

2020 Census Detailed Operational Plan for: 24. Count Question Resolution Operation (CQR)

A New Design for the 21st Century

Issued: March 31, 2020

Version: 1.0

Prepared by: Decennial Census Management Division



[Page intentionally left blank.]

Approvals

This CQR Detailed Operational Plan has been reviewed and approved for use.

Electronically Approved

Melody Troxell
Team Lead, CQR Branch, DCMD

2/21/2020

Date Signed

Electronically Approved

Matthew Frates
Chief, Count Question Resolution (CQR) Branch, DCMD

2/21/2020

Date Signed

Electronically Approved

Francis McPhillips
Assistant Division Chief, Geographic Operations,
DCMD

2/21/2020

Date Signed

Electronically Approved

Jennifer Reichert
Acting Division Chief, Decennial Census Management
Division (DCMD)

3/31/2020

Date Signed

Document Change History

Revision #	Version	Date	Description
1	v0.01	7/24/19	<ul style="list-style-type: none"> Initial Working DRAFT Version from 2020 Census DOP template.
2	v0.02	12/12/2019	<ul style="list-style-type: none"> Initial draft with detailed CQR information. Includes expanded background, CQR working process and closeout.
3	V0.03	12/23/2019	<ul style="list-style-type: none"> Review of outstanding comments/track changes.
4	V0.04	1/30/2020	<ul style="list-style-type: none"> Resolution of outstanding comments/track changes.
5	V0.05	2/7/2020	<ul style="list-style-type: none"> Clarifying language about “housing” to include housing units and group quarters.
6	V1.0	2/26/2020	<ul style="list-style-type: none"> Updating approvals page. Uses CQR BPM 2.2 dated December 11, 2019 with annotation.

Note: The fields below control the document version, date, and status in the page footers throughout the document.

Document Footer Information Control Table

Field Name	Version, Date and Status
DocVersion:	Version 1.0
DocDate:	March 31, 2020
DocStatus:	Final

Table of Contents

1. Document Purpose	1
2. Operational Overview.....	2
2.1 Operation Purpose.....	2
2.2 Background	2
2.3 Design Overview.....	3
2.3.1 High-Level Operational Design	3
2.3.2 CQR Operational Context.....	5
2.3.2.1 CQR Operational Inputs.....	6
2.3.2.2 CQR Operational Controls	7
2.3.2.3 CQR Operational Outputs.....	8
2.3.2.4 CQR Operational Mechanisms.....	10
2.4 CQR Data Flow and Operational Influences.....	11
3. CQR Detailed Process Description	18
3.1 Case Receipt and Initial Processing [CQR 24-1].....	19
3.1.1 Receive and Preprocess Case [CQR 24-1.1]	20
3.2 Geocoding, Coverage, and Boundary Review [CQR 24-2].....	21
3.2.1 Process Boundary Case Resolutions [CQR 24-2.1]	22
3.2.2 Process Geocoding and Coverage Case Resolutions [CQR 24-2.2]	24
3.2.2.1 Research and Resolve Case [CQR 24-2.2.1]	26
3.3 Final Results [CQR 24-3]	27
3.3.1 Process Final Case Results [CQR 24-3.1].....	28
3.3.2 Release Final Results [CQR 24-3.2].....	29
3.4 CQR Closeout [CQR 24-4]	30
3.4.1 Closeout [CQR 24-1.1].....	30

4. Cost Factors	32
5. Measures of Success	33
Appendix A – Acronyms and Terminology.....	34
Appendix B – References.....	38
Appendix C – Activity Tree for CQR	39

List of Figures

Figure 1: Count Question Resolution (CQR) Operation Context Diagram.....	6
Figure 2: 2020 Census Data Products and Archiving Integrated Operations Diagram.....	13
Figure 3: CQR Context Model	18
Figure 4: Case Receipt and Initial Processing [CQR 24-1] Constituent Activities.....	19
Figure 5: Receive and Preprocess Case	20
Figure 6: Geocoding, Coverage, and Boundary Review [CQR 24-2] Constituent Activities.....	22
Figure 7: Process Boundary Case Resolutions	23
Figure 8: Process Geocoding and Coverage Case Resolutions	24
Figure 9: Research and Resolve Case.....	26
Figure 10: Final Results [CQR 24-3] Constituent Activities	27
Figure 11: Process Final Case Results.....	28
Figure 12: Release Final Results.....	29
Figure 13: CQR Closeout [CQR 24-4] Constituent Activities.....	30

List of Tables

Table 1: CQR Operational Inputs	7
Table 2: CQR Operational Controls.....	7
Table 3: CQR Operational Outputs	9

Table 4: Staff Resources Used Within CQR Operational Activities.....10

Table 5: Infrastructure Sites for CQR Operational Activities.....10

Table 6: Systems Used Within CQR Operational Activities.....11

Table 7: Acronyms and Abbreviations List34

Table 8: Glossary of Terms36

[Page intentionally left blank.]

1. Document Purpose

The 2020 Census Detailed Operational Plan for the Count Question Resolution operation (CQR) is intended for use by U.S. Census Bureau managers, staff, contractors, and other internal and external stakeholders working on the 2020 Census. The document presents the detailed operational design for the 2020 Census CQR and includes a summary of the operational processes involved, their inputs, outputs, controls, and the basic mechanisms employed to conduct the operational work.

Anticipated uses of this document include the following:

- Communication—Documents operational design details for internal and external stakeholders.
- Planning—Documents planning assumptions and key milestones.
- Staffing—Documents staffing needs and strategies.
- Design—Describes operations and flows, which inform design of IT systems, manual processes, and training.
- Development—Identifies business rules and required capabilities to be developed.
- Testing—Provides a basis for developing integrated test plans for IT systems and processes.

This document complements the 2020 Census Operational Plan, which presents the 2020 Census operational design and covers all operations required to execute the 2020 Census, starting with precensus address and geographic feature updates and ending once census data products are disseminated and coverage and quality are measured.

2. Operational Overview

2.1 Operation Purpose

The purpose of the 2020 Census CQR is to provide a mechanism for governmental units (GUs) to request a review of their official 2020 Census results. The 2020 Census CQR is the final operation by which updates to the 2020 Census data can be made. Tribal chairpersons and the highest elected officials (or their representative) from state and local governments in the United States and Puerto Rico can submit a CQR case to request review of the official 2020 Census counts of population and housing, and to correct boundary, geocoding, and certain coverage issues.

2.2 Background

The U.S. Census Bureau has established the 2020 Census CQR, by which tribal, state, and local government officials may request a review of their jurisdiction's 2020 Census counts to determine whether they were affected by processing issues, which, if found during CQR case research, would result in corrected 2020 Census population and housing data. The Census Bureau will use the updated counts to:

- Modify the decennial census file for use in annual postcensal estimates beginning in 2022.
- Create the errata information made available on the Census Bureau website.

The 2020 Census CQR is not a mechanism to revise the counts sent to the Office of the President by December 31, 2020, which are used to apportion the U.S. House of Representatives. The Census Bureau does not make any changes to the apportionment, redistricting, or official 2020 Census data products.

The Census Bureau partners with tribal, state, and local GUs across the nation to help ensure a complete and accurate count in the decennial census. The objective of the decennial census is to count everyone once, only once, and in the right place. Historically, there has been a small percentage of instances where an incorrect geographic boundary or coding of housing* was used to produce the official census population and housing counts. There may also be processing issues that are reflected in the data, which allow CQR cases from communities to be reviewed in order for the Census Bureau to change outcomes and publish revised counts. The Census Bureau does not collect any additional data during this review process.

**See Table 8 in Appendix for definition*

If these CQR cases result in a change, the Census Bureau delivers new, officially revised, counts to the affected GUs. GUs can use the updated data for future programs that require official 2020 Census data. These results are also used to calculate subsequent population estimates for each community.

In the past, CQR has accepted cases from GUs through paper, fax, or email for processing. These requests included a variety of supporting materials for the Census Bureau to support research and validate each CQR case. The 2020 Census CQR will leverage new technologies to provide a more streamlined process for GUs to submit their cases and receive final, corrected population and housing data.

2.3 Design Overview

The sections below present the high-level design for the 2020 Census CQR. Please refer to the 2020 Census Operational Plan for a complete inventory of design decisions for all 2020 Census operations.

2.3.1 High-Level Operational Design

The design of the 2020 Census CQR includes four major operational activity areas:

- Case Receipt and Initial Processing.
- Geocoding, Coverage, and Boundary Review.
- Final Results.
- CQR Closeout.

Each of these major activity areas is summarized below. Together, these activities represent the complete set of work that needs to be performed to conduct this operation.

Case Receipt and Initial Processing

Staff in the Decennial Census Management Division (DCMD) at the Census Bureau receive CQR case inquiries from GUs and log them in the CQR Production Control System (PCS). DCMD staff review case information to determine its accuracy and completeness and ensure the CQR PCS reflects the receipt of the case. If a case is in scope, DCMD staff send correspondence confirming receipt of the case to the GU's highest elected official or tribal chairperson and assign the case for further review and research. DCMD staff also inform the appropriate tribal chairperson or highest elected official if their case is out of scope for the operation.

Geocoding, Coverage and Boundary Review

After DCMD staff determine a CQR case is in scope (CQR case meets all submission criteria, information is complete and sufficient as described in the CQR guidelines and materials [and in further sections of this document]), Census Bureau staff review case information to determine the appropriate action. If a case is associated with the inaccurate recording of a legal boundary, the boundary change must be effective on or before January 1, 2020. Additionally, if the boundary change is the result of a legal action, such as an annexation, de-annexation, disincorporation, or new incorporation, the case information must include legal documentation authorizing the boundary change. Further, staff review the required list of addresses included within the geographic area encompassed by the boundary change.

If an initially submitted case is associated with a coverage or geocoding error, staff review the GU-submitted block counts of housing. Coverage or geocoding cases that are resubmitted or that dispute the result of a completed CQR case must include a list of addresses with map spots or coordinates to support additional case research. The CQR staff conducts research as needed.

Final Results

The 2020 Census CQR will resolve all cases and notify all affected GUs of findings and applicable updates made to the Master Address File/Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) system, as well as prepare and deliver final data/errata files to other Census Bureau stakeholders and to the web. The Census Bureau does not change the apportionment counts that are delivered to the Office of the President by December 31, 2020, nor the data used for redistricting purposes to reflect the results of a CQR case. The Census Bureau will not incorporate CQR corrections into any 2020 Census data products. However, the Census Bureau will issue the revised, certified population and housing unit counts for each affected GU, maintain a list of CQR-corrected geographic areas on the web, and will incorporate any corrections to other postcensal estimate programs as necessary.

