	52.8	56.3	52.8	56.3	63
210130002	KY	Bell	63.3	65	49.3	50.6	49.3	50.6	61
210150003	KY	Boone	68.0	70	53.5	55.1	53.5	55.1	63
210190017	KY	Boyd	70.0	72	57.7	59.3	57.7	59.3	66
210290006	KY	Bullitt	72.3	75	58.0	60.1	58.0	60.1	66
210373002	KY	Campbell	76.7	79	61.3	63.1	61.3	63.1	70
210430500	KY	Carter	67.0	69	53.6	55.2	53.6	55.2	61
210470006	KY	Christian	70.7	73	55.6	57.4	55.6	57.4	62
210590005	KY	Daviess	76.3	79	57.1	59.1	57.1	59.1	65
210610501	KY	Edmonson	72.0	75	56.3	58.6	56.3	58.6	64
210670012	KY	Fayette	71.3	74	57.0	59.1	57.0	59.1	67
210890007	KY	Greenup	69.7	72	57.4	59.2	57.4	59.2	63
210910012	KY	Hancock	73.7	76	54.1	55.8	54.1	55.8	68
210930006	KY	Hardin	70.3	73	54.2	56.3	54.2	56.3	65
211010014	KY	Henderson	76.3	79	59.7	61.8	59.7	61.8	69
211110027	KY	Jefferson	77.0	80	62.5	64.9	62.5	64.9	69
211110051	KY	Jefferson	78.5	79	64.4	64.8	64.4	64.8	69
211110067	KY	Jefferson	85.0	85	70.1	70.1	70.1	70.1	74
211130001	KY	Jessamine	70.0	72	55.3	56.9	55.3	56.9	65
211390003	KY	Livingston	72.3	75	57.1	59.2	57.1	59.2	65
211451024	KY	McCracken	73.7	77	59.3	62.0	59.3	62.0	63
211850004	KY	Oldham	82.0	86	63.5	66.6	63.5	66.6	70
211930003	KY	Perry	65.3	68	54.3	56.5	54.3	56.5	58
211950002	KY	Pike	65.7	68	53.1	55.0	53.1	55.0	60
211990003	KY	Pulaski	66.7	69	51.1	52.9	51.1	52.9	62
212130004	KY	Simpson	69.3	71	52.9	54.2	52.9	54.2	64
212218001	KY	Trigg	69.0	69	54.8	54.8	54.8	54.8	N/A
212270008	KY	Warren	64.0	64	49.5	49.5	49.5	49.5	N/A

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
212299991	KY	Washington	69.0	69	54.4	54.4	54.4	54.4	64
220050004	LA	Ascension	74.7	77	63.5	65.4	63.5	65.4	71
220150008	LA	Bossier	77.3	80	63.4	65.6	63.4	65.6	65
220170001	LA	Caddo	74.7	76	61.0	62.0	61.0	62.0	64
220190002	LA	Calcasieu	72.7	75	66.5	68.6	66.5	68.6	68
220190008	LA	Calcasieu	67.7	69	61.7	62.8	61.7	62.8	N/A
220190009	LA	Calcasieu	72.0	74	63.6	65.4	63.6	65.4	64
220330003	LA	E. Baton Rouge	78.7	82	67.8	70.6	67.8	70.6	72
220330009	LA	E. Baton Rouge	75.0	77	64.1	65.8	64.1	65.8	66
220330013	LA	E. Baton Rouge	71.0	72	60.5	61.4	60.5	61.4	N/A
220470009	LA	Iberville	73.3	75	63.5	65.0	63.5	65.0	N/A
220470012	LA	Iberville	76.0	77	65.7	66.6	65.7	66.6	N/A
220511001	LA	Jefferson	73.7	76	66.0	68.0	66.6	68.6	68
220550007	LA	Lafayette	71.0	72	59.8	60.7	59.8	60.7	66
220570004	LA	Lafourche	72.3	74	64.1	65.6	64.1	65.6	65
220630002	LA	Livingston	74.0	76	63.3	65.0	63.3	65.0	70
220710012	LA	Orleans	69.3	70	62.1	62.7	62.2	62.8	N/A
220730004	LA	Ouachita	63.3	66	52.8	55.1	52.8	55.1	N/A
220770001	LA	Pointe Coupee	75.3	77	63.3	64.7	63.3	64.7	68
220870004	LA	St. Bernard	69.0	69	61.8	61.8	61.9	61.9	66
220890003	LA	St. Charles	70.0	72	62.7	64.5	63.0	64.8	N/A
220930002	LA	St. James	68.0	69	60.0	60.9	60.0	60.9	65
220950002	LA	St. John the Baptist	74.0	75	66.3	67.2	66.3	67.2	66
221030002	LA	St. Tammany	73.3	74	64.1	64.7	64.0	64.6	68
221210001	LA	West Baton Rouge	70.3	72	60.0	61.5	60.0	61.5	66
230010014	ME	Androscoggin	61.0	62	49.4	50.2	49.3	50.1	60
230052003	ME	Cumberland	69.3	70	56.2	56.8	56.7	57.3	65
230090102	ME	Hancock	71.7	74	61.3	63.2	59.9	61.8	66
