

**General Information and Document Request for Comcast**  
**WT Docket No. 18-197**  
**October 3, 2018**

1. Provide documents sufficient to show the following:
  - a. the customers of the Company's mobile wireless service, including, but not limited to, the characteristics of customers and the mobile wireless service providers customers could have switched from previously;
  - b. the engineering of the Company's cable wireless networks, including, but not limited to, Wi-Fi handoffs with the Company's fixed network and the mobile wireless network the Company uses;
  - c. the revenues, costs, and profitability of the Company's wireless service;
  - d. any MVNO relationship the Company may have with a wireless company, including, but not limited to, the negotiations and financial terms of such MVNO contracts;
  - e. all plans to develop a facilities-based mobile wireless network or acquire spectrum or to use spectrum already acquired for mobile wireless service; and
  - f. any actual or potential impacts of other cable wireless service on the Company's business generally.
2. Describe in detail how the Proposed Transaction could impact the Company's mobile wireless business.
3. Describe in detail how the Proposed Transaction could impact the Company's television and/or internet provision businesses.
4. Provide all documents provided to any state or federal entity for purposes of reviewing the Proposed Transaction that relate to the items in Specifications 1(a)-(f).

## Definitions

**In this General Information and Document Request, the following terms shall have the following meanings (such meanings to be equally applicable to both the singular and plural forms of the terms defined):**

1. The term “Company” means Comcast Corporation, its domestic and foreign parents, predecessors, divisions, subsidiaries, affiliates, partnerships, and joint ventures, and all directors, officers, employees, agents, and representatives of the foregoing. The terms “parent,” “subsidiary,” “affiliate,” and “joint venture” refer to any person in which there is partial (10 percent or more) or total ownership or control between the company and any other person.
2. The term or “T-Mobile” means T-Mobile US, Inc., its domestic and foreign parents, predecessors, divisions, subsidiaries, affiliates, partnerships, and joint ventures, and all directors, officers, employees, agents, and representatives of the foregoing. The terms “parent,” “subsidiary,” “affiliate,” and “joint venture” refer to any person in which there is partial (10 percent or more) or total ownership or control between the company and any other person.
3. The term “Sprint” means Sprint Corporation, its domestic and foreign parents, predecessors, divisions, subsidiaries, affiliates, partnerships, and joint ventures, and all directors, officers, employees, agents, and representatives of the foregoing. The terms “parent,” “subsidiary,” “affiliate,” and “joint venture” refer to any person in which there is partial (10 percent or more) or total ownership or control between the company and any other person.
4. The term “New T-Mobile” means T-Mobile US, Inc., after the proposed merger of Sprint into an indirect subsidiary of T-Mobile, the proposed structure of which is reflected on page 7 of the Public Interest Statement, as well as its domestic and foreign parents, predecessors, divisions, subsidiaries, affiliates, partnerships, and joint ventures, and all directors, officers, employees, agents, and representatives of the foregoing. The terms “parent,” “subsidiary,” “affiliate,” and “joint venture” refer to any person in which there is partial (10 percent or more) or total ownership or control between the company and any other person.
5. The term “5G” means 5<sup>th</sup> generation technology.
6. The terms “and” and “or” have both conjunctive and disjunctive meanings.
7. The word “any” shall be construed to include the word “all,” and the word “all” shall be construed to include the word “any.” The word “each” shall be construed to include the word “every,” and the word “every” shall be construed to include the word “each.” All words used in the singular should be construed to include the plural, and all words used in the plural should be construed to include the singular.
8. The term “Applicants” means T-Mobile and Sprint, collectively.
9. The term “Application” means the applications submitted by T-Mobile and Sprint beginning on June 18, 2018, some of which have been subsequently amended, with the lead application file number for the wireless radio services listed as 0008224209.
10. The term “BTA” means Basic Trading Area.
11. The term “CDMA” means Code Division Multiple Access technology.
12. The term “CMA” means Cellular Market Area.
13. The term “competitor” includes any partnership, corporation (including a business trust), joint stock company, trust, unincorporated association, joint venture, limited liability company, or

other entity providing any actual or potential competition in any relevant area for any relevant product.