CQR Closeout

All CQR cases and results are tracked, verified, completed and reported to all stakeholders in the Census Bureau and each GU. These results are published accordingly on the Census website. After all case information has been completed, the case status is closed in the CQR PCS. Once every case has been closed in the CQR PCS, the 2020 Census CQR can be closed out.

The full hierarchy of activities for the 2020 Census CQR is provided in Appendix C in the form of an Activity Tree. In the Activity Tree, each major operational activity area listed above is

numbered and then decomposed into a numbered set of subactivities, some of which are further decomposed into more detailed numbered subactivities or steps.

For a full description of the operational subactivities that comprise the 2020 Census CQR, see the Detailed Process Description discussions in Section 3 below.

2.3.2 CQR Operational Context

The CQR operational activities described above are conducted within the context of other 2020 Census operations and other programs or data sources that are external to the 2020 Census Program. One way to depict an operational context is by using a “Context Diagram,” which shows the boundary of the operational process, the operational activities it contains, and the information exchanged with its neighbor operations (or other entities) as well as the resources (mechanisms) needed to conduct the operational work.

[Figure 1](#) is a top-level context diagram for the 2020 Census CQR represented as an Integrated Definition, Level 0 (IDEF0) model. An IDEF0 model of a process (or operation) shows the Inputs, Controls, Outputs, and Mechanisms of the process. These IDEF0 model elements are summarized below and described further in the sections that follow.

The yellow box in the center of the IDEF0 model lists the major operational activity areas for the operation, numbered as given in the CQR activity tree in Appendix C. Specific Information Exchanges (IE) are shown in different colored boxes to represent the Inputs (green boxes on left side), Outputs (orange boxes on right side), Controls (purple boxes on top), and Mechanisms (blue boxes on the bottom). Boxes to the left of the Inputs indicate the *Provider* of the inputs to the operation (typically another 2020 Census operation or an external source). The Provider of the Controls is noted in the box itself. Boxes to the right of the Outputs indicate the *Receiver* of the outputs (typically another 2020 Census operation or external entity). Each Information Exchange has a name and a unique number for identification purposes.

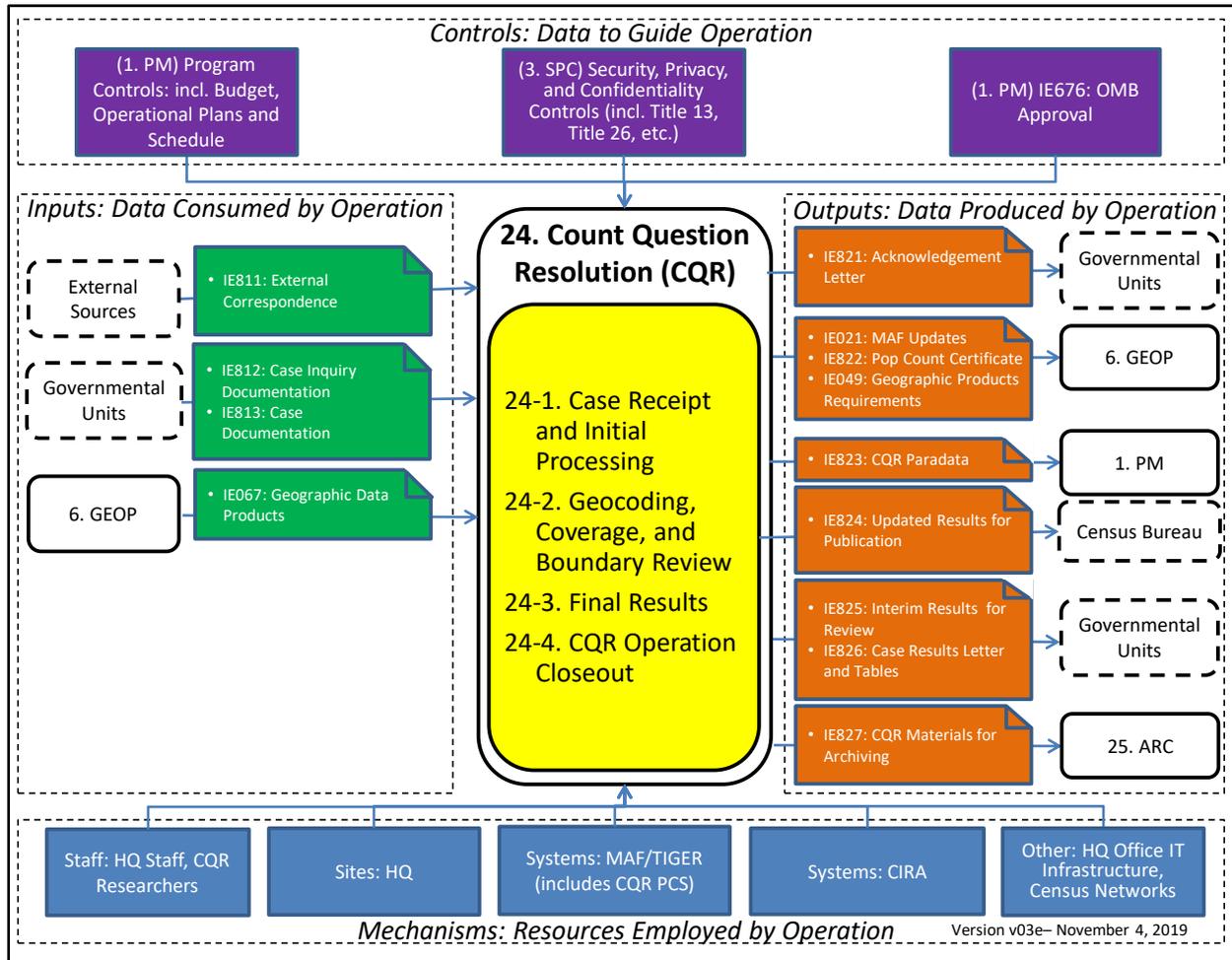


Figure 1: Count Question Resolution (CQR) Operation Context Diagram

For detailed descriptions of the Inputs, Controls, Outputs, and Mechanisms used by the 2020 Census CQR, see the sections that follow.

2.3.2.1 CQR Operational Inputs

Inputs are the data that are consumed by the operation. The inputs define the amount of operational work that needs to be performed.

Table 1 lists the inputs to the 2020 Census CQR.

Table 1: CQR Operational Inputs

Provider	Information Exchange	Description
External Sources	IE811: External Correspondence	Documentation submitted by tribal, state, and local governments in support of CQR cases.
GUs	IE812: Case Inquiry Documentation	Documentation regarding a CQR case inquiry. An example would be a question about status of reviewing a case.
GUs	IE813: Case Documentation	CQR case documentation, including address lists, block count lists of housing (housing unit (HU) and/or group quarters (GQ)), and/or maps displaying boundary changes.
6. Geographic Programs operation (GEOP)	IE067: Geographic Data Products	The geographic products needed to conduct the specific 2020 Census operations work. For CQR, this includes maps and shapefiles displaying legal boundaries, as well as block counts lists displaying the count of housing by block.

2.3.2.2 CQR Operational Controls

Controls are the data that guide the behavior of the operation. They are not consumed by the operation, but rather they provide guidance, models, limits, criteria, cutoff dates, or other information that controls the way in which the operational work is performed.

Table 2 lists the controls for the 2020 Census CQR.

Table 2: CQR Operational Controls

Provider	Information Exchange	Description
1. Program Management operation (PM)	Program Controls	Program Control information including: <ul style="list-style-type: none"> • Budget. • Operational plans and schedule.

Provider	Information Exchange	Description
3. Security, Privacy, and Confidentiality operation (SPC)	Security, Privacy, and Confidentiality Controls	Laws, policies, regulations, and guidelines related to physical security, information technology (IT) security, data security, and privacy and confidentiality impacts, analyses, and processes. These include but are not limited to Title 13, Title 26, and other laws and policies related to protection of personally identifiable information.
1. Program Management operation (PM)	IE676: OMB Approval	To avoid overburdening the public with federally sponsored data collections, the Paperwork Reduction Act (PRA) of 1995 requires that U.S. federal government agencies obtain Office of Management and Budget (OMB) approval before requesting or collecting most types of information from the public. OMB approval must be obtained before collecting federally sponsored data, whether the request is delivered in person, on the phone, or online.

2.3.2.3 CQR Operational Outputs

Outputs are the data produced by the operation. The outputs constitute the results of operational work that has been performed. Outputs produced may be used as inputs or controls to other operations.

Table 3 lists the outputs from the 2020 Census CQR.

Table 3: CQR Operational Outputs

Consumer	Information Exchange	Description
GUs	IE821: Acknowledgement Letter	Letter sent from DCMD staff to a governmental unit acknowledging receipt of case inquiry.
6. Geographic Programs operation (GEOP)	IE021: MAF Updates	Updated address data from Geography Division used for MAF updates by DITD.
6. Geographic Programs operation (GEOP)	IE822: Pop Count Certificate	Certified population counts produced by Population Division staff after the processing of CQR cases.
6. Geographic Programs operation (GEOP)	IE049: Geographic Products Requirements	Requirements for the geographic products needed to support CQR activities.
1. Program Management operation (PM)	IE823: CQR Paradata	Status and progress data related to the CQR process.
Census Bureau	IE824: Updated Results for Publication	Updates to population and housing counts and boundaries resulting from CQR cases.
GUs	IE825: Interim Results for Review	Interim boundaries provided to GUs for review.
GUs	IE826: Case Results Letter and Tables	Letter from DCMD staff advising GUs of the outcome of their CQR case, including any revised population and/or housing counts.
25. Archiving operation (ARC)	IE827: CQR Materials for Archiving	Materials received from GUs and products developed by CQR during the operation.

2.3.2.4 CQR Operational Mechanisms

Mechanisms are the resources (people, places, and things) that are used to perform the operational processes. They include staff resources, infrastructure sites, systems, and other technology infrastructure.

Staff Resources

Table 4 identifies the staff resources employed for the 2020 Census CQR.

Table 4: Staff Resources Used Within CQR Operational Activities

Staff Resources	Description/Role
Headquarters (HQ) Staff	HQ staff (from DCMD, Decennial Statistical Studies Division, and Population Division) who perform work for CQR. This includes a role for CQR agents.
CQR Researchers	Census Bureau staff (from Geography Division, Field Division, and National Processing Center) who support CQR by researching addresses, geocoding, or other elements of a case.