230090103	ME	Hancock	66.3	69	55.0	57.3	55.3	57.5	62
230112005	ME	Kennebec	62.7	64	50.5	51.5	50.5	51.5	59
230130004	ME	Knox	67.7	69	54.7	55.7	54.8	55.8	63
230173001	ME	Oxford	54.3	55	43.7	44.3	43.7	44.3	N/A
230194008	ME	Penobscot	57.7	59	46.6	47.6	46.6	47.6	58
230230006	ME	Sagadahoc	61.0	61	48.7	48.7	48.7	48.7	N/A
230310038	ME	York	60.3	62	48.2	49.6	48.2	49.6	58
230310040	ME	York	64.3	65	51.5	52.0	51.5	52.0	61
230312002	ME	York	73.7	75	60.1	61.2	59.6	60.7	67

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
240030014	MD	Anne Arundel	83.0	87	63.4	66.4	63.4	66.4	N/A
240051007	MD	Baltimore	79.0	82	63.9	66.3	63.9	66.3	72
240053001	MD	Baltimore	80.7	84	64.9	67.6	65.3	67.9	72
240090011	MD	Calvert	79.7	83	64.2	66.9	63.2	65.9	69
240130001	MD	Carroll	76.3	79	58.8	60.9	58.8	60.9	68
240150003	MD	Cecil	83.0	86	64.5	66.8	64.5	66.8	76
240170010	MD	Charles	79.0	83	61.6	64.7	61.6	64.7	70
240199991	MD	Dorchester	75.0	75	60.7	60.7	59.4	59.4	66
240210037	MD	Frederick	76.3	79	59.6	61.8	59.6	61.8	67
240230002	MD	Garrett	72.0	75	55.1	57.4	55.1	57.4	65
240251001	MD	Harford	90.0	93	71.4	73.8	70.9	73.3	73
240259001	MD	Harford	79.3	82	61.8	63.9	62.2	64.3	73
240290002	MD	Kent	78.7	82	61.2	63.7	61.2	63.7	70
240313001	MD	Montgomery	75.7	77	60.0	61.0	60.0	61.0	68
240330030	MD	Prince George's	79.0	82	60.5	62.8	60.5	62.8	69
240338003	MD	Prince George's	82.3	87	63.2	66.8	63.2	66.8	71
240339991	MD	Prince George's	80.0	80	61.0	61.0	61.0	61.0	68
240430009	MD	Washington	72.7	75	56.0	57.8	56.0	57.8	66
245100054	MD	Baltimore (City)	73.7	75	59.9	61.0	59.4	60.4	69
250010002	MA	Barnstable	73.0	75	59.6	61.3	60.5	62.2	N/A
250034002	MA	Berkshire	69.0	71	56.1	57.7	56.1	57.7	N/A
250051002	MA	Bristol	74.0	74	61.6	61.6	61.2	61.2	N/A
250070001	MA	Dukes	77.0	80	64.1	66.6	64.1	66.6	N/A
250092006	MA	Essex	71.0	71	57.5	57.5	58.4	58.4	65
250094005	MA	Essex	70.0	70	57.2	57.2	57.2	57.2	64
250095005	MA	Essex	69.3	70	56.2	56.8	56.2	56.8	62
250130008	MA	Hampden	73.7	74	59.3	59.5	59.3	59.5	70
250150103	MA	Hampshire	64.7	66	51.9	53.0	51.9	53.0	N/A
250154002	MA	Hampshire	71.3	72	57.0	57.5	57.0	57.5	70
250170009	MA	Middlesex	67.3	68	54.0	54.5	54.0	54.5	63
250171102	MA	Middlesex	67.0	67	53.4	53.4	53.4	53.4	N/A
250213003	MA	Norfolk	72.3	73	59.6	60.2	59.6	60.2	67
250250041	MA	Suffolk	68.3	70	56.4	57.8	55.5	56.9	N/A
250250042	MA	Suffolk	60.7	61	49.6	49.9	50.1	50.4	56
250270015	MA	Worcester	68.3	70	54.6	55.9	54.6	55.9	64
250270024	MA	Worcester	69.0	70	54.9	55.7	54.9	55.7	64
260050003	MI	Allegan	82.7	86	69.0	71.8	69.0	71.7	75
260190003	MI	Benzie	73.0	75	60.9	62.6	60.6	62.3	69
260210014	MI	Berrien	79.7	82	67.4	69.3	66.9	68.8	74

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
260270003	MI	Cass	76.7	78	62.0	63.1	62.0	63.1	70
260370001	MI	Clinton	69.3	71	56.2	57.6	56.2	57.6	67
260490021	MI	Genesee	73.0	76	60.1	62.5	60.1	62.5	68
260492001	MI	Genesee	72.3	74	58.8	60.2	58.8	60.2	69
260630007	MI	Huron	71.3	74	59.5	61.7	59.0	61.2	68
260650012	MI	Ingham	70.3	72	56.8	58.2	56.8	58.2	67
260770008	MI	Kalamazoo	73.7	75	59.9	60.9	59.9	60.9	69
260810020	MI	Kent	73.0	75	59.8	61.4	59.8	61.4	69
