



# PUBLIC NOTICE

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## WIRELINER COMPETITION BUREAU FINALIZES APPLICATION FILINGS, PROCEDURES, COST CATALOG, AND REPLACEMENT LIST FOR THE SECURE AND TRUSTED COMMUNICATIONS NETWORKS REIMBURSEMENT PROGRAM

WC Docket No. 18-89

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### I. INTRODUCTION

1. By this Public Notice, the Wireline Competition Bureau (Bureau) adopts final procedures for, and provides eligible providers of advanced communications services with additional guidance regarding, the application filing and reimbursement process for the \$1.9 billion Secure and Trusted

Communications Networks Reimbursement Program (Reimbursement Program).<sup>1</sup> After considering comments received in response to the *Reimbursement Process Public Notice*,<sup>2</sup> the Bureau finalizes the information fields on the new FCC Form 5640, which participants must submit to request funding allocations and disbursements from the Reimbursement Program, as well as the procedures governing the submission of and any modifications made to that form. Acting Chairwoman Rosenworcel has announced a “target date” of October 29, 2021 to open the Reimbursement Program filing window to begin accepting applications.<sup>3</sup> Prior to the target date, the Bureau will announce in a forthcoming public notice when it will open the Reimbursement Program online portal and begin accepting applications, and the filing window closing date. Finally, after considering comments received in response to the *Catalog Public Notice*,<sup>4</sup> the Bureau also finalizes with this Public Notice the Catalog of Eligible Expenses and Estimated Costs (Catalog) and the List of Categories of Suggested Replacement Equipment and Services (Replacement List) which will be made available on the Commission’s website.<sup>5</sup>

## II. BACKGROUND

2. The Secure and Trusted Communications Networks Act of 2019 (Secure Networks Act) directs the Commission to establish the Reimbursement Program.<sup>6</sup> The Reimbursement Program will reimburse providers of advanced communications services with ten million or fewer customers for costs incurred in the removal, replacement, and disposal of covered communications equipment or services that pose a national security risk, i.e., communications equipment or services produced or provided by Huawei Technologies Company (Huawei)<sup>7</sup> or ZTE Corporation (ZTE),<sup>8</sup> that were obtained by providers on or before June 30, 2020.<sup>9</sup>

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<sup>1</sup> The rules adopted by the Commission in 47 CFR § 1.50004, and cited herein, contain new or modified information collection requirements subject to approval from the Office of Management and Budget pursuant to the Paperwork Reduction Act of 1995, Pub. L. 104-13, before becoming effective. Accordingly, those rule subparts requiring OMB approval are currently denoted as “reserved” in the Electronic Code of Federal Regulations, eCFR.gov. To find the full text of the adopted rule, see Appx. A to the *2020 Supply Chain Order*, as amended by Appx. A to the *2021 Supply Chain Order. Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs*, WC Docket No. 18-89, Second Report and Order, 35 FCC Rcd 14284, 14374-83, Appx. A (2020) (*2020 Supply Chain Order*); *Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs*, WC Docket No. 18-89, Third Report and Order, FCC 21-86, 2021 WL 3024271, at 49-51, Appx. A (Jul. 14, 2021) (*2021 Supply Chain Order*).

<sup>2</sup> *Wireline Competition Bureau Seeks Comment on Secure and Trusted Communications Networks Reimbursement Program Application Filings and Process*, WC Docket No. 18-89, Public Notice, DA 21-607 (WCB May 24, 2021) (*Reimbursement Process Public Notice*).

<sup>3</sup> See *2021 Supply Chain Order*, Stmt. of Acting Chairwoman Jessica Rosenworcel at \*1, <https://docs.fcc.gov/public/attachments/FCC-21-86A2.pdf>.

<sup>4</sup> *Wireline Competition Bureau Seeks Comment on a Report and Preliminary Cost Catalog and Replacement List to Help Providers Participate in the Supply Chain Reimbursement Program*, WC Docket No. 18-89, Public Notice, DA 21-355 (WCB Mar. 25, 2021) (*Catalog Public Notice*).