Infrastructure Sites

Table 5 identifies the Infrastructure Sites employed for the 2020 Census CQR.

Table 5: Infrastructure Sites for CQR Operational Activities

Infrastructure Site	Description/Role
Headquarters (HQ)	HQ site for office work conducted in support of CQR. This permanent site in Suitland, Maryland, manages the operation throughout the country.
National Processing Center (NPC)	CQR boundary cases are researched, and spatial updates are made, by staff at the NPC.

Systems and Other Technology Infrastructure

Table 6 identifies the systems employed for the 2020 Census CQR.

Table 6: Systems Used Within CQR Operational Activities

System	Description
Master Address File/Topologically Integrated Geographic Encoding & Referencing System (MAF/TIGER) (Includes CQR PCS)	A Census Bureau system that provides address and spatial data products for participants and a mechanism for applying updates made by participants. MAF/TIGER includes a number of component systems and utilities. CQR uses the CQR PCS to track all aspects of the operation.
Census Imaging and Retrieval Application (CIRA)	Manages scanned image data for further processing and subsequent archiving. CQR uses CIRA to access 2020 Census response data for case research.

Other technology infrastructure employed for CQR includes:

- Headquarters (HQ) office IT infrastructure.
- Census networks.

2.4 CQR Data Flow and Operational Influences

Figure 2 is an Integrated Operations Diagram (IOD), which describes the design concepts for all 2020 Census operations associated with the development and dissemination of 2020 Census data products covering the 50 states, the District of Columbia, and Puerto Rico. The Data Products and Dissemination operation (DPD) is the primary operation involved in these activities. DPD receives data from the Response Processing Operation (RPO), the Geographic Programs operation (GEOP), and the Federally Affiliated Count Overseas operation (FACO) to create apportionment data products (counts), which are delivered to the President for use by Congress for apportioning seats in the House of Representatives. Data from RPO and GEOP are also used to create redistricting data products for use by the states for redistricting and other data products for use by the public. DPD also receives data for the Island Areas Censuses operation (IAC) from GEOP and the RPO Island Areas Response Processing function (RPO/IARP).

IAC data are not applicable to CQR activities, nor are they involved with apportionment or FACO.

All final data products as well as official response data from the 2020 Census are sent to the Archiving operation (ARC) for archiving within the Census Bureau and to the National Archives and Records Administration (NARA) for permanent retention. Island Areas Censuses' materials and data products and additional information collected during data collection are also archived.

Three other operations support the dissemination of data. The Redistricting Data Program operation (RDP) coordinates the dissemination of redistricting data products to the states. The Integrated Partnership and Communications operation (IPC) provides support in communicating information about the data products. Finally, the CQR provides a mechanism for GUs to request review of the accuracy of their final 2020 Census counts.

The discussion below walks the reader through the diagram, using the circled numbers to help the reader follow the flow.

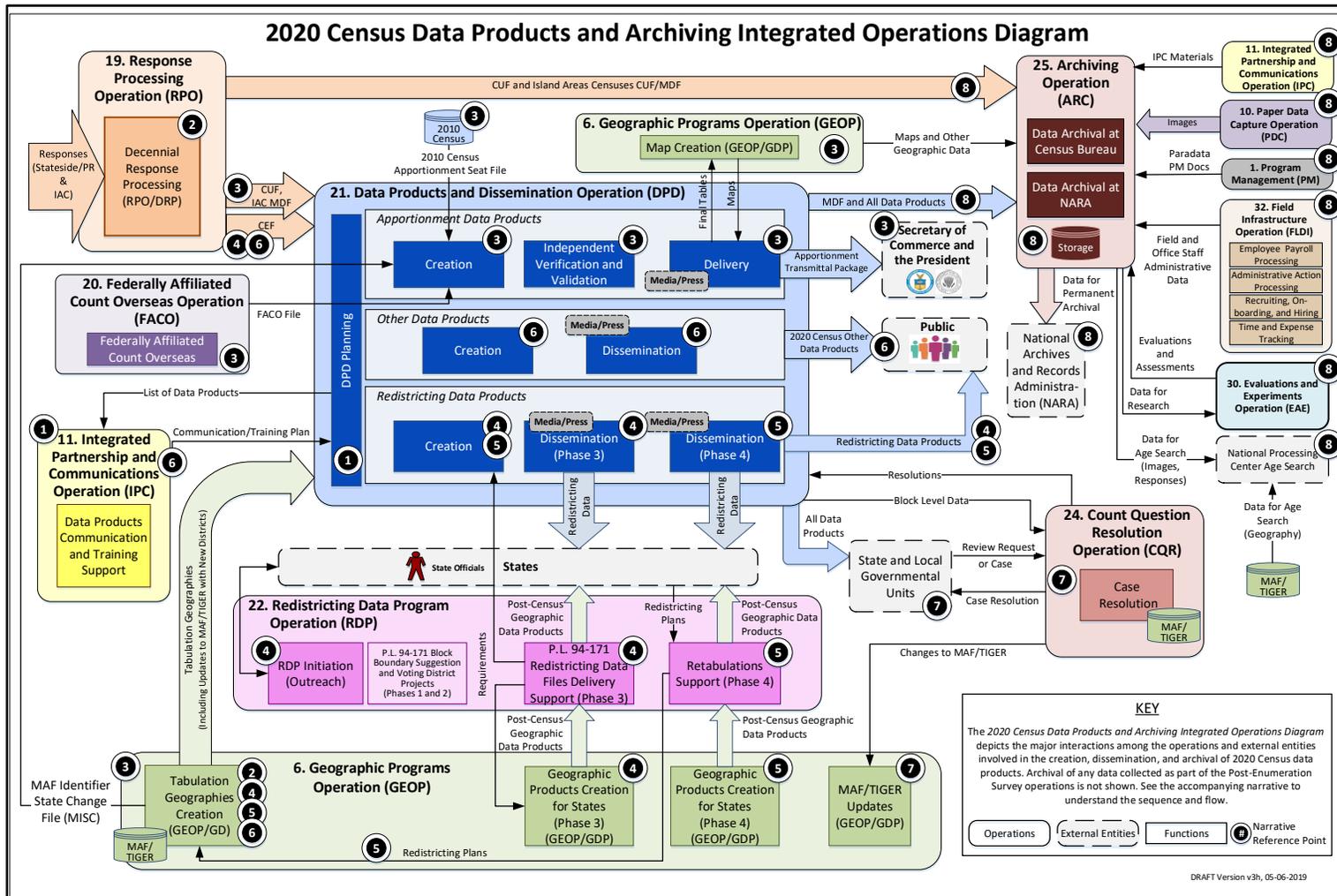


Figure 2: 2020 Census Data Products and Archiving Integrated Operations Diagram

① Before the start of the 2020 Census, DPD performs a planning function, creating specifications for the various data products and creating the list of data products and providing it to the IPC so it can create a plan for the training and communications support required to disseminate 2020 Census data products.

② Once data collection is complete, the RPO Decennial Response Processing (RPO/DRP) function processes the 2020 Census response data for the 50 states, the District of Columbia, and Puerto Rico (stateside/Puerto Rico data) and creates the Census Unedited File (CUF). The CUF is provided to DPD as input to the apportionment process. The CUF comprises 52 separate files (one for each state, the District of Columbia, and Puerto Rico), which are used to create the apportionment data products.

The CUF is further processed by RPO to produce the Census Edited File (CEF). The CEF is provided to DPD, which uses the data to create the Microdata Detail File (MDF). The MDF, which contains microdata (one record per housing unit and group quarters enumeration data), is used by DPD to create the redistricting data products and the other data products.

The GEOP Geographic Delineations (GEOP/GD) function creates tabulation geographies and sends these to DPD so it can link the blocks and housing unit records to specific geographies to produce the data products.

Apportionment Data Products

③ The primary requirement served by the decennial census is the apportionment of seats to the states for the House of Representatives. DPD creates the apportionment counts and delivers them to the President of the United States (through the Secretary of Commerce) to provide to Congress by December 31, 2020.

DPD performs three functions to create the apportionment products: creation, independent verification and validation, and delivery. To create the products, DPD receives, verifies, and tallies the final 2020 Census CUF from RPO and the Master Address File (MAF) Identifier State Change (MISC) File from GEOP to create a final resident population file, which is then combined with the count of federally affiliated people overseas, provided by FACO. Apportionment calculation formulas are then applied and the results are validated to create the final apportionment results. These results go through an independent verification and validation by Census Bureau staff and are then used to create the final apportionment tables, which illustrate

the apportionment population by state and the corresponding number of seats in the U.S. House of Representatives, including the change in seats per state since the 2010 Census Apportionment Seat File was calculated. DPD then creates a memo and a draft letter to the President from the Secretary of Commerce and sends these, with the Final Apportionment Tables, to the Secretary of Commerce. The transmittal package includes three unique tables:

- Apportionment Population and Number of Representatives (for the 50 states).
- Resident Population (for the 50 states, the District of Columbia, and Puerto Rico).
- Federally Affiliated Count Overseas Population (for 50 states and the District of Columbia).

The final tables are also made available to the Geographic Data Processing function within GEOP (GEOP/GDP), which produces map illustrations of the population results. The data and maps are published to the Census Bureau website after a press conference with the media.

Redistricting Data Products



Public Law (P.L.) 94-171 requires the development of redistricting data products to be made available to state officials. RDP is the operation responsible for ensuring that P.L. 94-171 is carried out and serves as the Census Bureau's point of contact for the program, handling all communications and providing training and support to the states for the program.

Halfway through the decade, RDP initiates outreach to the states to invite them to participate in the program and establish a liaison. RDP then conducts the first two phases of the program, the Block Boundary Suggestion Project (Phase 1) and the Voting District Project (Phase 2). These phases are shown in light pink, as they happen before the creation of any data products.

Once the 2020 Census data collection is complete, DPD uses the CEF from RPO to create the 2020 Census MDF. The MDF and geographic data from the GEOP/GDP are used to create the redistricting data files in accordance with requirements provided by RDP. The files go through several processing and review steps before being disseminated. Various embargoes are used to ensure proper timing of the release and receipt of the data. DPD releases the redistricting data to the states, the media, and the public, coordinating the release to the states with RDP to ensure the data are received. RDP also works with GEOP to release geographic data products. GEOP creates the geographic data products in accordance with requirements provided by RDP and then sends these products to RDP, which sends them to the states.