260810022	MI	Kent	72.7	74	58.3	59.3	58.3	59.3	67
260910007	MI	Lenawee	75.5	76	60.6	61.0	60.6	61.0	67
260990009	MI	Macomb	76.7	78	65.1	66.2	64.5	65.6	72
260991003	MI	Macomb	77.3	79	66.7	68.1	66.7	68.1	67
261010922	MI	Manistee	72.3	74	60.2	61.6	60.5	61.9	68
261050007	MI	Mason	73.3	75	60.7	62.1	60.7	62.1	70
261130001	MI	Missaukee	68.3	70	56.9	58.3	56.9	58.3	67
261210039	MI	Muskegon	79.7	82	65.6	67.5	65.8	67.7	75
261250001	MI	Oakland	76.3	78	64.1	65.6	64.1	65.6	69
261390005	MI	Ottawa	76.0	78	62.3	64.0	62.3	64.0	70
261470005	MI	St. Clair	75.3	77	63.7	65.1	62.5	63.9	73
261530001	MI	Schoolcraft	71.7	75	59.4	62.1	59.4	62.1	70
261610008	MI	Washtenaw	73.3	76	60.7	62.9	60.7	62.9	67
261630001	MI	Wayne	71.7	74	60.5	62.4	60.5	62.4	65
261630019	MI	Wayne	78.7	81	69.0	71.0	69.0	71.0	72
270031001	MN	Anoka	67.0	67	55.1	55.1	55.1	55.1	60
270031002	MN	Anoka	66.3	67	57.3	57.9	57.3	57.9	63
270353204	MN	Crow Wing	62.0	62	50.7	50.7	50.7	50.7	59
270495302	MN	Goodhue	62.5	63	52.2	52.6	52.2	52.6	61
270834210	MN	Lyon	64.5	65	54.1	54.5	54.1	54.5	62
270953051	MN	Mille Lacs	59.7	60	48.6	48.8	48.9	49.2	60
271095008	MN	Olmsted	63.5	64	52.3	52.7	52.3	52.7	61
271377550	MN	Saint Louis	49.7	50	42.0	42.2	42.2	42.5	53
271390505	MN	Scott	63.5	65	54.3	55.5	54.3	55.5	60
271453052	MN	Stearns	61.5	62	52.7	53.1	52.7	53.1	60
271713201	MN	Wright	63.5	64	54.6	55.0	54.6	55.0	61
280110001	MS	Bolivar	71.7	74	60.9	62.9	60.9	62.9	62
280330002	MS	DeSoto	72.3	74	55.4	56.7	55.4	56.7	64
280450003	MS	Hancock	66.3	67	53.4	53.9	53.9	54.4	63
280470008	MS	Harrison	72.3	75	55.9	58.0	57.7	59.9	67
280490010	MS	Hinds	67.0	68	50.0	50.7	50.0	50.7	N/A

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
280590006	MS	Jackson	71.7	73	56.9	58.0	57.1	58.2	67
280750003	MS	Lauderdale	62.7	63	50.0	50.2	50.0	50.2	57
280810005	MS	Lee	65.0	66	49.7	50.5	49.7	50.5	59
281619991	MS	Yalobusha	63.0	63	51.4	51.4	51.4	51.4	57
290030001	MO	Andrew	73.3	75	58.3	59.6	58.3	59.6	63
290190011	MO	Boone	69.0	72	54.0	56.3	54.0	56.3	64
290270002	MO	Callaway	67.7	70	53.5	55.3	53.5	55.3	64
290370003	MO	Cass	70.0	72	56.3	57.9	56.3	57.9	63
290390001	MO	Cedar	71.7	74	58.0	59.9	58.0	59.9	61
290470003	MO	Clay	77.0	79	61.9	63.5	61.9	63.5	65
290470005	MO	Clay	75.3	77	59.8	61.1	59.8	61.1	64
290470006	MO	Clay	77.7	80	61.7	63.5	61.7	63.5	67
290490001	MO	Clinton	78.0	80	61.3	62.9	61.3	62.9	67
290770036	MO	Greene	69.3	71	54.5	55.8	54.5	55.8	59
290770042	MO	Greene	71.7	74	56.4	58.2	56.4	58.2	60
290970004	MO	Jasper	76.7	78	60.2	61.2	60.2	61.2	61
290990019	MO	Jefferson	76.3	79	58.7	60.8	58.7	60.8	70
291130003	MO	Lincoln	77.0	80	59.6	62.0	59.6	62.0	65
291370001	MO	Monroe	68.7	71	55.8	57.7	55.8	57.7	59
291570001	MO	Perry	74.3	77	59.7	61.9	59.7	61.9	67
291831002	MO	Saint Charles	82.3	86	63.2	66.1	63.2	66.1	72
291831004	MO	Saint Charles	77.7	80	61.9	63.8	61.9	63.8	71
291860005	MO	Sainte Genevieve	72.3	75	57.4	59.5	57.4	59.5	66
291890005	MO	Saint Louis	72.0	74	54.4	55.9	54.4	55.9	65
291890014	MO	Saint Louis	79.0	82	60.5	62.8	60.5	62.8	71
292130004	MO	Taney	69.0	70	55.3	56.1	55.3	56.1	57
295100085	MO	St. Louis City	75.7	79	58.7	61.2	58.7	61.2	65