14. The term “discussing” when used to refer to documents means analyzing, constituting, summarizing, reporting on, considering, recommending, setting forth, or describing a subject. Documents that contain reports, studies, forecasts, analyses, plans, proposals, evaluations, recommendations, directives, procedures, policies, or guidelines regarding a subject should be treated as documents that discuss the subject. However, documents that merely mention or refer to a subject without further elaboration should not be treated as documents that discuss that subject.
15. The term “documents” means all computer files and written, recorded, and graphic materials of every kind in the possession, custody, or control of the Company. The term “documents” includes without limitation drafts of documents, copies of documents that are not identical duplicates of the originals, and copies of documents the originals of which are not in the possession, custody, or control of the Company. The term “documents” includes, without limitation, materials of every kind in the possession, custody, or control of the Company whether created internally or externally. In addition, the term “documents” includes without limitation any amendments, side letters, appendices, or attachments. The term “computer files” includes without limitation information stored in, or accessible through, computer or other information retrieval systems. Thus, the Company should produce documents that exist in machine-readable form, including documents stored in personal computers, portable computers, mobile devices, workstations, minicomputers, mainframes, servers, backup disks and tapes, and archive disks and tapes, and other forms of offline storage, whether on or off the Company’s premises. Electronic mail messages should also be provided, even if only available on backup or archive tapes or disks. Computer files shall be printed and produced in hard copy or produced in machine-readable form (provided that Commission staff determine prior to submission that it would be in a format that allows the Commission to use the computer files), together with instruction and all other materials necessary to use or interpret the data. Unless otherwise specified, the term “documents” excludes bills of lading, invoices, purchase orders, customs declarations, and other similar documents of a purely transactional nature and also excludes architectural plans and engineering blueprints. Where more than one identical copy of a requested document exists, the Company shall only submit one representative copy.
16. The term “EV-DO” or “EV-DO Rev. A” means Evolution-Data Optimized or Evolution-Data Optimized Revolution A. technology.
17. The term “GSM” means Global System for Mobile Communications technology.
18. The term “HSPA” or “HSPA+” means High Speed Packet Access or High Speed Packet Access + technology.
19. The term “identify,” when used with reference to a document, means to state the date, author, addressee, type of document (e.g., the types of document, as described above), a brief description of the subject matter, its present or last known location, and its custodian, who must also be identified.
20. The term “including” shall be construed as including, but not limited to, and indicates examples for the Applicants to address. The term should not be construed as to limit the response to only those examples listed.
21. The term “IoT” means Internet of Things.
22. The term “LTE” or “LTE-A” means Long Term Evolution technology or Long Term Evolution Advanced technology.

23. The term “mobile wireless application,” also referred to as “application software” or “app,” means a computer system that enables one or more functions on a mobile wireless device running a mobile operating system (e.g., Android, iOS).
24. The term “mobile wireless data services” means any data communications service using radio transmission between mobile or fixed stations and a network providing communication of packet data information, including but not limited to, broadband data, video, remote file access, status reporting, facsimile, and internet/intranet access. Mobile wireless data services include non-interconnected Voice over IP but exclude mobile wireless voice and text services, as defined herein.
25. The term “mobile wireless services” includes mobile wireless voice services, mobile wireless text services, mobile wireless data services, and mobile wireless applications.
26. The term “mobile wireless telephone number,” means the 10-digit telephone number assigned to an end-user to access mobile wireless services.
27. The term “mobile wireless text services” means any communications service using radio transmission between mobile or fixed stations and a network providing communication of numeric or alphanumeric messages, such as multi-media messaging, short messaging, and short codes. Mobile wireless text services exclude e-mails.
28. The term “mobile wireless voice services” means interconnected voice communications services provided using radio transmission between mobile or fixed stations on a wireless basis to customers, other than fixed wireless services. Mobile wireless voice services include interconnected Voice over IP and Voice over LTE.
29. The term “M2M” means machine-to-machine.
30. The term “MVPD” means multi-channel video programming distributor.
31. The term “MVNO” means mobile virtual network operator.
32. The term “PEA” means Partial Economic Area.
33. The term “Person” includes the Company, and means any individual, partnership, corporation (including a business trust), joint stock company, trust, unincorporated association, joint venture, limited liability company or other entity, or a government or any political subdivision or agency thereof.
34. The term “plans” means tentative and preliminary proposals, recommendations, or considerations, whether or not finalized or authorized, as well as those that have been adopted.
35. The term “plans, analyses, and reports” means business plans, strategic plans, written policies, budgets, analyses, reports, presentations (including quantitative presentations), and similar documents, including all appendixes and attachments thereto, prepared for, presented to, reviewed by, discussed by, or considered by the Company’s board of directors or the Company’s executive management, or any member thereof. The term “plans, analyses, and reports” includes without limitation copies of plans, analyses, and reports that are not identical duplicates of the originals, and copies of plans, analyses, and reports, the originals of which are not in the possession, custody, or control of the Company, but does not include drafts of plans, analyses, and reports, but only the final version or the latest draft if the final version does not exist or is not in the possession, custody, or control of the Company.
36. The term “Proposed Transaction” means the proposed transfer of licenses and authorizations controlled by T-Mobile and Sprint reflected in the Application.

