FHFA Lacked Documentation of its Validation of Data Used to Produce the Third Quarter 2020 Seasonally Adjusted, Expanded-Data FHFA HPI and Failed to Timely Review its Information Quality Guidelines

Audit Report • AUD-2021-010 • July 22, 2021
Executive Summary

The Housing and Economic Recovery Act of 2008 created and charged the Federal Housing Finance Agency (FHFA) with the supervision of Fannie Mae and Freddie Mac (together, the Enterprises) and the Federal Home Loan Banks (collectively, the regulated entities). Since 2008, FHFA has also served as conservator of the Enterprises. FHFA, acting as conservator and regulator, follows mandates assigned to it by statute and oversees the missions assigned to the Enterprises by their charters.

The Enterprises provide liquidity, stability, and affordability to the nation’s mortgage market by acquiring single-family mortgage loans originated by thousands of banks, savings and loans, and mortgage companies. In 2020 for example, the Enterprises acquired $2.5 trillion of single-family mortgages.

By law, the Enterprises can only acquire single-family mortgages with origination balances below a specific dollar amount, known as a “conforming loan limit.” FHFA is required, by statute, to set a “baseline” conforming loan limit each year as well as conforming loan limits for higher cost and other geographic locations. On November 24, 2020, FHFA set the 2021 baseline conforming loan limit at $548,250, an increase from $510,400 in 2020. A critical element in establishing annual conforming loan limits is the seasonally adjusted, expanded-data FHFA House Price Index (hereafter referred to as “expanded-data HPI”). The expanded-data HPI, produced quarterly, is built on housing transaction information received from four sources: the Enterprises (Fannie Mae and Freddie Mac), the Federal Housing Administration (FHA), and contractor-provided county recorder data.

We performed this audit to determine whether FHFA followed its written procedures for ensuring the reliability of data used to create the third quarter 2020 (2020 Q3) expanded-data HPI, which was used to establish the 2021 conforming loan limits. Our audit focused on FHFA’s controls over determining the reliability of data it received from each source to generate the 2020 Q3 expanded-data HPI.

We found that FHFA’s Division of Research and Statistics (DRS) lacked documentation that showed it followed procedures to validate record counts and property addresses for data provided by the sources used to produce the 2020 Q3 expanded-data HPI. DRS’ procedures also did not set reasonable expectation ranges and therefore lacked a basis on which to validate property address data provided by two sources. Where possible, we performed tests of the data provided by the four sources based on DRS’ procedures; those tests revealed that the data provided from the sources conformed to the standard prescribed in DRS’ procedures.
We also found that FHFA failed to timely review its December 2017 Information Quality Guidelines. That review was directed by the Office of Management and Budget (OMB) in 2019.

To remediate the shortcomings found in this audit, we make three recommendations. In a written management response, FHFA partially agreed with the first recommendation and agreed with the second and third recommendations.

This report was prepared by Tara Lewis, Audit Director; Terese Blanchard, Auditor-in-Charge; and Brian Maloney, Auditor; with assistance from Abdil Salah, Assistant Inspector General for Audits; and Bob Taylor, Senior Advisor. We appreciate the cooperation of FHFA staff, as well as the assistance of all those who contributed to the preparation of this report.

This report has been distributed to Congress, the Office of Management and Budget, and others and will be posted on our website, www.fhfaoig.gov, and www.oversight.gov.

Marla A. Freedman, Senior Audit Executive /s/
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BACKGROUND

A Critical Element in Establishing FHFA’s Annual Conforming Loan Limits for Single-Family Mortgages Is the Expanded-Data House Price Index

FHFA is required, by statute, to set a baseline conforming loan limit each year as well as conforming loan limits for geographic locations where 115% of the local median home value exceeds the baseline conforming loan limit. A critical element in establishing annual conforming loan limits is the expanded-data HPI. Congress requires FHFA to establish and maintain a method to calculate the national average single-family house price. FHFA produces and publishes five FHFA house price indexes (HPIs) on a monthly, quarterly, or annual basis. Of these five HPIs, only one is used to calculate annual conforming loan limits – the third quarter (ending September 30) expanded-data HPI.