<sup>5</sup> Information related to the FCC’s supply chain proceeding and the Reimbursement Program is available at <https://www.fcc.gov/supplychain>.

<sup>6</sup> Secure and Trusted Communications Networks Act of 2019, Pub. L. No. 116-124, § 4(a)-(c), 134 Stat. 158 (2020) (codified as amended at 47 U.S.C. §§ 1601–1609) (Secure Networks Act).

<sup>7</sup> See generally *Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs – Huawei Designation*, PS Docket No. 19-351, Order, 35 FCC Rcd 6604 (PSHSB 2020) (*Huawei Designation Order*).

<sup>8</sup> See generally *Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs – ZTE Designation*, PS Docket No. 19-352, Order, 35 FCC Rcd 6633 (PSHSB 2020) (*ZTE Designation Order*).

3. On December 10, 2020, the Commission adopted the *2020 Supply Chain Order*, which established the Reimbursement Program.<sup>10</sup> Along with adopting rules to create the Reimbursement Program, the Commission directed the Bureau to create reimbursement forms that “establish the timing and calculate the amount of the allocations,”<sup>11</sup> “develop a final Catalog of Eligible Expenses [(Catalog)] . . . , and make other determinations regarding eligible costs and the reimbursement process.”<sup>12</sup> The Commission also delegated to the Bureau authority to “adopt the necessary policies and procedures . . . to protect against waste, fraud, and abuse.”<sup>13</sup> The Commission further authorized the Bureau “to engage contractors to assist in the reimbursement process and the administration of the Reimbursement Program.”<sup>14</sup> On December 27, 2020, Congress appropriated \$1.895 billion in funding in the Consolidated Appropriations Act, 2021 (CAA) to “carry out” the Reimbursement Program.<sup>15</sup>

4. On March 25, 2021, the Bureau released a public notice seeking comment on a report discussing the removal, replacement, and disposal process and a preliminary Catalog and Replacement List prepared at the Bureau’s direction by the consulting firm Widelity, Inc. (Widelity).<sup>16</sup> On April 28, 2021, the Bureau announced the selection of Ernst & Young LLP as the Reimbursement Program Fund Administrator to assist the Bureau with processing applications and administering the Reimbursement Program.<sup>17</sup> The Bureau then released a public notice on May 24, 2021 seeking comment on the proposed application filing process, forms, and information fields contained on application requests for funding allocations and reimbursement claim requests for the Reimbursement Program.<sup>18</sup> We received a total of 13 comments in response to the *Catalog Public Notice*, and 7 comments in response to the *Reimbursement Process Public Notice*.<sup>19</sup>

5. On July 13, 2021, the Commission adopted the *2021 Supply Chain Order*, which

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<sup>9</sup> See 47 U.S.C. §§ 1603(c), 1608 (stating “‘advanced communications service’ has the meaning given the term ‘advanced telecommunications capability’ in section 706 of the Telecommunications Act of 1996”); *Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs*, WC Docket No. 18-89, Report and Order, Further Notice of Proposed Rulemaking, and Order, 34 FCC Rcd 11423, 11475-76, para. 140 (2019) (*2019 Supply Chain Order and Further Notice*); *2021 Supply Chain Order* at 21, para. 46.

<sup>10</sup> *2020 Supply Chain Order*.

<sup>11</sup> *Id.* at 14358, para. 180.

<sup>12</sup> *2020 Supply Chain Order*, 35 FCC Rcd at 14358, para. 180; see also 47 CFR § 1.50004(p) (“The Commission delegates authority to the [Bureau] to adopt the necessary policies and procedures relating to allocations, draw downs, payments obligations, and expenditures of money from the Reimbursement Program to protect against waste, fraud, and abuse and in the event of bankruptcy, to establish a [Catalog] and predetermined cost estimates, review the estimated cost forms, issue funding allocations for costs reasonably incurred, set filing deadlines, and review information and documentation regarding progress reports, allocations, and final accountings.”).