5 States use the 2020 Census data to develop their redistricting plans, and send their new redistricting plans (updated congressional districts and state legislative districts) to RDP. RDP reviews them and provides them to GEOP to update MAF/TIGER with the new districts. GEOP sends the updated congressional and state legislative district tabulation geographies to DPD, which retabulates the 2020 Census redistricting data using the new district boundaries. DPD releases the updated data to the states in coordination with RDP. GEOP updates the geographic products and provides them to RDP, which sends them to the states.

Other Data Products

6 A key service provided by DPD is the development of specific 2020 Census data products for the public. These products go through a two-step process to create and then disseminate the products.

To create the stateside/Puerto Rico data products, DPD uses the 2020 Census MDF created earlier and geographic data from GEOP. The geographic data are used to determine how to structure and layer the data by geographic area (e.g., state, city, and tract). The MDF data are tabulated based on rules and specifications and the tabulated results are reviewed for accuracy. DPD enhances the data and creates data products by generating and applying metadata tags and developing geographic and visualization products to make the data more usable. These products are reviewed by subject matter experts and approved by management before being held under public embargo.

In addition to the stateside/Puerto Rico data products described above, DPD also produces a set of data products for the Island Areas Censuses using the Island Areas Tabulation Geography data from GEOP and the Island Areas Censuses CUF and Island Areas Censuses MDFs from RPO.

DPD informs the media of the availability of the data and once the public embargo is released, DPD publishes the data products to the Census Bureau's website. IPC provides a plan for and supports efforts to communicate and demonstrate to data users how the 2020 Census data can be used in their communities.

DPD provides ongoing technical support on these various data products and also receives and responds to customer feedback and inquiries.

CQR

7 The GUs have a finite period to request review of the counts and provide supporting evidence for their case. This is done through CQR, which works to resolve the GU case by reviewing the block level data products provided by DPD and geographic data in the MAF/TIGER system. The GU and DPD are informed of the resolution to its case. Any changes resulting from this activity are reflected in MAF/TIGER, as part of GEOP/GDP, however, the changes do not affect the apportionment or redistricting data. If an issue with the data products does arise, DPD adds a user note and provides the new data in a static table (the files are not regenerated).

Archiving

8 2020 Census data are required to be archived so that they can be released to the public 72 years after the completion of the census in accordance with Title 44 of the United States Code as amended 92 Stat. 915; Public Law 95-416, October 5, 1978. ARC is responsible for archiving 2020 Census data in accordance with the agreed-upon 2020 Census Records schedule signed by NARA. This includes:

- Individual responses to the 2020 Census.
- Final records used to capture, process, and tabulate respondent data.
- Final records used to collect and update address and map information.
- Planning, management, and evaluation files that document policy, decision, and information related to the 2020 Census.
- Manuals, promotional materials, and evaluation reports.

In addition, ARC stores other data for archiving at the Census Bureau, including all paradata and the recruiting, payroll, personnel, hiring, retention, and time and expense data for temporary field and office staff. These data are used for research to support planning that is performed by the Evaluations and Experiments operation (EAE) for future censuses. These data also support legal inquiries related to temporary field personnel. Finally, ARC sends 2020 Census data to the NPC to support Age Search, a legally-required service to the public.

3. CQR Detailed Process Description

Figure 3 below is a top-level Business Process Model (BPM) showing the Level 1 activity areas within the 2020 Census CQR. BPMs for the 2020 Census follow industry-standard Business Process Model and Notation (BPMN). An explanation of how to read the BPMN notations and a full-sized copy of all the BPMN diagrams for this operation are provided under separate cover.

This top-level BPM serves as the Context Model for the 2020 Census CQR. A BPMN Context Model displays the high-level activities within the operation and relationships between them, whereas the IDEF0 Context Diagram shown earlier depicts the boundaries of the operation or activity and the interfaces between the operation or activity and other operations and activities with which it is associated.

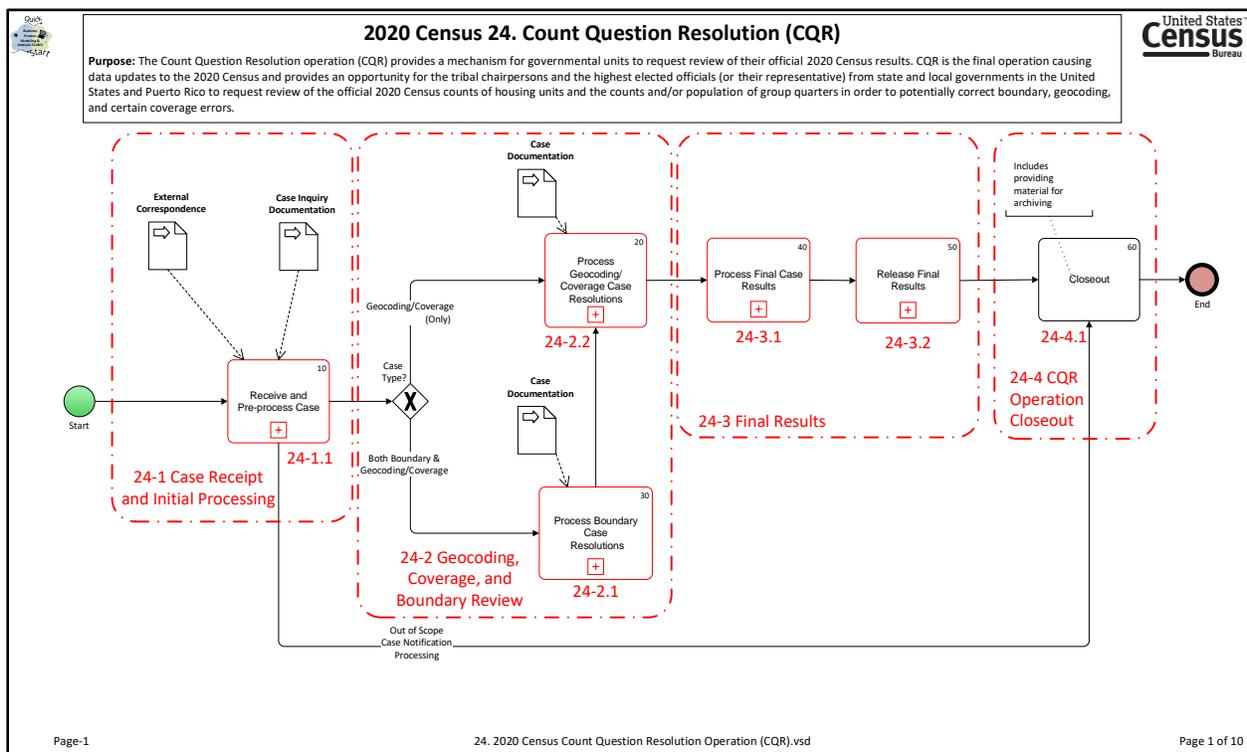


Figure 3: CQR Context Model

The 2020 Census CQR is subdivided into the following activity areas:

- Case Receipt and Initial Processing [CQR 24-1].
- Geocoding, Coverage, and Boundary Review [CQR 24-2].
- Final Results [CQR 24-3].

- CQR Closeout [CQR 24-4].

The business processes for each of these Level 1 activity areas are discussed along with their inputs and outputs in the following subsections.

3.1 Case Receipt and Initial Processing [CQR 24-1]

Figure 4 below shows the BPM for the Case Receipt and Initial Processing [CQR 24-1] activity area (area within the gray rounded rectangle) and its constituent activities within the overall context of the 2020 Census CQR.

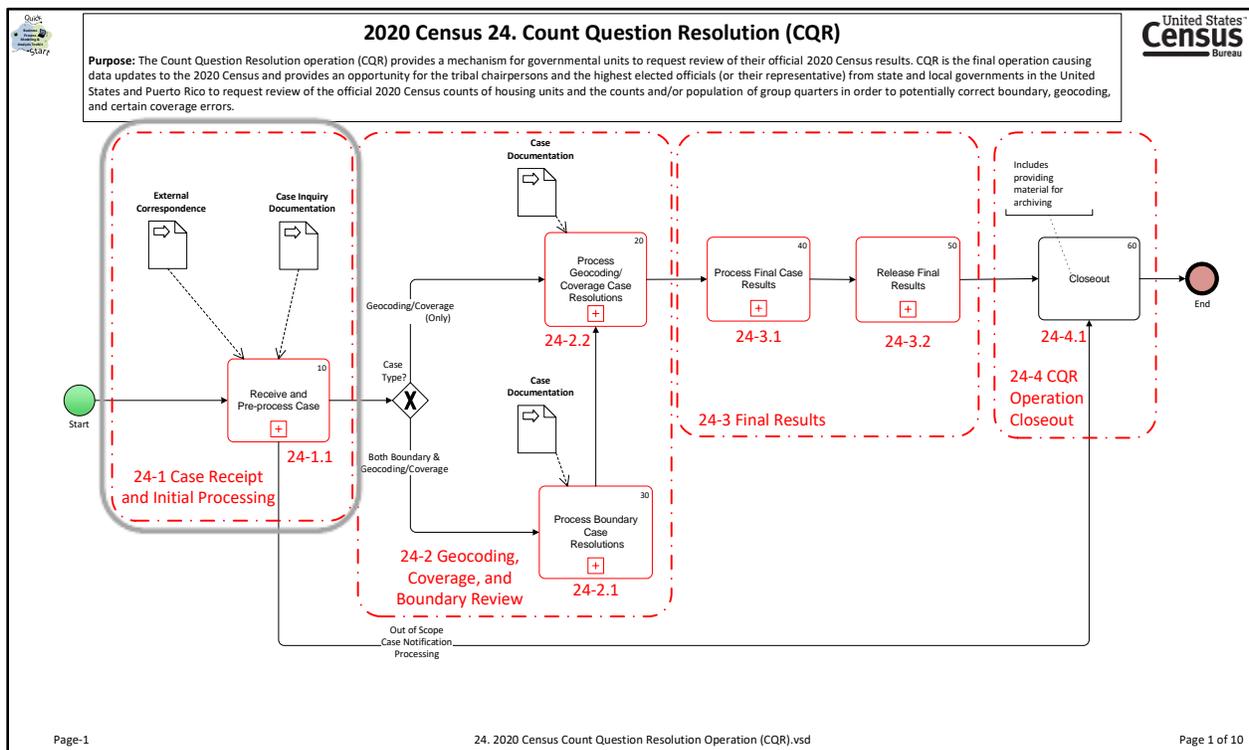


Figure 4: Case Receipt and Initial Processing [CQR 24-1] Constituent Activities

The Case Receipt and Initial Processing activity area is subdivided into the following operational subactivities:

- Case Receipt and Initial Processing [CQR 24-1].
 - Receive and Preprocess Case [CQR 24-1.1].