The quarterly expanded-data HPI is comprised of sales price information sourced from the Enterprises, FHA-backed mortgages, and county recorder offices (through CoreLogic, by contract). To set the baseline conforming loan limit for the following year, FHFA calculates the percentage change between the current year’s third quarter expanded-data HPI and the prior year’s third quarter expanded-data HPI. For example, FHFA determined, by comparing the two expanded-data HPIs for the third quarters of 2019 and 2020, that house prices increased 7.42 percent, on average. Accordingly, FHFA increased the conforming loan limit by 7.42 percent for 2021.

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1 Special statutory provisions establish different conforming loan limits for Alaska, Hawaii, Guam, and the U.S. Virgin Islands. In addition, FHFA is also required to set conforming loan limits for mortgages securing two-, three-, and four-family residences.


3 FHFA HPIs are used to provide information about house price changes in market segments such as refinances, FHA mortgages, and the entire single-family property market. In addition to the quarterly expanded-data HPI, FHFA produces the following HPIs: (1) Purchase-Only HPI – this index tracks changes in transaction prices for conforming, conventional mortgages that are purchased or securitized by the Enterprises; (2) All-Transactions HPI – this index adds appraisal values from refinance mortgages to the Purchase-Only HPI data; (3) Distress-Free HPI – this index removes sales of bank-owned properties and short sales from the Purchase-Only HPI data; and (4) Annual HPI – this index is constructed on a yearly basis to provide data for geographic areas (e.g., by county, ZIP code, and census tract). FHFA also produces HPIs for Puerto Rico.

4 In instances where the percentage change between the current year’s third quarter expanded-data HPI and the prior year’s third quarter expanded-data HPI does not increase, FHFA is required by statute to keep the baseline loan limit flat. In addition, after a period of declining home values, the statute requires that the prior declines be made up before the baseline limit can be increased.

5 FHFA explains that HPIs include indexes for nine census divisions (an example of a census division is Middle Atlantic: New York, New Jersey, Pennsylvania), the 50 states and the District of Columbia, and every Metropolitan Statistical Area in the United States, excluding Puerto Rico.
FHFA’s Procedures for Ensuring the Reliability of Data Used to Produce the Expanded-Data HPI

DRS, which is responsible for producing and distributing high quality data, analysis, research, and policy evaluation, is charged with producing FHFA’s HPIs. Consistent with FHFA’s Information Quality Guidelines and federal standards for internal control,6 DRS has adopted several written procedures that it asserts provide the required internal control for producing the HPIs.7 FHFA conducts tests to validate the data received from the Enterprises, FHA, and county recorder offices (through CoreLogic, by contract) before using it to produce the expanded-data HPI. FHFA’s stated purpose for these procedures is to mitigate the risk of producing reports with untimely or inaccurate data.

FACTS AND ANALYSIS ........................................................................................................

Lack of Documentation Frustrated Our Efforts to Determine Whether DRS Followed its Written Procedures for Ensuring the Reliability of Data Used to Produce the 2020 Q3 Expanded-Data HPI

The procedures used by DRS for validating source data included validating the number of records received and validating property addresses. According to DRS, these procedures provide sufficient internal controls to ensure the reliability of data received from these sources.

6 The Information Quality Act, enacted in December 2000, requires OMB to issue guidance to ensure the “quality, objectivity, utility, and integrity” of information disseminated to the public by federal agencies. To meet these statutory obligations, OMB issued “Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies,” effective January 2002, and directed federal agencies to issue their own information quality guidelines so that agencies will meet basic information quality standards. The agencies’ information quality guidelines were to, among other things, (1) embrace a basic standard of quality and consider quality in their information dissemination practices, and (2) develop information quality assurance procedures that are applied before disseminating information. Issued pursuant to OMB’s guidance, FHFA’s December 2017 Information Quality Guidelines state that “[T]he policies and procedures that FHFA currently has in place ensure, to the best of the Agency’s ability, that the quality of the information and data released to the public is accurate and appropriate and meets FHFA’s internal definitions of objectivity, utility, and integrity in accordance with the OMB Guidelines.”