<sup>13</sup> *2020 Supply Chain Order*, 35 FCC Rcd at 14358, para. 181.

<sup>14</sup> *Id.*

<sup>15</sup> Consolidated Appropriations Act, 2021, Pub. L. No. 116–260, Title IX—Broadband Internet Access Service, § 906(2), 134 Stat. 1182 (2020) (CAA).

<sup>16</sup> *Catalog Public Notice* at 2; see Widelity, Inc., <https://widelity.com/about-widelity/> (last visited Jun. 11, 2021). Widelity, Inc. is a consulting firm that specializes in providing network engineering consultation services.

<sup>17</sup> *Wireline Competition Bureau Announces Selection of the Secure and Trusted Communications Networks Reimbursement Program Fund Administrator*, WC Docket No. 18-89, Public Notice, DA-21-490, 2021 WL 1719301, at 1 (WCB Apr. 28, 2021); see also *2020 Supply Chain Order*, 35 FCC Rcd at 14358, para. 181 (“[The Commission] authorizes the Wireline Competition Bureau to engage contractors to assist in the reimbursement process and the administration of the Reimbursement Program.”).

<sup>18</sup> *Reimbursement Process Public Notice* at 1.

<sup>19</sup> Appx. E.

amended the Commission's rules to incorporate the CAA amendments to the Secure Networks Act.<sup>20</sup> Specifically, the *2021 Supply Chain Order* (1) increased the customer eligibility cap for participation in the Reimbursement Program from 2 million or fewer customers to 10 million or fewer customers; (2) modified the type of equipment and services eligible for reimbursement to be limited to communications equipment and services produced or provided by Huawei or ZTE that are on the Covered List; (3) adjusted the date by which equipment or services must have been obtained to be eligible for Reimbursement Program funds to June 30, 2020; (4) adopted the prioritization scheme created in the CAA; (5) clarified the definition of "provider of advanced communications service" for the purposes of the Reimbursement Program; and (6) clarified portions of the Reimbursement Program to assist eligible providers seeking reimbursement.<sup>21</sup>

### III. DISCUSSION

#### A. FCC Form 5640 - Application Request for Funding Allocation and Reimbursement Claim Requests

6. We adopt the application and reimbursement procedures and finalize forms for the Reimbursement Program proposed in the *Reimbursement Process Public Notice*.<sup>22</sup>

##### 1. Application Request for Funding Allocation Form

7. In the *Reimbursement Process Public Notice*, we provided a representative sample of the questions to be included in the FCC Form 5640 Application Request for Funding Allocation and sought comment on those information fields.<sup>23</sup> We received persuasive comments regarding various fields applicants would complete in the new proposed form and, in response, we have implemented some modifications, and will proceed with finalizing that form.

8. We proposed in the *Reimbursement Process Public Notice* "requiring applicants to identify in their application for each location site: (1) where covered communications equipment or services are located (e.g., address, longitude and latitude, etc.) and documentation supporting the acquisition/existence of such covered equipment or services; and (2) the itemized cost estimates, taken from the Catalog where applicable, that are associated with the removal, replacement, and disposal of covered equipment and services at each site."<sup>24</sup> Several commenters argued that requiring specific information about equipment at the application stage is burdensome on small carriers and some carriers may not have access to the information.<sup>25</sup> The Rural Wireless Broadband Coalition recommended that instead of requiring such information at the application stage, the Application Request for Funding Allocation should, after the equipment is removed, populate a field for the make, model, and number of units for the removed equipment.<sup>26</sup>

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<sup>20</sup> See generally *2021 Supply Chain Order*.

<sup>21</sup> *Id.* at 1, para. 2.

<sup>22</sup> *Reimbursement Process Public Notice* at 3. The Bureau, in a future public notice, will provide additional guidance to Reimbursement Program participants on satisfying the Commission's disposal requirement. See *2020 Supply Chain Order*, 35 FCC Rcd at 14358, para. 179 ("We expect the Wireline Competition Bureau to provide participants with additional guidance to help participants with the disposal and verification process.").