37. The term “Public Interest Statement” refers to the document filed by the Applicants on June 18, 2018, entitled “Description of Transaction, Public Interest Statement, and Related Demonstrations.”
38. The term “Relevant Area” means, and information must be provided separately for, (a) each Cellular Market Area; (b) the United States; and (c) the Commonwealth of Puerto Rico.
39. The term “Relevant Product” means (and information must be provided separately for, any of the mobile wireless services and using any of the following formats: GSM, CDMA, EV-DO Rev. A, UMTS, HSPA, HSPA+, LTE, VoLTE, 5G):
- 1) feature mobile devices: wireless handset devices that are cable of supporting voice services as well as text services;
  - 2) smartphones: wireless handset devices, with advanced computing capability and connectivity sufficient to run complete mobile operating system software (e.g., Apple, Android, Research in Motion Ltd. Blackberry, Windows phone) to support all mobile wireless services, including broadband data and video applications as well as voice, photographic cinematic, and audio-visual media player services (including books, periodicals, movies, music, games);
  - 3) tablet PCs (includes netbook PCs): portable devices with touch screen and/or a QWERTY keyboard input, and advanced computing capability and connectivity sufficient to run complete operating system software (e.g., Apple, Android, Windows) to support broadband data and video applications as well as photographic, cinematic, and audio-visual media player services (including books, periodicals, movies, music, games);
  - 4) e-readers: portable personal computing devices with a display size of 6" to 10" typically, with advanced computing capability and connectivity sufficient to enable users to shop for, purchase, download, and display text, designed primarily for the purpose of reading books, newspapers, and periodicals;
  - 5) “air cards” (also referred to as “laptop cards”): portable wireless modems that enable personal computing devices to connect to a mobile wireless network in order to support and deliver voice, data, and video services;
  - 6) mobile hotspots devices: network routing devices that enable portable, Wi-Fi enabled handset and personal computing devices to connect to a mobile wireless network in order to support and deliver voice, data, and video services; and
  - 7) other mobile wireless devices not listed above. Describe the other devices included in this category.
40. The term “Relevant Service” means (and information must be provided separately for, any of the services identified below, and bundles of such services, and using any of the following formats: GSM, CDMA, EV-DO Rev. A, UMTS, HSPA, HSPA+, LTE, VoLTE, 5G):
- 1) mobile wireless voice services;
  - 2) mobile wireless text services;
  - 3) mobile wireless data services; and
  - 4) mobile wireless applications.
41. The term “subsidiary” as to any Person means any corporation, partnership, joint venture, limited liability company, or other entity of which shares of stock or other ownership interests having ordinary voting power to elect a majority of the board of directors or other managers of such corporation, partnership, joint venture, limited liability company, or other entity are at the time owned, or the management of which is otherwise controlled, directly or indirectly, through one or more intermediaries, or both, by such Person.
42. The term “UMTS” means Universal Mobile Telecommunications System technology.
43. The term “VoLTE” means Voice over Long Term Evolution technology.

44. “United States” or “U.S.” means the United States, its possessions, territories, and outlying areas.

## Instructions

1. Unless otherwise specified, all requests cover the period from January 1, 2015, through the date of the Request. Where information is required, provide it separately for each year unless otherwise directed in this request. Where yearly data are not yet available, provide data for the calendar year to date.
2. The specific requests made herein are continuing in nature. The Company is required to produce in the future any and all documents and information that are responsive to the requests made herein but not initially produced at the time, date, and place specified herein. In this regard, the Company must supplement its responses (a) if the Company learns that, in some material respect, the documents and information initially disclosed were incomplete or incorrect or (b) if additional responsive documents or information are acquired by or become known to the Company after the initial production. The requirement to update the record will continue until the Commission's decision regarding the Transaction is no longer subject to reconsideration by the Commission or to review by any court.
3. All parties are requested to produce responsive documents (including materials containing Highly Confidential or Confidential Information) in electronic form, unless otherwise specified, as set forth in the Instructions for Submission of Electronic Documents. Parties that are already providing responsive documents to the U.S. Department of Justice are required to produce responsive documents in electronic form. The Commission does not require the submission of paper copies of these documents at this time, but reserves the right to require their submission at a later time.
4. Where a narrative response is required, identify each document relied upon by the Company in their narrative response.
5. Documents must be uniquely and sequentially numbered across the entire production. Documents submitted in response to this Information Request that were or will be submitted both to the Commission and to the U.S. Department of Justice must have the same document control number and the same metadata.
6. Contact Commission staff to discuss an acceptable format for the submission of all documents and data.
7. Each requested document shall be submitted in its entirety, even if only a portion of that document is responsive to a request made herein. This means that the document shall not be edited, cut, or expunged, and shall include all appendices, tables, or other attachments, and all other documents referred to in the document or attachments. All written materials necessary to understand any document responsive to these requests shall also be submitted. Provide final versions of each document; however, if a final version does not exist, provide one copy of the latest draft of the document.
8. Those documents written in a language other than English must be translated into English; automated or machine translations are permitted; however, the Commission retains the right to require a non-machine translation. Submit the foreign language document, with the English translation attached thereto.
9. Unless otherwise specified, provide data and interrogatory responses separately for prepaid, post-paid, wholesale, and all mobile wireless services. The Company shall provide a separate response for interrogatory, data, and documents (i.e., do not submit the Company's interrogatory and data responses on the same discs).