300870001	MT	Rosebud	55.5	56	51.6	52.1	51.6	52.1	56
310550019	NE	Douglas	67.0	67	56.2	56.2	56.2	56.2	62
310550028	NE	Douglas	58.7	60	49.3	50.3	49.3	50.3	59
310550035	NE	Douglas	64.0	66	53.1	54.7	53.1	54.7	N/A
311090016	NE	Lancaster	53.3	55	43.4	44.7	43.4	44.7	60
320010002	NV	Churchill	56.7	58	51.9	53.1	51.9	53.1	67
320030043	NV	Clark	74.7	76	67.7	68.8	67.7	68.8	73
320030071	NV	Clark	75.3	76	68.7	69.4	68.7	69.4	71
320030073	NV	Clark	74.7	76	68.2	69.4	68.2	69.4	73
320030075	NV	Clark	76.0	77	67.4	68.3	67.4	68.3	75
320030538	NV	Clark	71.0	72	62.9	63.8	62.9	63.8	N/A

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
320030540	NV	Clark	71.0	71	62.9	62.9	62.9	62.9	70
320030601	NV	Clark	72.0	72	65.7	65.7	65.7	65.7	67
320031019	NV	Clark	74.3	75	66.8	67.4	66.8	67.4	70
320032002	NV	Clark	71.7	73	63.4	64.5	63.4	64.5	73
320190006	NV	Lyon	68.5	69	62.1	62.5	62.1	62.5	69
320310016	NV	Washoe	66.0	67	59.2	60.1	59.2	60.1	70
320310020	NV	Washoe	67.0	68	60.1	61.0	60.1	61.0	68
320310025	NV	Washoe	66.3	67	60.0	60.6	60.0	60.6	67
320311005	NV	Washoe	67.3	68	59.9	60.5	59.9	60.5	69
320312002	NV	Washoe	61.7	62	54.3	54.5	55.2	55.5	62
320312009	NV	Washoe	67.0	68	60.1	61.0	60.1	61.0	69
320330101	NV	White Pine	72.0	74	65.8	67.7	65.8	67.7	64
325100002	NV	Carson City	66.0	66	60.2	60.2	60.2	60.2	N/A
330012004	NH	Belknap	62.3	63	50.4	51.0	50.0	50.6	58
330050007	NH	Cheshire	62.3	63	49.7	50.2	49.7	50.2	61
330074001	NH	Coos	69.3	70	57.1	57.7	57.1	57.7	67
330074002	NH	Coos	59.7	61	49.3	50.4	49.3	50.4	57
330090010	NH	Grafton	59.7	60	48.1	48.4	48.1	48.4	57
330111011	NH	Hillsborough	66.3	67	53.6	54.2	53.6	54.2	63
330115001	NH	Hillsborough	69.0	70	55.5	56.3	55.5	56.3	68
330131007	NH	Merrimack	64.7	65	51.6	51.8	51.6	51.8	61
330150014	NH	Rockingham	66.0	66	53.6	53.6	53.4	53.4	65
330150016	NH	Rockingham	66.3	67	53.8	54.4	53.6	54.2	67
330150018	NH	Rockingham	68.0	68	55.1	55.1	55.1	55.1	65
340010006	NJ	Atlantic	74.3	76	58.5	59.9	58.6	60.0	64
340030006	NJ	Bergen	77.0	78	64.1	65.0	64.1	65.0	74
340071001	NJ	Camden	82.7	87	66.3	69.8	66.3	69.8	69
340110007	NJ	Cumberland	72.0	75	57.0	59.4	57.0	59.4	68
340130003	NJ	Essex	78.0	82	64.3	67.6	64.3	67.6	70
340150002	NJ	Gloucester	84.3	87	68.2	70.4	68.2	70.4	74
340170006	NJ	Hudson	77.0	78	65.4	66.3	64.6	65.4	72
340190001	NJ	Hunterdon	78.0	80	62.0	63.6	62.0	63.6	72
340210005	NJ	Mercer	78.3	81	63.2	65.4	63.2	65.4	72
340219991	NJ	Mercer	76.0	76	60.4	60.4	60.4	60.4	73
340230011	NJ	Middlesex	81.3	85	65.0	68.0	65.0	68.0	74
340250005	NJ	Monmouth	80.0	83	65.4	67.8	64.1	66.5	70
340273001	NJ	Morris	76.3	78	62.4	63.8	62.4	63.8	69
340290006	NJ	Ocean	82.0	85	65.8	68.2	65.8	68.2	73
340315001	NJ	Passaic	73.3	75	61.3	62.7	61.3	62.7	70

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
340410007	NJ	Warren	66.0	66	54.0	54.0	54.0	54.0	64
350010023	NM	Bernalillo	68.0	70	59.0	60.7	59.0	60.7	65
350010024	NM	Bernalillo	69.3	70	60.1	60.7	60.1	60.7	N/A
350010027	NM	Bernalillo	70.0	71	63.4	64.3	63.4	64.3	N/A
350010029	NM	Bernalillo	68.7	70	59.2	60.3	59.2	60.3	65
350010032	NM	Bernalillo	70.0	70	60.6	60.6	60.6	60.6	N/A