<sup>23</sup> See *Reimbursement Process Public Notice*, Appx. A.

<sup>24</sup> See *id.* at 4.

<sup>25</sup> See CCA Reimbursement Process Public Notice Comments at 5-7 (stating the Commission should allow "reasonable up-front descriptions of covered equipment, followed by later confirmation."); Rural Wireless Broadband Coalition Reimbursement Process Public Notice Comments at 3-5, 8 ("Matching equipment to specific sites is impracticable, in most cases.").

<sup>26</sup> Rural Wireless Broadband Coalition Reimbursement Process Public Notice Comments at 8; see also Letter from Alexi Maltas, Senior V.P. & General Counsel, CCA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-89, (continued...)

9. We decline to modify the proposed site-specific information collected. The identification and tracking of site-specific information on covered and replacement communications and services, as well as on cost estimates, helps to ensure funds are spent for the purpose intended and protects against waste, fraud, and abuse. This information assists in determining program eligibility for the removal, replacement, and disposal of Huawei and ZTE equipment or services obtained on or before June 30, 2020 and facilitates the assessment of applicants' cost estimates for allocation purposes. We acknowledge that requiring site-specific information is more burdensome than a self-certification requirement. Including the more detailed site-specific information, however, will ensure that the Reimbursement Program Fund Administrator will be able to properly allocate the \$1.895 billion and will limit the risk that incorrect estimates unnecessarily deplete the Reimbursement Program to the detriment of other applicants. Additionally, any increased costs associated with preparing applications that include site-specific information are potentially eligible for Reimbursement Program support, decreasing the financial burden on applicants when preparing applications.<sup>27</sup> We, therefore, conclude that the benefits of the site-specific filing requirement outweigh any burden on the carriers. We recognize, however, that the information provided is made in "good faith and that all information provided . . . is true and correct to the best of Applicant's knowledge," based on the prior exercise of reasonable due diligence, at the time the application is filed.<sup>28</sup> The Bureau will provide a process for participants to file modifications to their applications if more accurate information subsequently becomes available.<sup>29</sup>

10. *Additional Requested Form Changes.* Several commenters sought changes or clarifications to the proposed information fields included in the Application Request for Funding Allocation. Nokia proposed changes to the questions concerning the use of Open Radio Access Network (Open RAN) technology interface standards by applicants.<sup>30</sup> Specifically, Nokia requested that the fields indicating that applicants selected Open RAN solutions be removed because the fields show a preference for Open RAN.<sup>31</sup> We disagree. These questions are merely intended to help the Commission track technology choices by providers and do not suggest or otherwise encourage an applicant to select a particular technology solution. Accordingly, we fail to see how these questions show a preference for certain types of network architecture and decline to remove these questions.

11. Mavenir Systems, Inc. (Mavenir) separately requested several changes to the proposed information fields.<sup>32</sup> Specifically, Mavenir requested that we strike the use of "O RAN" to avoid confusion between Open RAN generally and the O RAN Alliance, that we specify an applicant is using fronthaul Radio Access Network and Core Network, and that we specify that an applicant is compliant with O-RAN Alliance 7.2 fronthaul standards rather than the more generally stated "O-RAN Alliance

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at 1-2 (filed July 15, 2021) (urging "Commission to reconsider the level of detail required in the initial application stage") (CCA July 15, 2021 *Ex Parte*).

<sup>27</sup> See 47 CFR § 1.50004(p) (delegating authority to the Bureau to issue "funding allocations for costs reasonably incurred").

<sup>28</sup> See *Reimbursement Process Public Notice*, Appx. A, Item Number 58.

<sup>29</sup> See *infra* III.A.9 (discussing modifications). As to the additional concerns raised by RWA, the online application will allow applicants to designate a site as "other" and provide a text field to describe the nature of the site, e.g., warehouse. See *RWA Reimbursement Process Public Notice Comments* at 3. However, this should not be used to replace more specific site information if it is available. The online application will also provide a separate field for applicants to identify costs estimates not contained, or different than those listed, in the Catalog. *Id.* at 4. We will also allow applicants to identify costs not associated with specific site locations, e.g., network-wide costs that apply to several site locations such as disposal costs or software upgrades and other soft costs.