10. Data provided in response to this Information Request should include a list of all parameters/assumptions on which the data are based.
11. Unless otherwise agreed to by the Commission, requests for the production of documents (and any particular type of document) require the production of all responsive documents in the possession, custody, or control of the Company.
12. For each statement submitted in response to the Information Request, indicate, by number and subsection, the specific request to which it is responsive.
13. For each document submitted in response to the Information Request, identify the Person(s) from whose files the document was retrieved (i.e., the custodian). If any document is not dated, if known, state the date on which it was prepared. If any document does not identify its author(s) or recipient(s), provide, if known, the name(s) of the author(s) or recipient(s) as metadata in accordance with the Instructions for Submission of Electronic Documents. The Company must identify with reasonable specificity all documents provided in response to these Requests. Where more than one identical copy of a requested document exists, the Company may submit only one representative copy, but in all cases all metadata, including without limitation all custodians who possessed identical documents withheld, must be provided in accordance with the provisions of the Instructions for Submission of Electronic Documents.
14. For each question in this Information Request, provide a list of the custodians, based on discussions with Commission staff, who are most likely to have relevant documents, and whose files are to be searched for responsive documents.
15. If search terms were used to conduct all or any part of a search conducted in response to this Information Request, provide a list of search terms used, along with a glossary of industry and company terminology, including project code words. In addition, describe the search methodologies and the applications used to execute the search.
16. Any documents that are withheld in whole or in part from production based on a claim of privilege shall be assigned document control numbers (with unique consecutive numbers for each page of each document). For any page of any document that the Company has designated to be withheld as entirely privileged, the Company shall submit a substitute, placeholder page that lists only the Document ID of the page that was withheld in its entirety as privileged and a statement indicating that the page has been withheld in its entirety as privileged. For any document withheld as entirely privileged, it is sufficient to supply one substitute, placeholder page for that document, so long as the range of Document IDs for the entire document is listed on the placeholder page and each Document ID for each page of the document is reflected in metadata. The placeholder pages must be imaged as any other paper record, as described above. For each document withheld as privileged, whether in its entirety or in part, the Company shall code the substitute document submitted as specified in and provide as metadata the information in the attached Metadata Table of Requested Fields.
17. For each Document identified on the Company privilege log:
  - 1) Provide the document control number(s);
  - 2) Identify all authors of the document;
  - 3) Identify all addressees of the document;
  - 4) Identify all recipients of the document or of any copies of the document, to the extent not included among the document's addressees;
  - 5) Provide the date of the document;
  - 6) Provide a description of the subject matter of the document;
  - 7) State the nature or type of the privilege that the Company is asserting for the document (e.g., "attorney-client privilege");



- 8) Provide the number(s) of the Request to which the document is responsive;
  - 9) Provide the document control number(s) of any attachments to the document, regardless of whether any privilege is being asserted for such attachment(s); and
  - 10) State whether the document has been produced in redacted form, and include the range of Document ID labels for those produced documents.
18. The Company's privilege log shall also conform with all of the following requirements:
- 1) Provide a separate legend identifying each author, addressee, and recipient identified on the Company's privilege log.
  - 2) Identify on the privilege log, and denote with an asterisk, all attorneys acting in a legal capacity with respect to the withheld document or communication.
  - 3) The description of the subject matter of each document shall describe the nature of the document in a manner that, though not revealing information that is itself privileged, provides sufficiently detailed information to enable the Commission to assess the applicability of the privilege claimed.
  - 4) For each document withheld under a claim that it constitutes or contains attorney work product, also state whether the Company asserts that the document was prepared in anticipation of litigation or for trial and, if so, specify the anticipated litigation or trial upon which the assertion is based.
  - 5) Produce all nonprivileged portions of any responsive document (including nonprivileged or redactable attachments) for which a claim of privilege is asserted, except where the only nonprivileged information in the document has already been produced. Note where any redactions in the document have been made.
  - 6) The privilege log shall be produced in both hardcopy and electronic form, the electronic form of which shall be both searchable and sortable.
  - 7) Documents sent solely between counsel, including in-house counsel acting solely in a legal capacity, and documents authored by the Company's outside counsel that were not directly or indirectly furnished to any third party, such as internal law firm memoranda, may be omitted from the privilege log. However, any attachments to such documents must be included on the privilege log (if a privilege is applicable to such materials), unless such attachments are addressed and sent solely to counsel.

# Instructions for Electronic Production of Documents and Electronically Stored Information

## Introduction

This document contains the standard specifications and procedures for submitting to the Federal Communications Commission electronic versions of documents in response to an Information Request.

- In many cases, it is useful for the party producing the documents, its vendor, and the FCC staff to review the technical details of the production prior to submitting the response.
- Take care to ensure that all responsive data and metadata are preserved in the collection process.
- Submit two copies of the response: file one copy in the docket with the Secretary's Office and provide one copy to FCC staff or the FCC's contractor, as directed, for loading and review.