7 The control activities component of the Standards for Internal Control in the Federal Government (the Green Book, issued pursuant to 31 U.S.C. § 3512 (c) and (d)), along with the underlying principle that federal agencies should design control activities to achieve the agency’s objectives and respond to risks. The Green Book instructs that management of an agency clearly documents internal control for all transactions and other significant events in a manner that allows the documentation to be readily available for examination. FHFA is subject to the Green Book. The Green Book is published by the Government Accountability Office (GAO). See GAO-14-704G (Sept. 2014).
**Validation of Number of Records Received**

Validation of the number of records received facilitates the determination of the completeness and consistency of the data received.

**Procedures for Validating the Number of Records Received from the Enterprises, FHA, and County Recorder Offices**

DRS obtains records from four sources to produce the quarterly expanded-data HPI: the two Enterprises, FHA, and county recorder offices (through CoreLogic, by contract). DRS uses slightly different procedures to validate the number of records received from each source.

- For the Enterprises, DRS runs queries to count the number of records received from each. DRS then compares the number of records counted through the queries to the record counts provided by each Enterprise. It also compares the current month’s record count to the previous month’s record count to identify significant (unexpected) changes in record counts from month to month.

- For the other two sources (FHA and CoreLogic), DRS receives housing transaction information from FHA and CoreLogic on a quarterly basis. DRS runs queries to count the number records received from each and compares the results of the queries to “reference numbers” in its procedures that establish reasonable expectation ranges for each source.

**Tests to Determine Whether DRS Followed its Procedures to Validate the Number of Records Received from these Four Sources**

We performed several tests to determine whether FHFA followed its procedures to validate the number of records received from each source in order to produce the 2020 Q3 expanded-data HPI.

1. Testing to determine whether queries were run. We found that DRS performed queries of the data received from each of the four sources, which totaled 131,886,257 records.

2. Testing to determine whether DRS compared the record counts produced by the queries against source documentation for each of the four sources. DRS was unable to provide documentation to show that it compared the total record counts generated from its queries to the total record counts provided by the Enterprises in their transmittal emails. It also lacked documentation to show that it compared the total record counts generated by the queries to the reference numbers in the DRS procedure documents for FHA and CoreLogic.
DRS officials asserted that they had performed these comparisons. These officials claimed that they did not document their comparison of the number of records received to source documents or reference numbers because it was not required in their guidance and it was not part of their production process to document every step they took to validate the data.

We performed testing to assess whether the record counts in the queries matched the record counts provided by the Enterprises and the reference numbers in DRS’ procedures document for the two other sources. We found that the record counts generated from DRS’ queries matched the numbers in the Enterprises’ transmittal emails. We also found that the record counts generated from DRS’ queries on data provided by FHA and CoreLogic were within the acceptable range of the reference numbers in the relevant DRS procedure documents.

3. Testing to compare the current month’s record count for each Enterprise to the previous month’s record count to monitor for significant (unexpected) changes in record counts from month to month. While DRS maintained the results of its queries, which showed the total number of records received from the Enterprises each month, we found that DRS did not document its comparison of record counts from month to month.

Our testing found that, for one Enterprise, the increase in the number of records received in September 2020 was comparable with the increase in the number of records received in prior months. For the other Enterprise, we found that the increase in the number of records received in September 2020 was not comparable with the number of records received in prior months. Specifically, the increase in the number of records received in September 2020 was more than one and one-half million greater than the number of records received in August 2020, and the increase in the number of records received in August 2020 was slightly more than a quarter of a million greater than the number of records received in July 2020. We asked DRS officials whether they inquired about the increase. DRS officials provided us with email correspondence between DRS and Enterprise to seek information about this difference, and DRS told us it was satisfied with the Enterprise’s response.8

8 In a technical comment to a draft of this report, DRS asserted that it reviewed the comparison of the Enterprises’ record counts from month to month and that it had provided the OIG with files that showed prior observation counts. As we reported in our results from test 3 above, we acknowledge that DRS maintained the results of its queries, which showed the total number of records received from the Enterprises each month. However, DRS did not maintain documentation that showed that it had made such a comparison of the count of records from month to month, contrary to the Green Book.
Validation of Addresses

Validation of addresses, by standardizing the input of addresses according to the U.S. Postal Service (USPS) specifications, facilitates the identification of repeat transactions for the same property over time. Repeat sales transactions are included in the quarterly expanded-data HPI.