<sup>30</sup> See *Reimbursement Process Public Notice*, Appx. A, Item Numbers 51-54; *Nokia Reimbursement Process Public Notice Comments* at 12.

<sup>31</sup> *Nokia Reimbursement Process Public Notice Comments* at 12.

<sup>32</sup> *Mavenir Reimbursement Process Public Notice Comments* at 1-2.

standards.”<sup>33</sup> Additionally, Mavenir suggested two additions to the information fields inquiring whether applicants are using equipment or service compliant with the 3GPP X2 standard and other 3GPP open interfaces, and if so, whether there is an associated fee to make the equipment interoperable or open.<sup>34</sup> To reduce confusion, we remove the general O-RAN question that was in item 51 on the proposed Application Request for Funding Allocation.<sup>35</sup> Additionally, we modify items 53 and 54 to ask applicants if the “equipment or service is compliant with O-RAN Alliance standards, such as O-RAN Alliance 7.2 fronthaul standards.”<sup>36</sup> While the O-RAN Alliance 7.2 fronthaul standard is currently a leading standard, work continues on this developing standard, and updates continue to be published. For example, on June 29, 2021, after Mavenir and others filed their comments, the O-RAN Alliance published a Third White Paper, “O-RAN Minimum Viable Plan and Acceleration towards Commercialization.”<sup>37</sup> In the Third White Paper, the O-RAN Alliance wrote that “[f]uture O-RAN releases will extend the [Minimum Viable Plan] with new features and functionalities as these inputs and priorities evolve.”<sup>38</sup> We want to ensure the information collected on the Application Request for Funding Allocation addresses whether the equipment is compatible with any future standards that are adopted as the O-RAN Alliance continues its work. Finally, we include the two questions regarding 3GPP X2 standard and open interfaces because these questions are helpful in analyzing technology trends.

12. ADTRAN, Inc. (ADTRAN) suggested incorporating a “country of origin” line item into the Application Request for Funding Allocation, which would support a “buy American” policy.<sup>39</sup> Specifically, ADTRAN requests for the Application Request for Funding Allocation to include a question about the replacement equipment manufacturer’s country of origin.<sup>40</sup> ADTRAN argued that such information collection would be consistent with the Open RAN-related line items.<sup>41</sup> We find that including a “country of origin” question on the Application Request for Funding Allocation will further help the Commission track and analyze technology trends without increasing the overall burden on applicants. Accordingly, we will modify the Application Request for Funding Allocation to include a question about the replacement equipment manufacturer’s country of origin.

13. The Rural Wireless Association (RWA) requested clarifications and additions to the FCC Form 5640 Application Request for Funding Allocation. In particular, RWA argued that form changes were necessary because the Commission had yet to address whether there would be further prioritization within the three levels prioritized by Congress in the Secure Networks Act.<sup>42</sup> In the *2021 Supply Chain Order*, the Commission rejected RWA’s request to provide additional sub-prioritization categories

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<sup>33</sup> *Id.*

<sup>34</sup> *Id.* at 2.

<sup>35</sup> See *Reimbursement Process Public Notice*, Appx. A, Item Number 51.

<sup>36</sup> *Id.*, Appx. A, Item Numbers 53 and 54.

<sup>37</sup> O-RAN Alliance, O-RAN Minimum Viable Plan and Acceleration towards Commercialization (June 29, 2021), <https://static1.squarespace.com/static/5ad774cce74940d7115044b0/t/60daf34f041acf553658bb34/1624961876380/O-RAN+Minimum+Viable+Plan+and+Acceleration+towards+Commercialization+White+Paper+29+June+2021.pdf> (O-RAN Alliance White Paper).