## I. CATEGORIES OF DOCUMENTS

There are seven major categories of relevant documents: (1) email and other electronic messages (e.g., instant messaging, text messages); (2) other electronic documents; (3) hard copy documents; (4) shared resources; (5) databases; (6) audio and video data; and (7) foreign-language materials. Typically, responsive documents will come from the first four categories, although databases will be used to respond to Data Requests. The general requirements for each category of document are outlined below. The attached Metadata Table of Requested Fields provides information regarding document-specific metadata and bibliographic information (identifying information).

### A. Email, Attachments, and Other Electronic Messages

Email and other electronic messages (e.g., instant messages (IMs), text messages) should be produced as image files with related searchable text, metadata, and bibliographic information. Depending on how the Company's systems represent names in email messages, IMs, or text messages, we may require a table of names or contact lists from custodians.

Each IM or text conversation should be produced as one document.

Email repositories, also known as email databases (e.g., Outlook .PST, Lotus .NSF), can contain a variety of items, including messages, calendars, contacts, tasks, etc. For purposes of production, responsive items should include the "Email", "Other ESI", or "Calendar Items" metadata/database fields outlined in the Metadata Table, including but not limited to all parent items (mail, calendar, contacts, tasks, notes, etc.) and child files (attachments of files to email or other items), with the parent/child relationship preserved. Similar items found and collected outside an email repository (e.g., .MSG, .EML, .HTM, .MHT) should be produced in the same manner.

Graphic objects embedded in emails such as logos, letterheads, or backgrounds should remain as part of the email and not be extracted as separate attached documents.

Pay special attention to the PARENTID, ATTACHMENTIDS, and FAMILYRANGE fields, which are used to track email families. While the example below relates to email families, all attachment relationships for all responsive documents are to be produced in this format.

EXAMPLE: Consider ABC-JD-00000001, a 10-page parent email, with records ABC-JD-00000011 to ABC-JD-00000015, ABC-JD-00000016 to ABC-JD-00000020, and ABC-JD-00000021 to ABC-JD-00000025 as its attachments. Fields should be populated exactly as follows using the semicolon as the multi-entry delimiter for ATTACHMENTIDS:

BEGDOC#	ENDDOC#	PARENTID	ATTACHMENTIDS	FAMILYRANGE
ABC-JD-00000001	ABC-JD-00000010		ABC-JD-00000011;ABC-JD-00000016;ABC-JD-00000021	ABC-JD-00000001 – ABC-JD-00000025
ABC-JD-00000011	ABC-JD-00000015	ABC-JD-00000001		ABC-JD-00000001 – ABC-JD-00000025
ABC-JD-00000016	ABC-JD-00000020	ABC-JD-00000001		ABC-JD-00000001 – ABC-JD-00000025
ABC-JD-00000021	ABC-JD-00000025	ABC-JD-00000001		ABC-JD-00000001 – ABC-JD-00000025

## B. Electronic Documents

Electronic documents include word processing documents, spreadsheets, presentations, and all other electronic documents not specifically discussed elsewhere. Production of these items should include image files with related searchable text, metadata, and bibliographic information. All passwords and encryption must be removed from electronic documents prior to production. Note that the following apply to both attachments of files to email or other items and loose native files:

1. *Spreadsheets*: Spreadsheets should be produced in native format (e.g., as .XLSX files), with searchable text for the entire document, metadata, and bibliographic information. Provide only a single image of the first page of the spreadsheet or provide a single placeholder image. The placeholder image must contain at a minimum the BEGDOC#, FILENAME, and FILEPATH. The Identification range for a spreadsheet should be a single number (e.g., ABC-JD-00000001 – ABC- JD-00000001). The linked native file name should match the BEGDOC#/DOCID with the appropriate file extension.
2. *Presentations*: Presentations should be produced in full slide image format along with speaker notes (which should follow the full images of the slides) with related searchable text, metadata, bibliographic information, and linked native file. Presentations should also be produced in native format (e.g., as .PPT files). The linked native file name should match the BEGDOC#/DOCID with the appropriate file extension.
3. *Hidden Text*. All hidden text (e.g., track changes, hidden columns, hidden slides, mark-ups, notes) shall be expanded and rendered in the extracted text file. For files that cannot be expanded, linked native files shall be produced with the image files.
4. *Embedded Files*. All embedded objects (e.g., graphical files, Word documents, Excel spreadsheets, .wav files) that are found within a file shall be produced so as to maintain the integrity of the source document as a single document. For purposes of production, the embedded files shall remain embedded as part of the original source document. Hyperlinked files must be produced as separate, attached documents upon request. Any objects that cannot be rendered to images and extracted text (e.g., .wav, .avi files) must be produced as separate extracted files with linked native files and placeholder images and be treated as attachments to the original file.
5. *Image-Only Files*. All image-only files (non-searchable PDFs, multi-page TIFFs, Snipping Tool screenshots, etc., as well as all other images that contain text) shall be produced with associated OCR text, metadata, and bibliographic information.