Procedures to Validate the Addresses Received from the Enterprises, FHA, and the County Recorder Offices

DRS’ written procedures require it to use a process known as “address scrubbing,” which involves standardizing addresses to validate property addresses for the data received from the Enterprises, FHA, and CoreLogic. For example, an address of “123 Elm St.” will be standardized to “123 Elm Street.” DRS procedures require validation of the address scrubbing results for the Enterprises by comparing the percentage of addresses scrubbed for the Enterprises to acceptable ranges in its procedures. For example, for the Enterprise data, the procedures call for 92% to 96% of the addresses to be standardized to USPS specifications.

DRS’ written procedures do not require validation of address scrubbing results for FHA and CoreLogic data. DRS officials reported to us that the lack of a procedure requiring address scrubbing was an oversight.9

Testing to Determine Whether DRS Validated Addresses

1. Testing to determine whether DRS standardized property addresses to USPS specifications for each of the four sources. We found that DRS performed this procedure for all four sources.

2. Testing to determine whether DRS obtained address scrubbing success rates for all four sources. DRS produced reports showing address scrubbing success rates for all four sources.

3. Testing to determine whether DRS compared the address scrubbing success rates for the Enterprises’ data to the reference numbers in the DRS procedures document. In a technical comment to a draft of this report, DRS asserted that it always checks address scrubbing success rates to validate that they fall within a certain range. While DRS produced reports showing address scrubbing success rates for the Enterprises, those reports did not show any comparison of these success rates to the reference numbers nor did DRS produce any other documentation with this comparison. DRS officials claimed that comparison of the address scrubbing rates to the reference numbers was

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9 In a technical comment to a draft report, DRS asserts that its officials did not make this statement to us. Our contemporaneous records of interviews are to the contrary.
performed but not documented because documentation was not required by their
guidance and their internal production process did not require documentation of steps
taken to validate the data.

We compared the address scrubbing success rates for the Enterprises against the range
of the reference numbers in the DRS procedure documents and found that the rates fell
within the prescribed ranges.

DRS officials asserted that they looked at the address scrubbing success rates for the FHA and
CoreLogic data but did not document those efforts. In a technical comment to a draft of this
report, DRS maintained that it always checks the FHA and CoreLogic address scrubbing
success rates against prior rates. However, we found that DRS’ written procedures do not
require the validation of the address scrubbing success rates nor do they provide a range of
acceptable address scrubbing success rates. Because DRS had not established a standard for
address scrubbing success rates for FHA and CoreLogic, it lacked a standard against which it
could conduct any comparison to validate the data.

**FHFA Failed to Timely Review its December 2017 Information Quality Guidelines as
Directed by OMB in 2019**

In April 2019, OMB issued Memorandum M-19-15, *Improving Implementation of the
Information Quality Act* (M-19-15), which provided updates to the implementation of its prior
guidelines issued to reflect recent innovations in information generation, access, management,
and use, and to help agencies address common problems with maintaining information
quality. This Memorandum directed agencies to update their information quality guidelines
within 90 days. Among other things, M-19-15 instructs “Drawing on experience
implementing the [January 2002 “Guidelines for Ensuring and Maximizing the Quality,
Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies”],
agencies should revisit the parameters for identifying ‘influential information.’”

During our audit we inquired whether FHFA had revisited its 2017 Information Quality
has not completed its evaluation and development activities around M-19-15. [FHFA’s Office
of General Counsel] and DRS will work with other stakeholders to recommit to the timely
completion of the evaluative and developmental processes around implementation of the
guidance.”
FINDINGS ........................................................................................................

- Lack of documentation frustrated our efforts to determine whether DRS followed its written procedures for ensuring the reliability of data used to produce the 2020 Q3 expanded-data HPI.
- FHFA failed to timely review its December 2017 Information Quality Guidelines as directed by OMB in 2019.

CONCLUSION .....................................................................................................