<sup>38</sup> O-RAN Alliance White Paper at 78. O-RAN Alliance states, “[t]he O-RAN ALLIANCE will continue to work towards the vision of a fully open and intelligent RAN through the definition of innovative use cases and a secure network architecture that can be deployed commercially with interoperable verified multi-vendor solutions.” O-RAN Alliance White Paper at 25.

<sup>39</sup> ADTRAN Reimbursement Program Public Notice Comments at 2-6.

<sup>40</sup> *Id.* at 2-3.

<sup>41</sup> *Id.* at 6.

<sup>42</sup> RWA Reimbursement Program Public Notice Comments at 2.



outside of the scheme advanced by Congress.<sup>43</sup> Thus, we find the changes requested by RWA would be inconsistent with the Commission's rules.

14. *Administrative and Form Consistency Changes.* We will further require, as proposed, that applicants obtain and identify in their applications an FCC Registration Number (FRN) issued by the Commission Registration System (CORES), a Data Universal Numbering System (DUNS) number or where applicable, a DUNS+4 number, and that applicants register with the System for Award Management (SAM) and provide the SAM Commercial and Government Entity (CAGE) Code in their applications. No commenter objected to these proposals.<sup>44</sup> An FRN is an identifying number that is assigned to entities doing business with the Commission.<sup>45</sup> Registration in the SAM provides the Commission with an authoritative source for information necessary to provide funding to applicants and to ensure accurate reporting pursuant to the Federal Funding Accountability and Transparency Act.<sup>46</sup> The DUNS number or, where applicable, the DUNS+4 number, provides necessary banking information to assist the Commission in the electronic payment of funds to program recipients.<sup>47</sup>

15. Separately, to reflect changes adopted in the *2021 Supply Chain Order*, we modify the question on the FCC Form 5640 concerning whether the applicant has obtained covered communications equipment or services.<sup>48</sup> The CAA amended the Secure Networks Act to modify the covered communications equipment and services eligible for the Reimbursement Program.<sup>49</sup> The Commission in the *2021 Supply Chain Order* implemented these changes by changing its rules to limit equipment and services eligible for the reimbursement to communications equipment or services produced or provided by Huawei and ZTE that are purchased, leased, or otherwise obtained on or before June 30, 2020.<sup>50</sup> Accordingly, we have made the necessary changes to the FCC Form 5640 to ask the applicant whether it has “previously purchased, leased or otherwise obtained communications equipment or services on the Covered List that were produced or provided by Huawei or ZTE, including their affiliates and subsidiaries, on or before June 30, 2020.”<sup>51</sup>

16. We have also added a question for applicants to indicate whether the cost estimate provided by the applicant includes a technology upgrade over a comparable replacement. This information will help the Bureau and the Reimbursement Program Fund Administrator identify requests involving technology upgrades. As the Commission stated in the *2021 Supply Chain Order*, “[p]articipants may obtain Reimbursement Program support for an amount equivalent to the cost estimate of a comparable replacement” but noted that if “a participant ultimately decides to upgrade to a higher quality, more advanced, non-comparable replacement, then the program participant will bear the

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<sup>43</sup> *2021 Supply Chain Order* at 29, para. 65.

<sup>44</sup> RWA explicitly took no issue with these requirements. RWA Reimbursement Program Public Notice Comments at 2.

<sup>45</sup> Applicants can register with CORES here: <https://apps.fcc.gov/cores/userLogin.do>.

<sup>46</sup> 31 U.S.C. § 6101 note. Applicants can register with the SAM here: <https://www.sam.gov/SAM/>. SAM registration requires additional information including: Data Universal Numbering System (DUNS) number, Taxpayer Identification Number (TIN) or Employment Identification Number (EIN), and bank routing and account number for Electronic Funds Transfer (EFT). The CAGE code is a five-character identifier, which is used by entities doing business with the Federal government to provide banking and other related information.

<sup>47</sup> SAM Non-Federal User Guide § 4.3.1.6.1 (“If your entity has more than one bank account that needs to be listed on the registration, you will need to create DUNS+4. The DUNS+4 should be created if the registered entity only has one physical location but more than one bank account. The DUNS+4 is a user generated four-digit number.”).