Staff in DCMD receive CQR case inquiries and log them in the CQR PCS. DCMD staff review case information to determine its accuracy and completeness and ensure the CQR PCS reflects the

receipt of the case. If a case is out of scope for CQR, DCMD staff inform the appropriate tribal chairperson or highest elected official; if a case is in scope, DCMD staff inform the appropriate tribal chairperson or highest elected official and assign it for further review and research. Subsequent sections describe the Case Receipt and Initial Processing operational subactivities in detail.

3.1.1 Receive and Preprocess Case [CQR 24-1.1]

Figure 5 below shows the work to receive and preprocess a case.

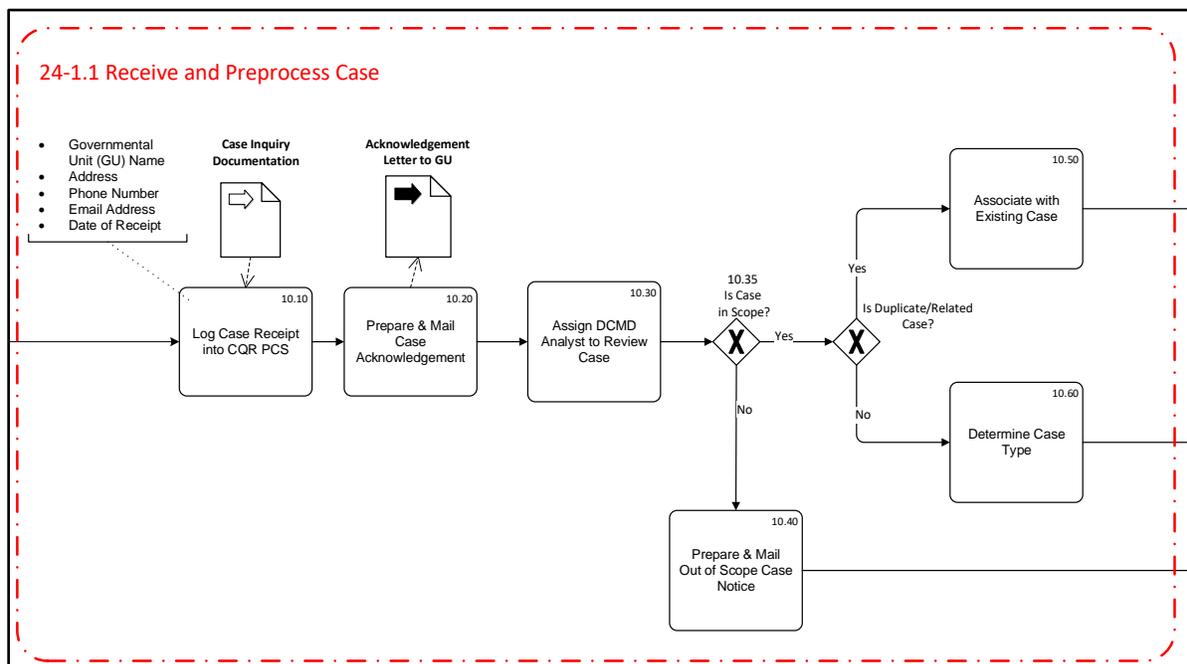


Figure 5: Receive and Preprocess Case

Beginning on June 1, 2021, tribal, state, and local GU officials have an opportunity to submit a case inquiry regarding the official 2020 Census population and housing counts for their respective GU. The Census Bureau receives the case inquiry letter and any supporting documentation, which may include address lists, block count lists, block maps with a map spot for each address, and maps and/or shapefiles displaying boundary changes. The case information (GU name, address, contact information, and dates of receipt) are logged in the CQR PCS to facilitate access, assignment, tracking, and processing of the case file. After logging the case information in the CQR PCS, DCMD staff send a letter acknowledging receipt of a CQR case inquiry to the tribal chairperson or highest elected official of the submitting GU.

CQR agents are assigned to each CQR case. The CQR agents are responsible for determining if cases are within the scope of the operation, for creating cases that are within scope of the operation, and for communicating with each respective GU. The CQR agents review all GU-submitted documentation to determine if it is within scope, which is to say whether the case meets the criteria of a geocoding, coverage, and/or boundary case. If it is not a valid case, the CQR agent enters the required information into the CQR PCS, including any reasons for their decision, and notifies the GU of their findings through an out of scope case letter explaining why their case was not accepted.

CQR cases that are within scope must be compared to existing CQR cases to determine whether they are duplicates of existing cases. If the case is a duplicate, it is attached to the existing case that has already been logged in the CQR PCS. For CQR cases that are within scope and not duplicates, the CQR agent proceeds to determine whether the case is a geocoding case, a coverage case, a boundary case, or a combination of all three.

- **Geocoding** cases involve and affect the placement of housing and associated population within the correct boundaries and census blocks.
- **Coverage** cases can result in the addition or deletion of housing and associated population if housing was erroneously excluded or duplicated during the census process.
- **Boundary** cases address the incorrect reporting of data due to inaccurate or missing boundaries that were legally in effect on January 1, 2020, and include the effective date of changes, address review within the boundary, and appropriate documentation.

3.2 Geocoding, Coverage, and Boundary Review [CQR 24-2]

Figure 6 below shows the BPM for the Geocoding, Coverage, and Boundary Review [CQR 24-2] activity area (area within the gray rounded rectangle) and its constituent activities within the overall context of the 2020 Census CQR.

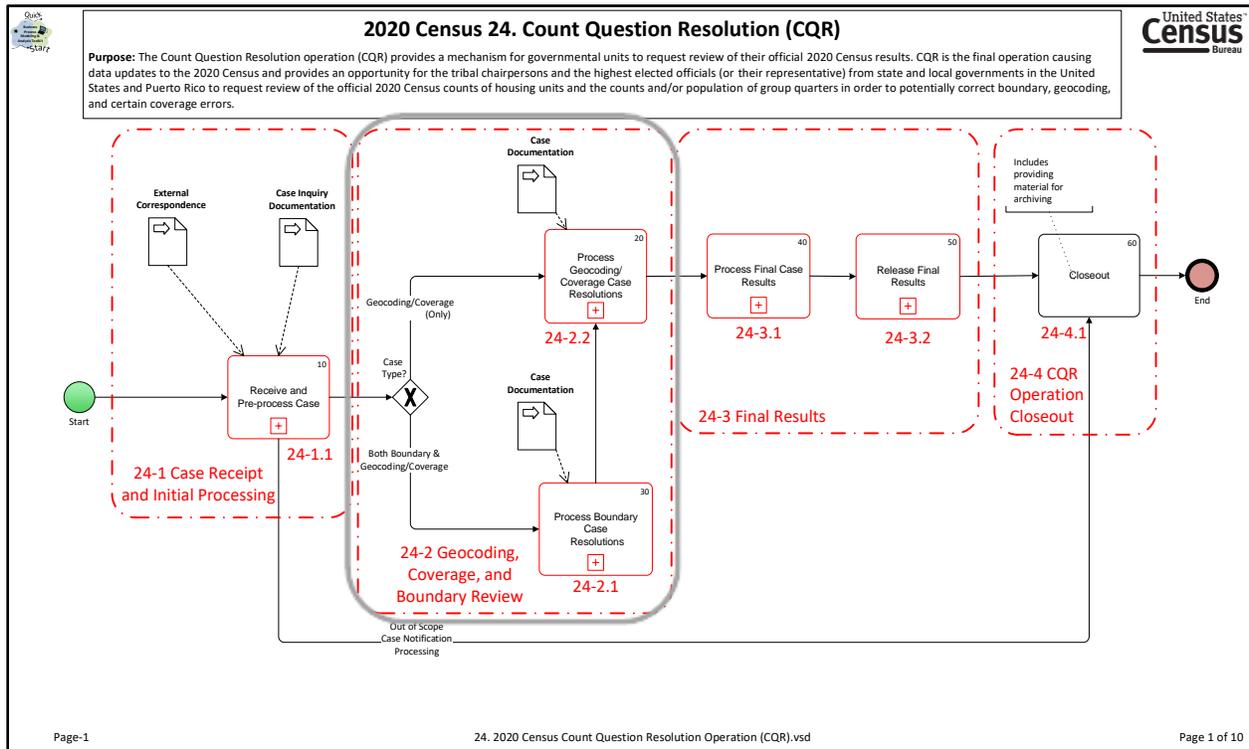


Figure 6: Geocoding, Coverage, and Boundary Review [CQR 24-2] Constituent Activities

The Geocoding, Coverage, and Boundary Review activity area is subdivided into the following operational subactivities:

- Geocoding, Coverage, and Boundary Review [CQR 24-2].
 - Process Boundary Case Resolutions [CQR 24-2.1].
 - Process Geocoding and Coverage Case Resolutions [CQR 24-2.2].
 - Research and Resolve Case [CQR 24-2.2.1].

After all the case information has been received, logged in the PCS, preprocessed, and the case type determined, the CQR agents refer cases for research and processing. If a boundary case is submitted for research and processing, it must include the appropriate boundary documentation in addition to addresses within the area covered by the boundary change.

Subsequent sections describe the Geocoding, Coverage, and Boundary Review operational subactivities in detail.

3.2.1 Process Boundary Case Resolutions [CQR 24-2.1]

Figure 7 below shows the work to “Process Boundary Case Resolutions.”