DRS lacked documentation to show that it followed its written procedures for ensuring the reliability of data used to produce the 2020 Q3 expanded-data HPI, which is used by FHFA to calculate annual conforming loan limits. DRS also did not establish a standard in its written procedures or elsewhere to validate address scrubbing rates for FHA and CoreLogic data. Additionally, FHFA acknowledged, as of April 2021, that it had not completed timely review of its 2017 Information Quality Guidelines, as directed by OMB in 2019.

RECOMMENDATIONS .........................................................................................

We recommend that FHFA:

1. Enhance guidance and HPI production processes to include written requirements that DRS document its performance of validation procedures and when necessary, follow-up on exceptions or anomalies identified through those procedures.

2. Enhance guidance and HPI production processes to establish reference numbers for address scrubbing success rates for FHA and CoreLogic data.

3. Complete in an expedite manner, its evaluation and development activities related to the FHFA Information Quality Guidelines in response to M-19-15 and update the Guidelines, as deemed necessary.
FHFA COMMENTS AND OIG RESPONSE

OIG provided FHFA an opportunity to respond to a draft of this audit report. FHFA provided technical comments that we incorporated into this final report, as appropriate. On July 7, 2021, FHFA provided its management response, which is provided in the Appendix. In its response, FHFA partially agreed with recommendation 1, and agreed with recommendations 2 and 3. FHFA’s comments and our responses are below.

**FHFA Comments to Recommendation 1**

FHFA partially agrees with this recommendation. FHFA asserts that DRS may not document successful validation checks but will follow-up on data exceptions or anomalies that fail a check. For any check failure, DRS staff will investigate and document any corrective action or acceptance, as appropriate, prior to data production. FHFA further states that the HPI production documentation has been enhanced to include requirements for written confirmation of selected validation checks. Unless otherwise documented, successful validation checks will not need to be documented.

OIG Response to FHFA Comments to Recommendation 1. We acknowledge FHFA’s commitment to document follow-up on data exceptions or anomalies that fail a validation check. FHFA’s written response stating that it may not document successful validation checks does not meet the intent of our recommendation. Therefore, we consider this recommendation rejected.

**FHFA Comments to Recommendation 2**

FHFA agrees with this recommendation, and DRS has enhanced the documentation per the recommendation.

OIG Response to FHFA Comments to Recommendation 2. We consider the recommendation met.

**FHFA Comments to Recommendation 3**

FHFA agrees with this recommendation. The Office of General Counsel will work with FHFA stakeholders to complete the evaluation of the OMB Guidance and update the FHFA Information Quality Guidelines as necessary by January 31, 2022.

OIG Response to FHFA Comments to Recommendation 3. We consider FHFA’s planned corrective actions to meet the intent of our recommendation.
OBJECTIVE, SCOPE, AND METHODOLOGY .................................

The objective of the audit was to determine whether FHFA followed its written procedures for ensuring the reliability of data used to create the 2020 Q3 expanded-data HPI, which was used to establish the 2021 conforming loan limits. The expanded-data HPI, produced quarterly, is built on housing transaction information received from four sources: the Enterprises, FHA, and county recorder data through CoreLogic. Our audit focused on FHFA’s controls over determining the reliability of data it received from each source to generate the 2020 Q3 expanded-data HPI.

To accomplish our objective, we:

- Reviewed laws and regulations relevant to the FHFA HPI including the Housing and Economic Recovery Act and the Information Quality Act;

- Reviewed FHFA’s Information Quality Guidelines and procedures for ensuring the reliability of data used to create the FHFA HPI that were in effect during our review period, including Production Steps to the HPI Release (for housing transaction data received from the Enterprises); DRS’s Steps to HUD FHA (Expanded-Data) Data Processing and Scrubbing (for housing transaction data received from FHA); and DRS’s Steps to the Data Quick Data (for Real Estate Owned and Regular Transactions) Processing (for housing transaction data received from CoreLogic on county records);

- Reviewed FHFA’s House Price Index webpage, found here, and related documentation including FHFA’s HPI: news releases and reports; facts and questions; and Methodology: HPI Technical Paper;

- Interviewed FHFA officials regarding the controls in place and the process they follow for ensuring the reliability of FHFA HPI data received from the Enterprises, FHA, and CoreLogic; and