350011012	NM	Bernalillo	72.0	74	64.2	66.0	64.2	66.0	64
350011013	NM	Bernalillo	68.7	69	61.1	61.3	61.1	61.3	N/A
350130008	NM	Dona Ana	64.7	67	60.8	63.0	60.8	63.0	66
350130017	NM	Dona Ana	66.7	68	63.1	64.3	63.1	64.3	N/A
350130020	NM	Dona Ana	67.7	69	62.8	64.0	62.8	64.0	66
350130021	NM	Dona Ana	71.0	72	67.1	68.1	67.1	68.1	72
350130022	NM	Dona Ana	70.3	75	66.3	70.8	66.3	70.8	68
350130023	NM	Dona Ana	64.3	65	58.7	59.3	58.7	59.3	65
350151005	NM	Eddy	70.3	71	67.7	68.4	67.7	68.4	67
350171003	NM	Grant	65.0	67	61.9	63.8	61.9	63.8	N/A
350250008	NM	Lea	62.7	66	59.9	63.0	59.9	63.0	66
350290003	NM	Luna	63.0	67	58.2	61.9	58.2	61.9	N/A
350431001	NM	Sandoval	61.7	63	55.4	56.5	55.4	56.5	64
350439004	NM	Sandoval	63.0	63	58.8	58.8	58.8	58.8	N/A
350450009	NM	San Juan	65.3	68	56.7	59.0	56.7	59.0	62
350450018	NM	San Juan	71.0	71	62.0	62.0	62.0	62.0	66
350451005	NM	San Juan	66.0	68	55.3	57.0	55.3	57.0	62
350490021	NM	Santa Fe	64.3	66	60.5	62.1	60.5	62.1	63
350610008	NM	Valencia	68.5	70	60.1	61.4	60.1	61.4	64
360010012	NY	Albany	68.0	70	55.4	57.0	55.4	57.0	64
360050133	NY	Bronx	74.0	76	68.0	69.9	63.3	65.0	70
360130006	NY	Chautauqua	73.3	76	59.6	61.7	58.5	60.7	68
360130011	NY	Chautauqua	74.0	76	60.2	61.8	59.4	61.0	N/A
360150003	NY	Chemung	66.5	67	54.9	55.3	54.9	55.3	N/A
360270007	NY	Dutchess	72.0	74	58.6	60.2	58.6	60.2	68
360290002	NY	Erie	71.3	73	58.3	59.7	58.2	59.6	69
360310002	NY	Essex	70.3	73	57.5	59.8	57.5	59.8	62
360310003	NY	Essex	67.3	69	55.1	56.5	55.1	56.5	65
360410005	NY	Hamilton	66.0	67	53.7	54.5	53.7	54.5	60
360430005	NY	Herkimer	62.0	63	50.5	51.3	50.5	51.3	63
360450002	NY	Jefferson	71.7	74	59.0	60.9	59.4	61.3	63
360530006	NY	Madison	67.0	67	55.0	55.0	55.0	55.0	N/A
360610135	NY	New York	73.3	76	65.3	67.8	64.2	66.5	69

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
360631006	NY	Niagara	72.3	75	60.5	62.8	59.5	61.7	66
360650004	NY	Oneida	61.5	64	50.5	52.5	50.5	52.5	N/A
360671015	NY	Onondaga	69.3	72	57.8	60.1	57.8	60.1	64
360715001	NY	Orange	67.0	69	55.3	56.9	55.3	56.9	66
360750003	NY	Oswego	68.0	70	55.7	57.4	55.6	57.2	60
360790005	NY	Putnam	70.0	71	58.4	59.2	58.4	59.2	68
360810124	NY	Queens	78.0	80	70.1	71.9	70.2	72.0	69
360830004	NY	Rensselaer	67.0	67	54.4	54.4	54.4	54.4	N/A
360850067	NY	Richmond	81.3	83	71.9	73.4	67.1	68.5	76
360870005	NY	Rockland	75.0	76	62.0	62.8	62.0	62.8	72
360910004	NY	Saratoga	67.0	68	54.3	55.1	54.3	55.1	63
361010003	NY	Steuben	65.3	67	54.4	55.9	54.4	55.9	59
361030002	NY	Suffolk	83.3	85	72.5	74.0	74.0	75.5	72
361030004	NY	Suffolk	78.0	80	66.3	68.0	65.2	66.9	72
361030009	NY	Suffolk	78.7	80	68.5	69.7	67.6	68.7	N/A
361111005	NY	Ulster	69.0	69	57.4	57.4	57.4	57.4	N/A
361173001	NY	Wayne	65.0	67	53.4	55.0	53.4	55.0	64
361192004	NY	Westchester	75.3	76	68.1	68.8	63.8	64.4	74
370030004	NC	Alexander	66.7	68	51.3	52.3	51.3	52.3	N/A
370110002	NC	Avery	63.3	65	48.1	49.3	48.1	49.3	62
370119991	NC	Avery	63.0	63	48.9	48.9	48.9	48.9	64
370210030	NC	Buncombe	66.7	68	48.8	49.8	48.8	49.8	63
370270003	NC	Caldwell	66.0	67	49.6	50.3	49.6	50.3	64
370330001	NC	Caswell	70.7	73	53.9	55.7	53.9	55.7	63
370370004	NC	Chatham	64.0	66	47.4	48.9	47.4	48.9	N/A