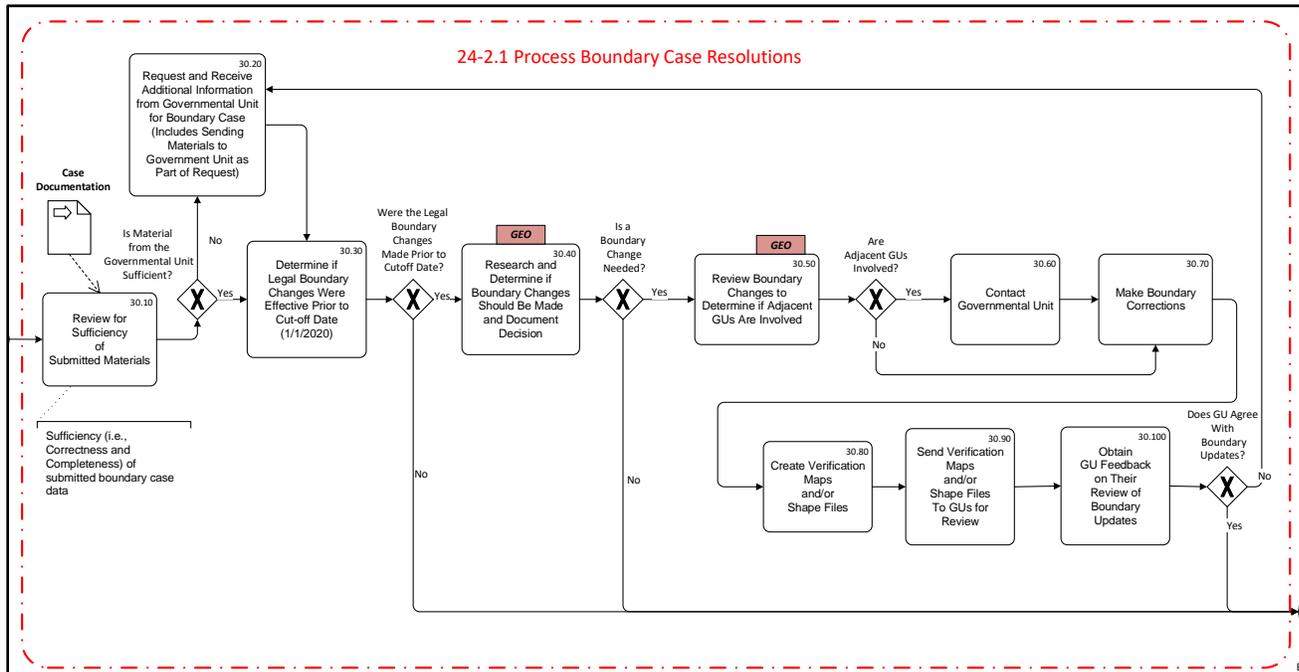


Figure 7: Process Boundary Case Resolutions

CQR researchers review boundary case information for completeness and accuracy before proceeding with processing. If needed, the Census Bureau provides the submitting GU maps and/or shapefiles to ensure the GU properly annotates the requested boundary change. Additionally, CQR researchers confirm that all boundary changes are effective on or before January 1, 2020 and are accompanied by a list of addresses with map spots or coordinates within the geographic area covered by the boundary change.

During research of boundary cases, CQR researchers must determine if the requested boundary changes affect adjacent GUs. If so, the Census Bureau notifies the adjacent GU of the impending boundary change. If the adjacent GU indicates that they do not agree with the change, the case is referred back to the CQR agent for further information. Otherwise, CQR researchers proceed with processing the boundary change.

Upon completing the boundary change in MAF/TIGER, the Geography Division produces new map and/or shapefile products displaying the updated boundary. These materials are then provided to the submitting GU for their review. If the GU confirms the boundaries are accurate, the boundary work for the case is complete. If the GU does not agree with the updated boundaries, they are afforded the opportunity to resubmit documentation, which may further change the boundary.

3.2.2 Process Geocoding and Coverage Case Resolutions [CQR 24-2.2]

The “Process Geocoding and Coverage Case Resolutions” operational subactivity is subdivided into the following constituent activities:

- Process Geocoding and Coverage Case Resolutions [CQR 24-2.2].
 - Research and Resolve Case [CQR 24-2.2.1].

Figure 8 below shows the work to “Process Geocoding and Coverage Case Resolutions.”

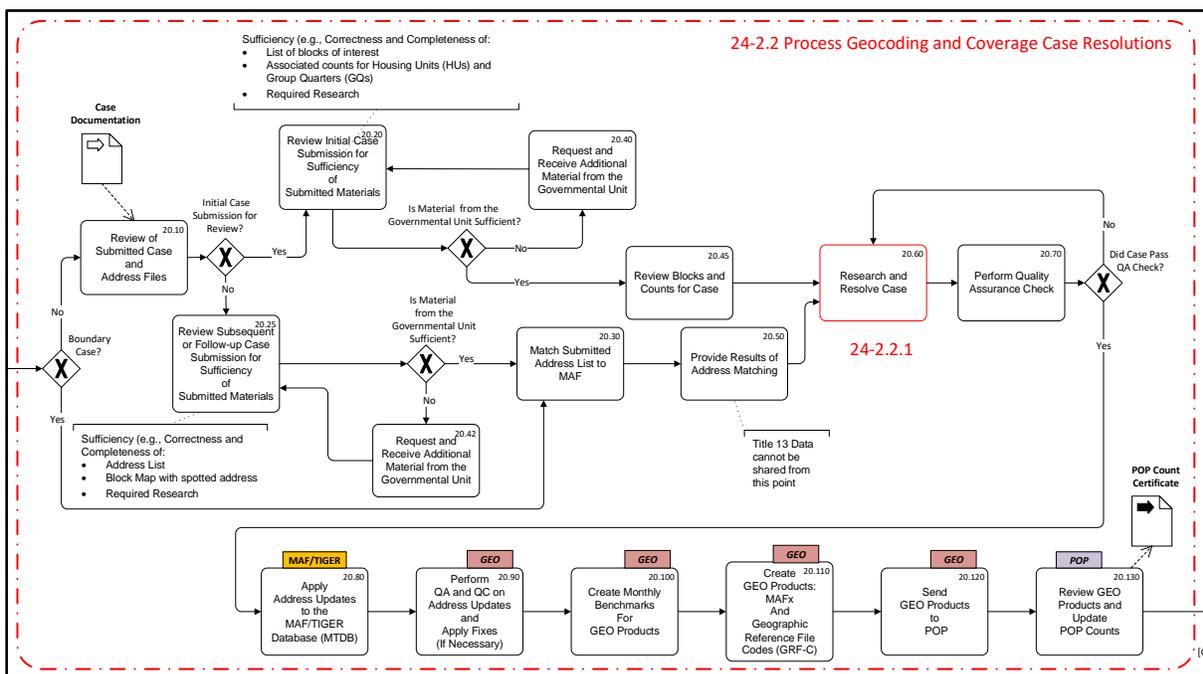


Figure 8: Process Geocoding and Coverage Case Resolutions

CQR researchers review case documentation and supporting materials (including required block count lists, supporting address lists (if necessary), and block maps with map spots and/or location) that have been uploaded to the CQR PCS to ensure correctness and completeness. Correctness entails all materials meet the criteria established as part of the CQR case submission and applies to each case, and completeness entails including and verifying all materials and documents sent in with the CQR case. If the case documentation from the GU is sufficient, the GU’s block count list is reviewed and compared to 2020 Census counts.

When the GU resubmits or disputes the results of a case in a new submission, then the required address list (including maps spots or coordinates) is compared to the 2020 Census enumeration

address list in the MAF. Submitted block counts that differ from census results are researched to identify discrepancies; address records reviewed in CQR cases are sent through MAF address matching. The goal of this address matching is to identify addresses submitted by the GU that were included or excluded from the 2020 Census enumeration. Addresses that do not match will be further researched by the CQR researcher in an attempt to find MAF units that represent the addresses.

If supporting information or materials described above are not present, additional information is requested from the GU. The CQR case is placed on hold and cannot proceed with additional processing until these materials are received from each GU and included in the CQR case. When all block counts and/or addresses in the list are present and have been reviewed, the geocoding/coverage research can proceed as described in the paragraphs above.

NOTE: Title 13* protected data cannot be shared with the GU from this point.

After research for all submitted block/address records is complete, additional quality assurance (QA) steps are taken to identify potential issues that may impact the case. The QA is performed by different CQR stakeholders in different Census Bureau divisions and must be completed for each case. The CQR QA can include a one or two step review to allow for peer review and also a secondary verification. If the case has errors identified during the QA phase, these must be reviewed and resolved before the CQR case can pass QA. The CQR case goes back to the research phase for additional work and corrections as necessary.

Once all block/address research is completed and passes QA, the CQR case moves to other stakeholders (divisions or branches) to create address transaction files and update the MAF (if warranted). The CQR PCS will show whether an address transaction file has been created for a case, and whether the case has gone to MAF update.

Similarly to the research portion of the CQR case, after the address transaction files are created and the MAF is updated, QA steps are required to ensure all data are correct and no additional issues are found. Geography Division staff corrects any errors found during this QA of updates to the MAF. When the MAF updates and address transaction files pass QA, the corresponding CQR PCS module is updated with dates to reflect completion of this task and move the CQR case forward.

Monthly benchmarks are created to produce geographic products for review by other Census Bureau stakeholders. These benchmarks are a snapshot of the MAF and are used to create

**See Table 8 in Appendix for definition*

Geographic Reference File codes (GRF-C) to be distributed to Population Division (POP) for final review. These data, when validated by POP, are used to update population counts and issue new POP count certificates for each affected GU. After POP reviews and issues new counts and certificates, this information is also captured in the CQR PCS to notify all CQR stakeholders that the processing and release of final case results can begin.

3.2.2.1 Research and Resolve Case [CQR 24-2.2.1]

A detailed view of the constituent activities that make up the “Research and Resolve Case” operational subactivity is given in [Figure 9](#) below.

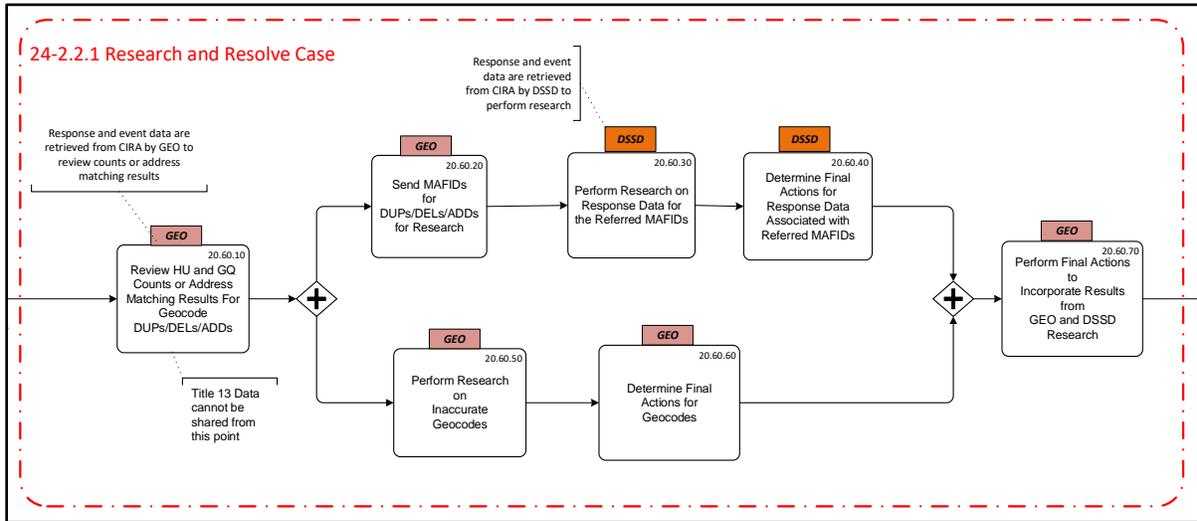


Figure 9: Research and Resolve Case

CQR researchers in various Census Bureau divisions review address records submitted by every GU for block count discrepancies and MAF address matching results. Address records that are identified as potential duplicates and that may need to be added to or reinstated in the 2020 Census enumeration list are researched and assigned a final action.