6. *Proprietary File Types and Non-PC or Non-Windows Based Systems.* Proprietary file types, such as those generated by financial or graphic design software, should be discussed with Commission staff in advance of production to determine the optimal format of production. Also, file types from non-PC or non-Windows based systems (e.g., Apple, UNIX, LINUX systems), should be discussed with Commission staff in advance of production to determine the optimal format of production.
7. *Archive File Types.* Archive file types (e.g., .zip, .rar) must be uncompressed for processing. Each file contained within an archive file should be produced as a child to the parent archive file. If the archive file is itself an attachment, that parent/child relationship must also be preserved.
8. *Processing Errors.* The text of the placeholder image should also be contained in the searchable text of the document in the event of uncorrectable processing errors.

#### C. Hard-Copy (or Paper) Documents

Hard-copy documents are to be produced as black-and-white image files, except where noted below, with related searchable OCR text and bibliographic information. Special attention should be paid to ensure that hard-copy documents are produced as they are kept, reflecting attachment relationships between documents and information about the file folders within which each document is found. In addition, multi-page documents must be produced as single documents (i.e., properly unitized) and not as several single-page documents. Where color is required to interpret the document, such as hard copy photos, and certain charts, that image must be produced in color. These color images are to be produced as .jpg format. Hard-copy photographs should be produced as color .jpg format files, if originally in color, or black-and-white .tif files if originally in black-and-white.

#### D. Shared Resources

Shared Resources should be produced as separate custodians if responsive custodians have access to them or if they contain responsive documents. The name of the group having access would be used as the custodian name, i.e., Marketing Execs or Accounting Dept. The Company will separately provide a brief description of each shared resource that includes a list of the custodians who have access.

#### E. Database Productions

Production of enterprise databases are not addressed in these specifications and must be discussed with the appropriate government legal and technical staff to determine the optimal production format; these will usually fall outside the scope of an image-based production. Care must be taken to ensure that all responsive databases and their metadata are preserved.

#### F. Audio/Video Data

These specifications do not address the production of audio/video data. Care must be taken to ensure that all responsive audio/video data and their metadata are preserved. These data types may be stored in audio or video recordings, voicemail text messaging, and related/similar technologies. However, such data, logs, metadata, or other files related thereto, as well as other less common but similar data types, should only be produced after consultation with and consent of Commission staff as to the format for the production of such data.

#### G. Foreign-Language Materials

Foreign language materials should be produced after consultation with Commission staff.

## II. DE-DUPLICATION

Before doing any de-duplication, provide Commission staff with a written description of the method used to de-duplicate (including which elements are compared and what hash codes are used), and what is considered a duplicate. Then confirm that your approach is acceptable to the Commission. The Commission does not allow de-duplication of hard-copy documents, or that of "loose" electronic documents (e.g., presentation slides located on the custodian's C: drive) against email attachment versions of those same documents. The integrity of any produced email and any related "document family" must be maintained except as limited by any claim of privilege. Email attachments may not be deduplicated against attachments in other email families. De-duplication should occur both vertically within each custodian and horizontally across custodians. Vertical de-duplication is crucial when a production includes electronic documents from back-up tapes. Horizontal de-duplication must be done in a way that preserves (and produces) information on blind copy (Bcc) recipients of emails and other custodians whose files contain the duplicates that will be eliminated from the production as well as original filepath and mailbox folder information.

*Custodian Append File.* A Custodian Append file is to be produced when de-duplicating ACROSS custodians (i.e., horizontal de-duplication) and data is produced on a rolling basis. The file must be provided on an incremental basis starting with the second submission; as more custodians are discovered for previously produced documents, this file is updated with only the new custodian information. The Custodian Append File is a four-field delimited file consisting of the DOCIDs of the previously delivered document, the new custodian names, the Filepath(s) prepended with Custodian Name (multi-entry), and the FolderLabel(s) prepended with Custodian name (multi-entry) for the duplicates of those records that would otherwise have been produced in the subsequent (new) submissions.

These specifications do not allow for near de-duplication or email threading. These forms of de-duplication must be discussed separately with Commission staff and consent obtained prior to the use of such techniques for production.

## III. DOCUMENT NUMBERING

Documents must be uniquely and sequentially numbered across the entire production, with an endorsement burned into each image. Each number shall be of a consistent length, include leading zeros in the number, and unique for each produced page. Numbers should contain no more than three segments connected by a hyphen. The leading segment must be the Company identifier, a middle segment identifying the custodian, and a sequential page counter with connecting hyphens (e.g., ABCCO-CEO-0000001). The number of digits in the numeric portion of the format should not change in subsequent productions, nor should spaces, hyphens, or other separators be added or deleted. Under no circumstances should Identification numbers contain embedded spaces, slashes (/), backslashes (\), carats (^), underscores (\_), ampersands (&), hash marks (#), plus signs (+), percent signs (%), dollar signs (\$), exclamation marks (!), pipes (|), any character used as a delimiter in the metadata load files, or any character not allowed in Windows file-naming convention (, \ / : \* ? " < > | ~ @ ^).