370510008	NC	Cumberland	68.7	70	51.1	52.0	51.1	52.0	61
370511003	NC	Cumberland	70.7	72	51.5	52.4	51.5	52.4	N/A
370590003	NC	Davie	71.0	73	53.5	55.0	53.5	55.0	N/A
370630015	NC	Durham	70.0	72	49.8	51.3	49.8	51.3	62
370650099	NC	Edgecombe	70.0	71	51.3	52.0	51.3	52.0	N/A
370670022	NC	Forsyth	75.3	78	56.6	58.6	56.6	58.6	67
370670028	NC	Forsyth	69.7	72	52.0	53.7	52.0	53.7	N/A
370670030	NC	Forsyth	72.7	76	55.0	57.5	55.0	57.5	68
370671008	NC	Forsyth	72.3	75	54.5	56.5	54.5	56.5	67
370690001	NC	Franklin	69.3	71	50.2	51.5	50.2	51.5	N/A
370750001	NC	Graham	70.3	72	54.4	55.7	54.4	55.7	64
370770001	NC	Granville	70.7	72	51.2	52.1	51.2	52.1	64
370810013	NC	Guilford	74.0	76	55.0	56.5	55.0	56.5	65
370870008	NC	Haywood	61.0	61	48.6	48.6	48.6	48.6	62

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
370870036	NC	Haywood	67.7	69	53.8	54.8	53.8	54.8	65
370990005	NC	Jackson	67.0	67	53.1	53.1	53.1	53.1	N/A
371010002	NC	Johnston	71.7	74	51.5	53.2	51.5	53.2	65
371070004	NC	Lenoir	67.7	69	51.7	52.7	51.7	52.7	63
371090004	NC	Lincoln	72.7	75	55.4	57.1	55.4	57.1	67
371170001	NC	Martin	66.3	67	50.7	51.2	50.7	51.2	60
371190041	NC	Mecklenburg	80.0	83	60.8	63.1	60.8	63.1	69
371191005	NC	Mecklenburg	75.0	77	56.4	57.9	56.4	57.9	N/A
371191009	NC	Mecklenburg	79.7	83	58.2	60.6	58.2	60.6	N/A
371239991	NC	Montgomery	66.0	66	47.2	47.2	47.2	47.2	61
371290002	NC	New Hanover	63.0	64	46.0	46.8	46.9	47.6	60
371450003	NC	Person	71.0	74	57.5	59.9	57.5	59.9	63
371470006	NC	Pitt	69.7	71	52.6	53.6	52.6	53.6	62
371570099	NC	Rockingham	71.0	73	56.2	57.8	56.2	57.8	66
371590021	NC	Rowan	75.3	78	54.5	56.5	54.5	56.5	65
371590022	NC	Rowan	75.0	77	53.7	55.2	53.7	55.2	N/A
371730002	NC	Swain	60.7	62	48.7	49.7	48.7	49.7	60
371790003	NC	Union	71.0	73	50.9	52.4	50.9	52.4	68
371830014	NC	Wake	70.3	72	51.3	52.6	51.3	52.6	65
371830016	NC	Wake	73.0	75	54.2	55.7	54.2	55.7	N/A
371990004	NC	Yancey	69.7	71	53.0	54.0	53.0	54.0	65
390030009	OH	Allen	73.0	74	59.6	60.4	59.6	60.4	66
390071001	OH	Ashtabula	77.3	79	60.7	62.1	61.3	62.7	70
390090004	OH	Athens	69.0	69	55.5	55.5	55.5	55.5	N/A
390170004	OH	Butler	77.0	79	62.2	63.8	62.2	63.8	72
390170018	OH	Butler	79.7	82	63.0	64.9	63.0	64.9	71
390179991	OH	Butler	77.0	77	59.7	59.7	59.7	59.7	69
390230001	OH	Clark	75.0	76	58.6	59.4	58.6	59.4	69
390230003	OH	Clark	74.0	75	58.6	59.4	58.6	59.4	67
390250022	OH	Clermont	78.7	82	60.2	62.7	60.2	62.7	70
390271002	OH	Clinton	78.7	82	59.3	61.8	59.3	61.8	70
390350034	OH	Cuyahoga	77.7	80	57.0	58.7	62.1	63.9	69
390350060	OH	Cuyahoga	68.5	70	52.4	53.6	54.1	55.3	64
390350064	OH	Cuyahoga	70.0	73	56.1	58.5	57.4	59.9	64
390355002	OH	Cuyahoga	76.7	80	56.9	59.4	61.0	63.7	68
390410002	OH	Delaware	73.0	74	58.5	59.3	58.5	59.3	67
390479991	OH	Fayette	72.0	72	55.6	55.6	55.6	55.6	68
390490029	OH	Franklin	80.3	82	65.3	66.7	65.3	66.7	71
390490037	OH	Franklin	75.0	76	60.8	61.6	60.8	61.6	66

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
390490081	OH	Franklin	71.0	73	57.7	59.4	57.7	59.4	67
390550004	OH	Geauga	74.7	78	59.0	61.6	59.0	61.6	71
390570006	OH	Greene	73.0	74	55.4	56.2	55.4	56.2	68