The research is conducted by different CQR stakeholders in various Census Bureau divisions. The research will focus on identifying potential issues that caused address records to be added as duplicates or excluded from the 2020 Census counts. Census Bureau systems and applications will allow access to response and event data, field collected data, and other datasets that may help determine if corrections are needed.

CQR cases may require a review of address geocoding. Boundary changes may impact the location of associated addresses in a GU or block. Address geocodes are researched by CQR

stakeholders in various Census Bureau divisions using different Census Bureau systems and applications, and updates are made to correct inaccurate address geocodes discovered during research.

After all coverage and geocoding research is completed on the address records, an action is taken on each record: either updating the record’s status in the MAF or keeping it as is. Once all address records research is completed, the CQR PCS is updated with relevant information and the CQR case continues to the next phase, which includes additional QA.

3.3 Final Results [CQR 24-3]

Figure 10 shows the BPM for the Final Results [CQR 24-3] activity area (area within the gray rounded rectangle) and its constituent activities within the overall context of the 2020 Census CQR.

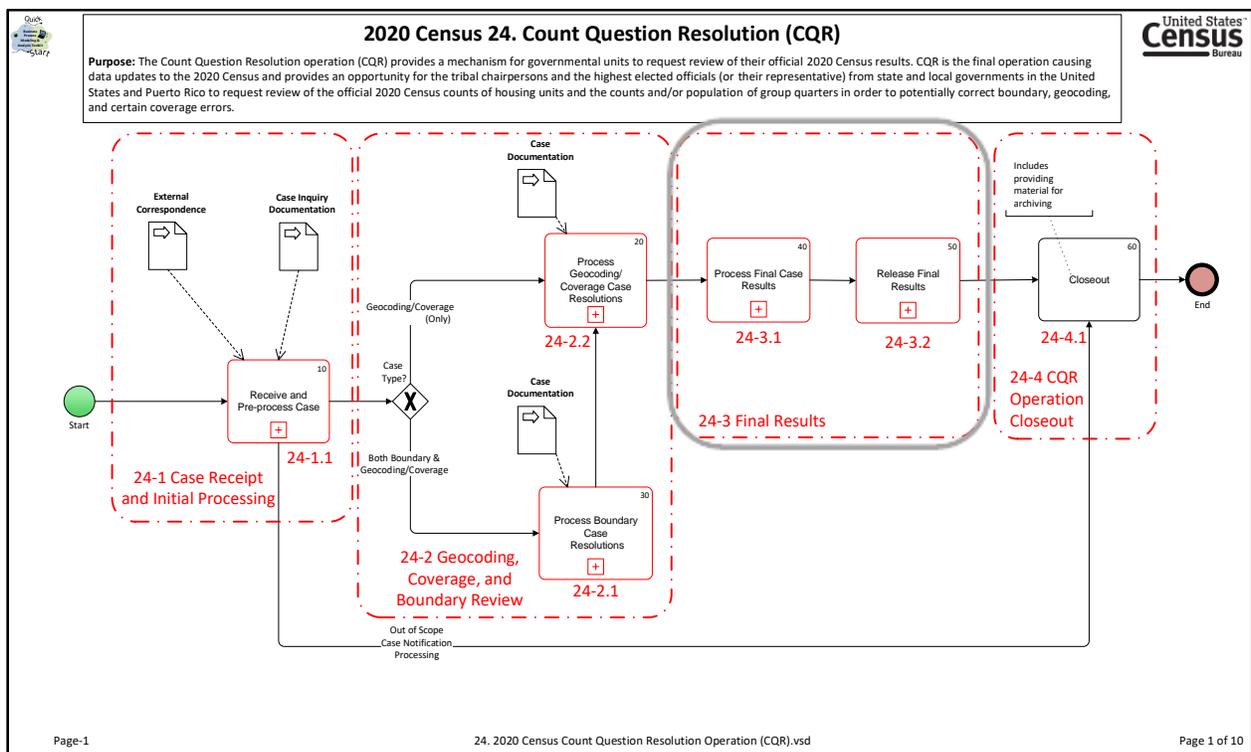


Figure 10: Final Results [CQR 24-3] Constituent Activities

The Case Receipt and Initial Processing activity area is subdivided into the following operational subactivities:

- Final Results [CQR 24-3].
 - 24-3.1 Process Final Case Results [CQR 24-3.1].
 - 24-3.2 Release Final Results [CQR 24-3.2].

The 2020 Census CQR resolves all cases and notifies the affected GU of findings and applicable updates that have been made to the MAF/TIGER system. CQR also prepares final data and errata files for distribution.

Subsequent sections describe the Final Results operational subactivities in detail.

3.3.1 Process Final Case Results [CQR 24-3.1]

Figure 11 below shows the work to “Process Final Case Results.”

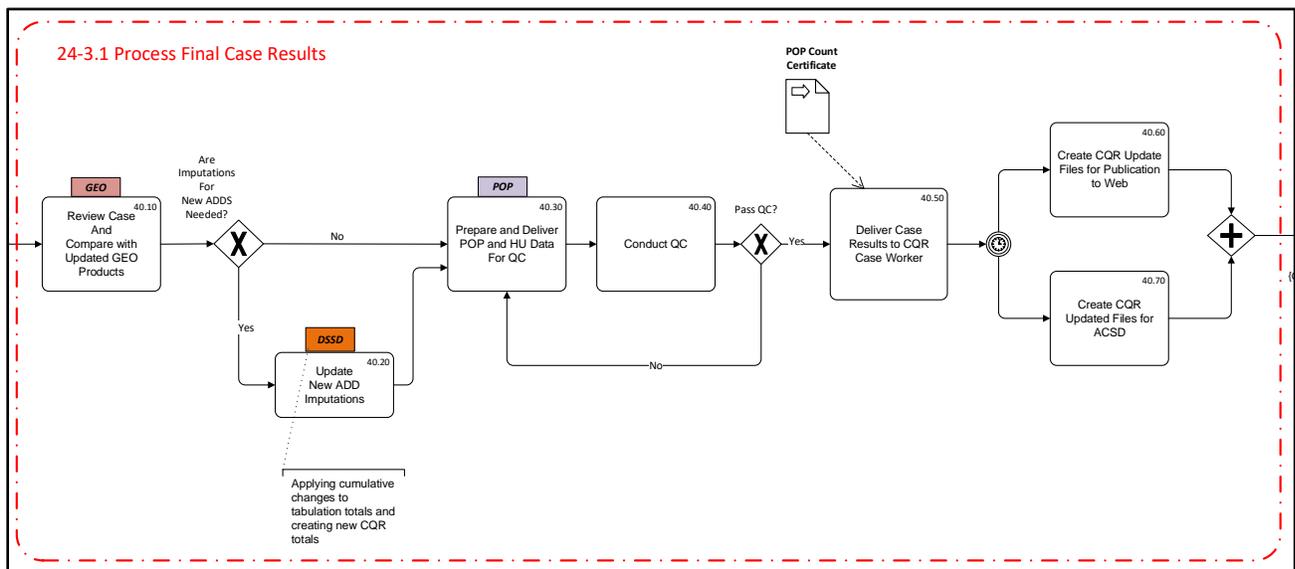


Figure 11: Process Final Case Results

Once all research and MAF/TIGER updates are complete for a CQR case, new geographic products are sent to POP for review. POP creates updated population count certificates based on the products that pass their review. When CQR research determines that addresses were missed, other Census Bureau divisions add them in MAF/TIGER and include them in the final counts.

POP prepares and QAs updated count data (population and housing) as part of final CQR case research and geographic products review. If the case passes QA, the CQR agent logs the results

in the CQR PCS. If the case does not pass QA, the count data must be reviewed and corrected before continuing to publication.

The final POP count certificate is included with the results sent to the CQR agent. The CQR agent notifies the affected GUs of the outcome of the case. All CQR case results are sent to the Administrative and Customer Services Division (ACSD) and subsequently posted on a Census Bureau website (Uniform Resource Locator [URL] to be determined).

3.3.2 Release Final Results [CQR 24-3.2]

Figure 12 below shows the work to “Release Final Results.”

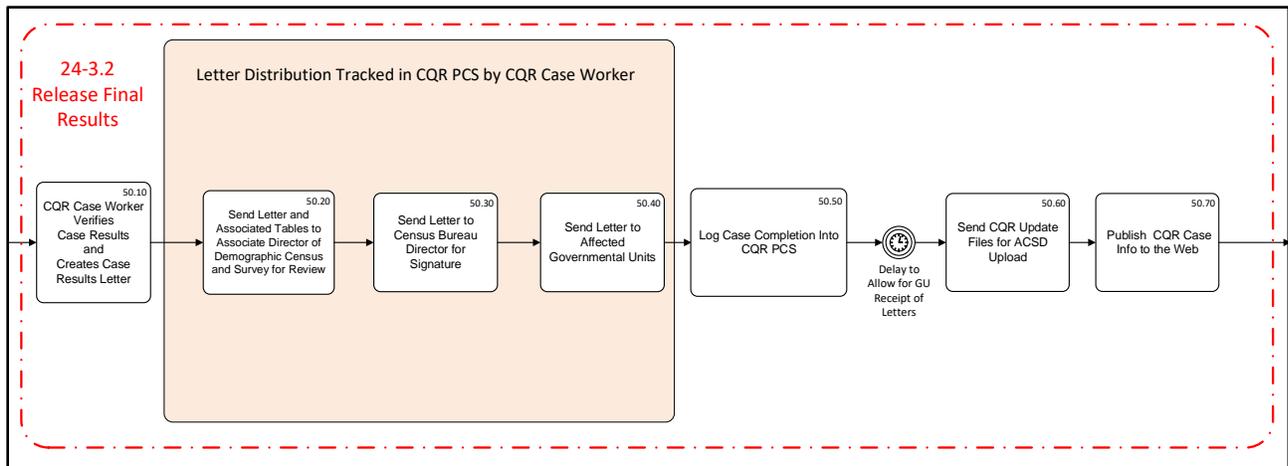


Figure 12: Release Final Results

The CQR agent verifies all final counts and results affecting the GU and any adjacent GUs, and updates the CQR PCS before creating the final CQR result letters to each GU impacted by the CQR case. The notification letters and tables with updated counts are sent to the Census Bureau Associate Director for Decennial Census Operations and Census Bureau Director for review and signature.