## IV. PRIVILEGE DESIGNATIONS

Documents redacted pursuant to any claim of privilege will be designated "Redacted" in the EPROPERTIES field as described in the Metadata Table. Appropriately redacted searchable text (OCR of the redacted images is acceptable), metadata, and bibliographic information must also be provided.

All documents that are part of a document family that includes a document withheld pursuant to any claim of privilege will be designated "Family Member of Privileged Doc" in the EPROPERTIES field as described in the Metadata Fields table for all other documents in its family. Placeholder images

with BEGDOC#, FILENAME, FILEPATH and reason withheld (e.g., “Privileged”) should be provided in place of the document images of the privileged document.

## V. SAMPLE

Before beginning production, a sample production covering files of all types, including emails with attachments, loose files including spreadsheets and presentations, redacted documents, etc., should be provided, as directed by Commission staff. The sample size should be between 500 to 1000 records to be large enough to be representative and small enough to review quickly. The Commission will take a few business days to evaluate the sample and provide feedback. If there are any problems, corrected samples will need to be resubmitted until the Commission can confirm the problems are resolved.

## VI. LOAD FILE SET/VOLUME CONFIGURATION

Each production must have a unique MEDIAID name associated with it. This MEDIAID name must also appear on the physical label. The MEDIAID naming scheme should start with a 2 or 3 letter prefix identifying the Company followed by a 3-digit counter (e.g., ABC001). Each separate volume delivered on that media must also have a separate VOLUMENAME associated with it. On the root of the media, the top level folder(s) must be named for the volume(s). VOLUMENAME(s) should also be indicated on the physical label of the media. The volume naming scheme should be based on the MEDIAID name followed by a hyphen, followed by a 3-digit counter (e.g., ABC001-001). Load file volumes should be as large as practical but not contain more than 100,000 records each. The VOLUMENAME should increase sequentially across all productions on the same MEDIAID.

Under the VOLUMENAME folder, the production should be organized in 4 subfolders:

1. DOCLINK (contains linked native files, may contain subfolders, with no more than 5,000 files per folder)
2. IMAGES (may contain subfolders, with no more than 5,000 image files per folder)
3. FULLTEXT (may contain subfolders, with no more than 5,000 document-level text files per folder)
4. LOADFILES (should contain the metadata, DII, OPT, LST, and custodian append files)

## VII. DELIVERABLES

A submission index spreadsheet must be delivered with each submission and should provide statistical information about the volume(s) and media produced. Provide this in hard copy format and electronically on the deliverable media. A sample is included in this PDF.

It is expected that all productions will conform to the structure of the final, approved sample production. Any changes to production procedures that alter output format will require prior submission of another sample production as outlined in Section 5. Sample.

The Commission accepts electronic productions loaded onto hard drives, CD-ROMs, or DVD-ROMs; however, production on hard drives minimizes costs and delay and is preferable. Where the size of the production exceeds the capacity of a single DVD-ROM, hard drives should be used as the delivery medium. For each piece of media, a unique identifier (MEDIAID) must be provided and must be physically visible *on the exterior* of the physical item.

If the media is encrypted, supply the tool for decryption on or with the same media, as well as instructions for decryption. Provide the password separately.

All documents produced in electronic format shall be scanned for, and free of, viruses. The Commission will return any infected media for replacement, which may affect the timing of the Company’s compliance with this Information Request.

The Commission does not accept load file productions via email or those that are posted on download sites (e.g., FTP, secure server).

The Commission recognizes that occasionally unforeseen issues will arise that require replacing documents or data from a previously delivered production with new documents or corrected data. Substantive corrections may require the reproduction of the entire production volume. The production format for all corrections must be agreed upon prior to any submission of corrections. Any productions that have been created but not delivered when the need for corrections is detected must be corrected prior to delivery. Each replacement or corrected production must be named based on the production volume that is being replaced or corrected. For example, if a corrected metadata file replaces data in the previously delivered volume ABC-001-001 then the file name ABC-001-001-fix.txt should be used. Replacement document image file names, likewise, must be labeled with the same Identification number as the image being replaced. A separate correcting file is required for each volume to be corrected. These replacement or corrected productions must be delivered on separate media from any new productions. In the event that corrections alter the statistical information previously reported in the cover letter spreadsheet, an updated submission index spreadsheet with the corrected final statistical information must accompany each replacement or corrected submission. Provide this in hard copy format and electronically on the deliverable media.

## METADATA TABLE OF REQUESTED FIELDS

Review carefully as fields may have been added or modified from the Commission's last set of specifications.