390610006	OH	Hamilton	82.0	85	65.0	67.4	65.0	67.4	72
390610010	OH	Hamilton	76.3	80	60.4	63.3	60.4	63.3	72
390610040	OH	Hamilton	78.7	80	63.2	64.3	63.2	64.3	71
390810017	OH	Jefferson	70.3	72	57.9	59.3	57.9	59.3	65
390830002	OH	Knox	73.7	75	57.6	58.6	57.6	58.6	67
390850003	OH	Lake	80.0	83	58.0	60.2	63.5	65.8	75
390850007	OH	Lake	71.7	73	53.0	54.0	56.1	57.2	67
390870011	OH	Lawrence	65.0	67	51.8	53.4	51.8	53.4	64
390870012	OH	Lawrence	70.0	72	57.6	59.2	57.6	59.2	67
390890005	OH	Licking	74.3	76	57.5	58.8	57.5	58.8	67
390930018	OH	Lorain	71.7	75	54.6	57.1	58.8	61.5	66
390950024	OH	Lucas	68.0	70	53.9	55.5	55.3	57.0	67
390950027	OH	Lucas	66.7	68	55.4	56.5	55.4	56.5	64
390950034	OH	Lucas	73.7	76	58.9	60.7	60.2	62.1	N/A
390970007	OH	Madison	74.3	76	56.5	57.8	56.5	57.8	68
390990013	OH	Mahoning	70.7	73	57.0	58.8	57.0	58.8	63
391030004	OH	Medina	69.0	69	55.9	55.9	55.9	55.9	64
391090005	OH	Miami	73.3	74	57.2	57.8	57.2	57.8	67
391130037	OH	Montgomery	76.7	78	60.6	61.6	60.6	61.6	70
391331001	OH	Portage	68.3	71	54.8	57.0	54.8	57.0	61
391351001	OH	Preble	72.3	74	58.0	59.3	58.0	59.3	67
391510016	OH	Stark	76.7	79	60.9	62.7	60.9	62.7	69
391510022	OH	Stark	72.0	73	57.3	58.1	57.3	58.1	64
391514005	OH	Stark	72.3	75	57.2	59.3	57.2	59.3	66
391530020	OH	Summit	72.0	74	58.8	60.4	58.8	60.4	61
391550009	OH	Trumbull	71.0	73	56.1	57.7	56.1	57.7	N/A
391550011	OH	Trumbull	76.3	79	60.8	63.0	60.8	63.0	68
391650007	OH	Warren	77.7	79	59.5	60.5	59.5	60.5	72
391670004	OH	Washington	71.3	74	56.4	58.5	56.4	58.5	65
391730003	OH	Wood	71.3	73	58.6	60.0	58.6	60.0	63
400019009	OK	Adair	73.7	76	58.6	60.4	58.6	60.4	61
400159008	OK	Caddo	74.7	77	61.2	63.1	61.2	63.1	N/A
400170101	OK	Canadian	75.7	76	60.4	60.6	60.4	60.6	65
400219002	OK	Cherokee	73.7	76	57.9	59.7	57.9	59.7	60
400270049	OK	Cleveland	75.0	76	61.8	62.7	61.8	62.7	66
400310651	OK	Comanche	74.7	77	62.6	64.5	62.6	64.5	65

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
400370144	OK	Creek	77.0	78	58.5	59.2	58.5	59.2	64
400430860	OK	Dewey	72.3	74	63.4	64.9	63.4	64.9	65
400719010	OK	Kay	73.0	77	60.3	63.6	60.3	63.6	63
400871073	OK	McClain	74.0	75	60.2	61.0	60.2	61.0	66
400892001	OK	McCurtain	68.0	68	58.9	58.9	58.9	58.9	N/A
400979014	OK	Mayes	76.3	78	56.6	57.9	56.6	57.9	62
401090033	OK	Oklahoma	76.7	78	62.7	63.8	62.7	63.8	67
401090096	OK	Oklahoma	76.0	77	61.5	62.4	61.5	62.4	65
401091037	OK	Oklahoma	78.3	79	64.4	65.0	64.4	65.0	68
401159004	OK	Ottawa	74.0	76	57.7	59.3	57.7	59.3	54
401210415	OK	Pittsburg	73.3	75	61.8	63.3	61.8	63.3	60
401359021	OK	Sequoyah	72.0	72	58.7	58.7	58.7	58.7	60
401430137	OK	Tulsa	79.0	80	61.0	61.7	61.0	61.7	N/A
401430174	OK	Tulsa	75.3	77	59.0	60.3	59.0	60.3	N/A
401430178	OK	Tulsa	76.7	78	60.9	61.9	60.9	61.9	63
401431127	OK	Tulsa	78.3	80	62.1	63.5	62.1	63.5	N/A
410050004	OR	Clackamas	64.0	66	55.0	56.8	55.0	56.8	65
410090004	OR	Columbia	51.3	53	45.3	46.8	45.3	46.8	54
410170122	OR	Deschutes	58.5	59	52.8	53.2	52.8	53.2	N/A
410290201	OR	Jackson	61.7	63	53.5	54.7	53.5	54.7	59
410390060	OR	Lane	58.0	59	48.3	49.2	48.3	49.2	61
410391007	OR	Lane	60.0	61	49.7	50.5	49.7	50.5	61
410470004	OR	Marion	59.3	61	49.7	51.1	49.7	51.1	65