Once the letters are reviewed and signed by all Census Bureau stakeholders, they are mailed to the affected GUs. The final CQR case status, completion dates, and final materials are logged in the CQR PCS. Once the CQR agent confirms that the impacted GUs have received their letters, they send all CQR case outcomes to ACSD for posting on a Census Bureau website (URL to be determined).

3.4 CQR Closeout [CQR 24-4]

Figure 13 shows the BPM for the CQR Closeout [CQR 24-4] activity area (area within the gray rounded rectangle) and its constituent activities within the overall context of the 2020 Census CQR.

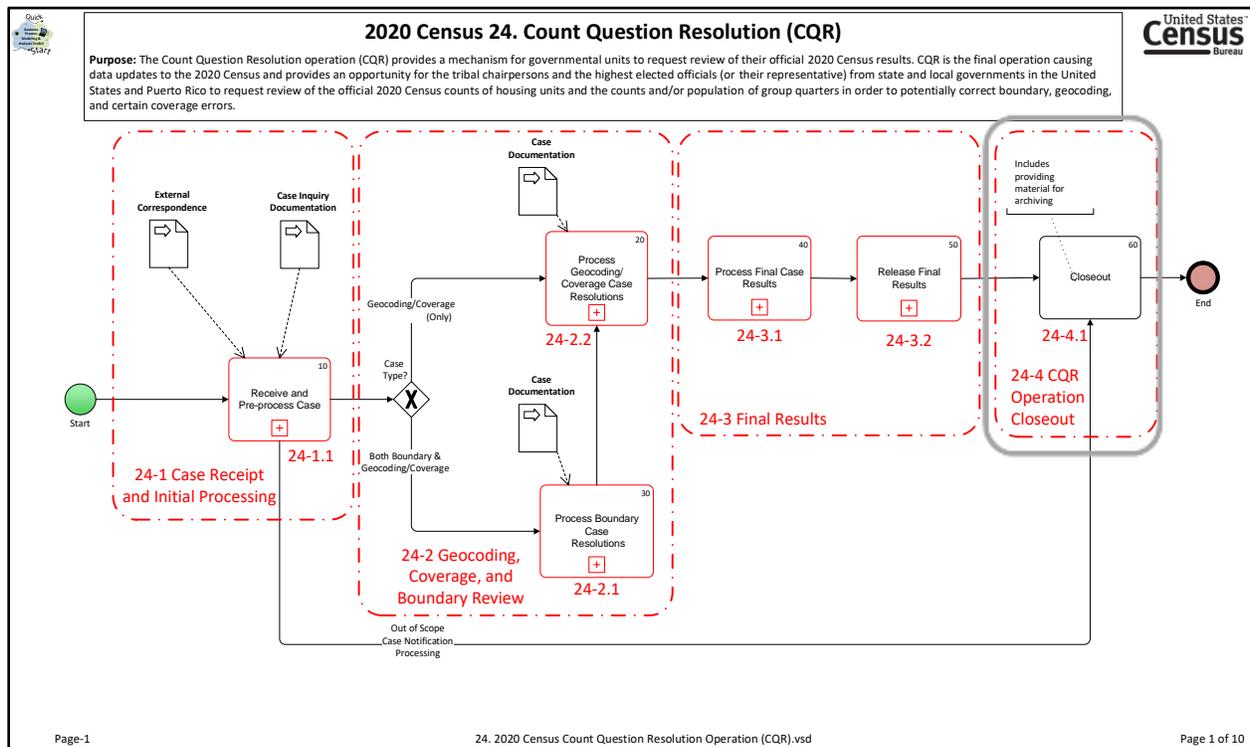


Figure 13: CQR Closeout [CQR 24-4] Constituent Activities

The Case Receipt and Initial Processing activity area consists of a single operational subactivity:

- CQR Closeout [CQR 24-4].
 - Closeout [CQR 24-4.1].

The next section describes the CQR Closeout operational subactivity in detail.

3.4.1 Closeout [CQR 24-1.1]

The “CQR Closeout” operational subactivity is shown in Figure 13 above.

The 2020 Census CQR activities will be conducted from June 2021 through September 2023, at which time all production operations stop and cases are expected to be completed. All CQR

case data and associated materials are maintained in the CQR PCS. The archiving of CQR materials is at the center of the closeout process, allowing CQR stakeholders to access all CQR cases for reporting activities, as well as producing other artifacts. Archiving may also be required to provide case access to other federal entities as needed (i.e., National Archives and Records Administration).

4. Cost Factors

While the 2020 Census CQR is not a major cost driver for the 2020 Census, the following mechanisms from the IDEF0 Context Diagram represent the resources used to support this operation and comprise part of the 2020 Census cost elements:

Staff

- Headquarters (HQ) staff.
- CQR Researchers.

Sites

- Headquarters.
- NPC.

Systems

- MAF/TIGER (includes CQR PCS).
- Census Imaging and Retrieval Application (CIRA).

Other

- Headquarters (HQ) office IT infrastructure.
- Census networks.

5. Measures of Success

For the 2020 Census operations, the corresponding Measures of Success will be documented in the operational assessment study plans and final reports. The operational assessment study plan documents the criteria that will be used to define successful completion of the operation. The operational assessment report will provide results on whether the criteria were met.

In general, operational assessments report on planned to actual variances in budget, schedules, and production and training workloads. The corresponding Measures of Success (as documented in the operational assessment study plan) include variances that exceed established thresholds. See *Preparing for the 2020 Census Operational Assessment Study Plan* for the potential scope of assessment.

Types of success measures include:

- **Process Measures** that indicate how well the process works, typically including measures related to completion dates, rates, and productivity rates.
- **Cost Measures** that drive the cost of the operation and comparisons of actual costs to planned budgets. Costs can include workload as well as different types of resource costs.
- **Measures of the Quality** of the results of the operation, typically including things such as rework rates, error rates, and coverage rates.

See the corresponding CQR operational assessment study plan and report for details on the measures of success.

Appendix A – Acronyms and Terminology

Table 7 lists the acronyms and abbreviations used within this document.

Table 8 lists a Glossary of Terms used within this document.

Additional Decennial terminology can be found on the Census Bureau Intranet for those with access.

Table 7: Acronyms and Abbreviations List

Acronym	Meaning
ACSD	Administrative and Customer Services Division
ARC	Archiving operation
BPM	Business Process Model
BPMN	Business Process Model and Notation
CEF	Census Edited File
CIRA	Census Imaging and Retrieval Application
CQR	Count Question Resolution operation
CUF	Census Unedited File
DCMD	Decennial Census Management Division
DOP	Detailed Operational Plan
DPD	Data Products and Dissemination operation
DRP	Decennial Response Processing
EAE	Evaluations and Experiments operation
FACO	Federally Affiliated Count Overseas operation
GD	Geographic Delineations
GDP	Geographic Data Processing

Acronym	Meaning
GEO	Geography Division
GEOP	Geographic Programs operation
GQ	Group Quarters
GRF-C	Geographic Reference File-Codes
GU	Governmental Unit
HQ	Headquarters
HU	Housing Unit
IA	Island Areas
IAC	Island Areas Censuses operation
IARP	Island Areas Response Processing (function)
IDEFO	Integrated Definition, Level 0
IE	Information Exchange
IOD	Integrated Operations Diagram
IPC	Integrated Partnership and Communications operation
IPT	Integrated Project Team
IT	Information Technology
LQ	Living Quarters
MAF	Master Address File
MAF/TIGER	Master Address File/Topologically Integrated Geographic Encoding and Referencing (System)
MDF	Microdata Detail File
MISC	Master Address File (MAF) Identifier State Change

Acronym	Meaning
NARA	National Archives and Records Administration
NPC	National Processing Center
OMB	Office of Management and Budget
PCS	Production Control System
P.L.	Public Law
PM	Program Management operation
POP	Population Division
PRA	Paperwork Reduction Act
QA	Quality Assurance
QC	Quality Check
RDP	Redistricting Data Program operation
RPO	Response Processing Operation
SPC	Security, Privacy, and Confidentiality operation
URL	Uniform Resource Locator

Table 8: Glossary of Terms

Term	Meaning
Group Quarters	A place where people live or stay, in a group living arrangement, that is owned or managed by an entity or organization providing housing and/or services for the residents. This is not a typical household-type living arrangement. (i.e. college residence halls, nursing homes, correctional facilities, military barracks)
Housing	Living quarters, including both housing units and group quarters.

Term	Meaning
Housing unit	A house, an apartment, a mobile home or trailer, a group of rooms or a single room occupied as separate living quarters or, if vacant, intended for occupancy as separate living quarters.
Title 13	The Census Bureau is bound by Title 13 of the United States Code. These laws not only provide authority for the work the Census Bureau does, but also provide strong protection for the information collected from individuals and businesses.

Appendix B – References

Appendix B lists the documents or other resources used during the development of this Detailed Operational Plan document.

U.S. Census Bureau (2018), "[2020 Census Operational Plan](#)," Version 4.0, December 31, 2018.

U.S. Census Bureau (2018), "Preparing for the 2020 Census Operational Assessment Study Plan," Draft, May 10, 2018.

Appendix C – Activity Tree for CQR

This appendix presents the Activity Tree for the 2020 Census CQR. An Activity Tree uses an outline structure to reflect the decomposition of the major operational activities in the operation. Each activity is numbered according to its position in the outline. For example, for the current operation numbered “24,” the first activity would be numbered 24-1. Subactivities under this activity would be numbered sequentially, starting again with the number one. For example, the first subactivity under the first activity would be numbered 24-1.1 the second subactivity as 24-1.2. The second activity would be numbered 24-2, and so on.

CQR Activity Tree:

- 24-1 Case Receipt and Initial Processing
 - 24-1.1 Receive and Preprocess Case
- 24-2 Geocoding, Coverage, and Boundary Review
 - 24-2.1 Process Boundary Case Resolutions
 - 24-2.2 Process Geocoding and Coverage Case Resolutions
 - 24-2.2.1 Research and Resolve Case
- 24-3 Final Results
 - 24-3.1 Process Final Case Results
 - 24-3.2 Release Final Results
- 24-4 CQR Closeout
 - 24-4.1 Closeout