Field Name	Field Description	Field Type	Hard-Copy	Email	Other ESI	Calendar Items
COMPANIES	Company submitting data	Multi-Entry	X	X	X	X
MEDIAID	The unique identifier on the physical piece of media (e.g., ABC001)	Note Text	X	X	X	X
VOLUMENAME	Production volume number (e.g., ABC001-001)	Note Text	X	X	X	X
CUSTODIAN	Custodian(s) / source(s) -- format: <i>Last, First</i> or <i>ABC Dept.</i> Be consistent across all ESI sources/productions.	Multi-Entry	X	X	X	X
TIMEZONE	The TimeZone in which the custodian is located.	Note Text		X	X	X
SPEC#	Subpoena/request paragraph number to which the document is responsive	Multi-Entry	X	X	X	X
HASHMD5	Document MD5 hash value (used for deduplication or other processing)	Note Text		X	X	X
HASHSHA	Document SHA1 hash value (used for deduplication or other processing)	Note Text		X	X	X
SEARCHVALUES	List of search terms used to identify record as responsive (if used)	Multi-Entry	X	X	X	X
BEGDOC#	Start Identification number (including prefix) -- No spaces or special characters	Note Text	X	X	X	X
ENDDOC#	End Identification number (including prefix) -- No spaces or special characters	Note Text	X	X	X	X
DOCID	Must equal the value appearing in the BEGDOC# field and be UNIQUE	Note Text	X	X	X	X
NUMPAGES	Page count	Integer	X	X	X	X
PARENTID	Parent record's BEGDOC#, including prefix (populated ONLY in child records)	Note Text	X	X	X	X
ATTACHMENTIDS	Child document list: BEGDOC# of each child (populated ONLY in parent records)	Multi-Entry	X	X	X	X
FAMILYRANGE	Range of the BEGDOC# value of the parent record to the ENDDOC# value (including prefix) of the last child record (for example, ABC-JD-00001201 - ABC-JD-00001220); populated for all documents in the group. Empty if the record is NOT in family grouping	Note Text	X	X	X	X
EPROPERTIES	Indicate all that apply: Record Type: E-Doc, E-Doc Attachment, Email, Email Attachment, Hard Copy, Calendar Appt Other Notations: Translation of [DOCID of original], Translated as [DOCID of Translation] Privilege Notations: Redacted, Privileged, Family Member of Priv Doc	Multi-Entry	X	X	X	X
FOLDERLABEL	Email folder path (sample: Smith,James-Inbox\Active); or Hard Copy folder/binder title/label prepended with Custodian Name.	Multi-Entry	X	X		X
FROM	Author of the Email or Calendar item (as formatted on the original)	Note Text		X		X
TO	Recipients of the Email or Calendar Item (as formatted on the original)	Multi-Entry		X		X
CC	Names of the individuals who were copied on the Email or Calendar Item (as formatted on the original)	Multi-Entry		X		X
BCC	Names of the individuals who were blind-copied on the Email or Calendar Item (as formatted on the original)	Multi-Entry		X		X
SUBJECT	Email or calendar subject	Note Text		X		X
DATE_HC	Date of hard copy documents, if coded. Format: YYYYMMDD.	Date	X			
DOCDATE	This is a multipurpose date field. Populate with: DATESAVED for E-Docs; DATESENT for Emails; DATEAPPTSTART for calendar appointments; DATE_HC for hard copy documents, if available. Format: YYYYMMDD.	Date	X	X	X	X
DATECREATED	Date electronic file was created. Format: YYYYMMDD.	Date			X	
DATESENT	Date the Email or Calendar Item was sent. Format: YYYYMMDD.	Date		X		X
TIMESENT	Time Email or Calendar Item was sent -- Format: HH:MM:SS (use 24 hour times, e.g., 13:32 for 1:32 pm; timezone indicators cannot be included)	Time		X		X
DATERECEIVED	Date Email or Calendar Item was received. Format: YYYYMMDD.	Date		X		X
TIMERECEIVED	Time Email or Calendar Item was received. Format: HH:MM:SS (use 24 hour times, e.g., 13:32 for 1:32 pm; timezone indicators cannot be included)	Time		X		X
HEADER	The internet header information for Email sent through the internet;	Note Text		X		
INTERNETMSGID	Globally unique identifier for a message which typically includes messageid and a domain name. Example: <0E6648D558F338179524D555@m1p.innovy.net	Note Text		X		X



MESSAGEID	Unique system identification number for the e-mail message assigned by the proprietary email database/mailstore/post office file associated with centrally managed enterprise email servers. EntryID for Microsoft Outlook, the UniqueID (UNID) for Lotus Notes, or equivalent value for other proprietary mailstore formats.	Note Text		X		X
INREPLYTOID	Internet message ID of the Email replied to	Note Text		X		
CONVERSATIONINDEX	Email Thread Identification	Note Text		X		X
IMPORTANCE	Email flag indicating priority level set for message	Note Text		X		X
DELIVRECEIPT	Delivery receipt request notification for Email messages	Note Text		X		X

An "X" indicates that the field should be populated in the load file produced. "Other ESI" includes non-email files, such as, but not limited to MS Office files, WordPerfect files, etc.