410510080	OR	Multnomah	56.7	57	51.2	51.5	51.2	51.5	55
410591003	OR	Umatilla	61.3	62	51.2	51.8	51.2	51.8	65
410671004	OR	Washington	57.7	59	50.6	51.8	50.6	51.8	59
420030008	PA	Allegheny	76.3	79	65.5	67.8	65.5	67.8	67
420030010	PA	Allegheny	73.7	75	63.3	64.4	63.3	64.4	N/A
420030067	PA	Allegheny	75.7	78	63.0	65.0	63.0	65.0	68
420031008	PA	Allegheny	80.7	82	67.1	68.2	67.1	68.2	70
420050001	PA	Armstrong	74.3	75	60.6	61.2	60.6	61.2	70
420070002	PA	Beaver	70.7	72	59.5	60.6	59.5	60.6	70
420070005	PA	Beaver	74.7	77	63.0	64.9	63.0	64.9	68
420070014	PA	Beaver	72.3	74	61.0	62.5	61.0	62.5	65
420110006	PA	Berks	71.7	75	56.2	58.8	56.2	58.8	66
420110011	PA	Berks	76.3	79	58.9	61.0	58.9	61.0	71
420130801	PA	Blair	72.7	75	60.3	62.3	60.3	62.3	63
420170012	PA	Bucks	80.3	83	64.6	66.8	64.6	66.8	77
420210011	PA	Cambria	70.3	72	58.0	59.4	58.0	59.4	63

Site	St	County	2009-2013 Avg	2009-2013 Max	2023en "3x3" Avg	2023en "3x3" Max	2023en "No Water" Avg	2023en "No Water" Max	2014-2016
420270100	PA	Centre	71.0	73	59.1	60.8	59.1	60.8	63
420279991	PA	Centre	72.0	72	59.8	59.8	59.8	59.8	65
420290100	PA	Chester	76.3	79	58.7	60.8	58.7	60.8	73
420334000	PA	Clearfield	72.3	74	60.3	61.8	60.3	61.8	64
420430401	PA	Dauphin	69.0	69	54.7	54.7	54.7	54.7	66
420431100	PA	Dauphin	74.7	77	58.3	60.1	58.3	60.1	67
420450002	PA	Delaware	75.7	78	60.3	62.1	60.3	62.1	72
420490003	PA	Erie	74.0	76	59.1	60.7	59.5	61.1	66
420550001	PA	Franklin	67.0	68	53.2	53.9	53.2	53.9	60
420590002	PA	Greene	69.0	71	56.5	58.1	56.5	58.1	67
420630004	PA	Indiana	75.7	79	62.7	65.4	62.7	65.4	70
420690101	PA	Lackawanna	71.0	72	55.8	56.6	55.8	56.6	67
420692006	PA	Lackawanna	68.7	71	54.0	55.8	54.0	55.8	N/A
420710007	PA	Lancaster	77.0	80	60.1	62.4	60.1	62.4	69
420710012	PA	Lancaster	78.0	82	60.2	63.3	60.2	63.3	66
420730015	PA	Lawrence	71.0	73	58.0	59.6	58.0	59.6	68
420750100	PA	Lebanon	76.0	76	58.6	58.6	58.6	58.6	71
420770004	PA	Lehigh	76.0	78	59.5	61.1	59.5	61.1	70
420791100	PA	Luzerne	65.0	66	49.9	50.6	49.9	50.6	N/A
420791101	PA	Luzerne	64.3	66	49.9	51.2	49.9	51.2	64
420810100	PA	Lycoming	67.0	69	53.9	55.5	53.9	55.5	64
420850100	PA	Mercer	76.3	79	60.0	62.1	60.0	62.1	69
420890002	PA	Monroe	66.7	70	52.9	55.6	52.9	55.6	65
420910013	PA	Montgomery	76.3	78	61.0	62.4	61.0	62.4	72
420950025	PA	Northampton	74.3	77	58.5	60.6	58.5	60.6	70
420958000	PA	Northampton	69.7	71	54.8	55.9	54.8	55.9	69
420990301	PA	Perry	68.3	70	54.8	56.2	54.8	56.2	N/A
421010004	PA	Philadelphia	66.0	70	53.9	57.1	53.9	57.1	61
421010024	PA	Philadelphia	83.3	87	67.3	70.3	67.3	70.3	77
421011002	PA	Philadelphia	80.0	80	64.7	64.7	64.7	64.7	N/A
421119991	PA	Somerset	65.0	65	50.8	50.8	50.8	50.8	N/A
421174000	PA	Tioga	69.7	71	57.3	58.3	57.3	58.3	63
421250005	PA	Washington	70.0	72	57.6	59.2	57.6	59.2	68
421250200	PA	Washington	70.7	73	57.6	59.4	57.6	59.4	65
421255001	PA	Washington	70.3	71	57.9	58.5	57.9	58.5	68
421290006	PA	Westmoreland	71.7	74	60.1	62.0	60.1	62.0	N/A
421290008	PA	Westmoreland	71.0	73	58.0	59.6	58.0	59.6	68
421330008	PA	York	72.3	74	56.9	58.3	56.9	58.3	66
421330011	PA	York	74.3	77	58.0	60.1	58.0	60.1	N/A