- Tested FHFA’s implementation of selected controls over determining the reliability of data it received from each source to produce the expanded-data HPI using FHFA’s HPI production procedures and GAO’s Standards for Internal Control in the Federal Government. We determined that the Control Activities component of internal control was significant to our objective, along with the underlying principle that management should design control activities to achieve objectives and respond to risks. Specifically, we:
Determined if DRS validated the number of records received from four sources. First, we reviewed DRS’s documentation from the queries that generated the total record counts of the files received from the four sources. DRS did not have documentation showing its comparison between the total record counts generated from the queries and the total record counts provided by the Enterprises in their transmittal emails or to the reference numbers contained in the DRS procedure documents for FHA and CoreLogic. Accordingly, we performed those comparisons. Next, from DRS’s report showing the total number of records received from the Enterprises, we calculated the change in the number of housing transactions from August 2020 to September 2020 and compared that change to prior months’ record count changes.

Determined if DRS validated the address scrubbing success rates for the Enterprises. We reviewed DRS’s documentation from the queries that calculate the address scrubbing success rates. DRS did not have documentation showing its comparison between the address scrubbing success rates generated from the queries and the address scrubbing success rate reference numbers contained in DRS’s procedures; accordingly, we performed those comparisons.

Inquired whether FHFA’s Information Quality Guidelines was reviewed in response to OMB M-19-15.

We conducted this performance audit between October 2020 and July 2021 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.
APPENDIX: FHFA MANAGEMENT RESPONSE

Federal Housing Finance Agency

MEMORANDUM

TO: Marla Freedman, Senior Audit Executive, Office of Inspector General

FROM: Lynn M. Fisher, Deputy Director, Division of Research and Statistics
       Clinton C. Jones III, General Counsel, Office of General Counsel

SUBJECT: Draft Audit Report: FHFA Lacked Documentation of its Validation of Data Used to Produce the Third Quarter 2020 Seasonally Adjusted, Expanded-Data FHFA HPI and Failed to Timely Review its Information Quality Guidelines

DATE: July 7, 2021

Thank you for the opportunity to review the above-referenced Office of Inspector General (OIG) draft audit report (Report). The objective of the audit was to determine whether the production of the Federal Housing Finance Agency House Price Index® (FHFA HPI) followed policies and procedures for ensuring the reliability of data. The original audit objectives were expanded over the course of the audit as the Division of Research and Statistics (DRS) staff shared information with the auditors related to the FHFA HPI production process.

DRS is pleased that the OIG’s final report corroborated the number of records received and that address record matching was within acceptable ranges. DRS has further strengthened the FHFA HPI written documentation that addresses the recommendations in the Report.

Management’s responses to the Report’s recommendations are below.

**Recommendation No. 1:** Enhance guidance and HPI production processes to include written requirements that DRS document its performance of validation procedures and when necessary, follow-up on exceptions or anomalies identified through those procedures.

**Management Response:** FHFA partially agrees with the recommendation. FHFA may not document successful validation checks but will follow-up on data exceptions or anomalies that fail a check. For any check failure, DRS staff will investigate and document any corrective action or acceptance, as appropriate, prior to data production. The HPI production documentation has been enhanced to include requirements for written confirmation of selected validation checks. Unless otherwise documented, successful validation checks will not need to be documented. FHFA appreciates this recommendation and considers it to be complete.
** Recommendation No. 2: ** Enhance guidance and HPI production processes to establish reference numbers for address scrubbing success rates for FHA and CoreLogic data.

**Management Response:** FHFA agrees with the specific recommendation and DRS has enhanced the documentation as per the recommendation. However, FHFA reiterates that address scrubbing success rates were checked as part of the production process. FHFA appreciates the recommendation and considers it to be complete.

** Recommendation No. 3: ** Complete in an expedite manner, its evaluation and development activities related to the FHFA Information Quality Guidelines in response to M-19-15 and update the Guidelines, as deemed necessary.

**Management Response:** FHFA agrees to the recommendation. The Office of General Counsel will work with FHFA stakeholders to complete the evaluation of the OMB guidance and update the FHFA Information Quality Guidelines as deemed necessary by January 31, 2022.
ADDITIONAL INFORMATION AND COPIES

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