<sup>48</sup> See *Reimbursement Process Public Notice*, Appx. A, Item Number 25.

<sup>49</sup> See CAA § 901.

<sup>50</sup> *2021 Supply Chain Order* at 70, para. 45.

<sup>51</sup> See *Reimbursement Process Public Notice*, Appx. A, Item Number 25.

difference in cost between the comparable replacement and the technology upgrade solution chosen.”<sup>52</sup> The added question will help identify participants seeking a technology upgrade solution so that the Reimbursement Program Fund Administrator and the Bureau can review the applications accordingly. Participants are reminded that, when seeking a technology upgrade, they will need to include a vendor quote for the comparable replacement in addition to a vendor quote for the upgrade they wish to purchase.<sup>53</sup> Finally, we have also made minor changes to the language of certain questions to improve clarity and assist applicants.

17. We strongly encourage interested participants to collect the information needed to prepare the application in advance of the opening of the filing window. Taking proactive steps will facilitate the submission process for applicants and help them identify and overcome potential challenges in advance of a filing deadline. Incomplete applications may be dismissed by the Bureau, which could prevent a provider from participating in the Reimbursement Program.

## 2. Online Filing Portal

18. As proposed, we will use an online filing portal to receive and process Application Requests for Funding Allocation and to coordinate the interactions between program participants, the Reimbursement Program Fund Administrator, and the Bureau.<sup>54</sup> No commenters addressed this approach. Applicants and recipients will electronically submit all filings related to the Reimbursement Program, including the Application Request for Funding Allocation, using an online filing portal. We will allow applicants to submit applications at either the holding company level or individual/subsidiary level as proposed.<sup>55</sup> We strongly recommend, however, that applicants file a single application at the holding company level to optimize administrative efficiency by reducing the number of filings requiring processing.

19. Commenters supported our proposal to consider the use of Excel batch uploads of information to facilitate the completion of applications.<sup>56</sup> To facilitate application preparation and ease the filing burden on applicants, we will develop the capability to allow batch uploads for targeted and specific portions of the applications.<sup>57</sup> Additionally, some commenters requested that the Commission ensure there will be sufficient support for issues associated with filings in the portal.<sup>58</sup> We agree and will make support available to applicants for issues with the portal. Specifically, a Reimbursement Program Fund Administrator helpline and an email address will be designated for Reimbursement Program applicants to address questions related to their application and reimbursement request submissions. We will also provide additional details on the online filing process through webinars and other outreach activities.

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<sup>52</sup> *2021 Supply Chain Order* at 36-37, paras. 88, 91 (“In particular, we reiterate, as previously stated in the *2020 Supply Chain Order*, that 4G Long Term Evolution (LTE) network equipment or service, which would include VoLTE technology, would be treated as a comparable replacement for an older mobile wireless network for purposes of the Reimbursement Program.”) (citation omitted).

<sup>53</sup> *See id.* at 37-38, paras. 91-92.

<sup>54</sup> *Reimbursement Process Public Notice* at 3.

<sup>55</sup> *Id.* at 5.

<sup>56</sup> CCA Reimbursement Process Public Notice Comments at 4; RWA Reimbursement Process Public Notice Comments at 3.

<sup>57</sup> For example, we are working towards facilitating batch uploads for the site-location and equipment identification information contained in the Application Request for Funding Allocation. Separately, as requested by RWA, we will evaluate the use of .zip upload files for providing supporting documentation. RWA Comment at 3.

<sup>58</sup> CCA Reimbursement Process Public Notice Comments at 4-5.



### 3. Filing Window

20. *Timing and Length.* We adopt our proposals related to the Application Request for Funding Allocation filing window. Per section 1.50004(b) of the Commission's rules, the Bureau will announce the opening of an initial filing window in a subsequent public notice when the online filing portal is ready to begin accepting applications.<sup>59</sup> In that public notice, the Bureau will also announce the duration of the initial filing window.<sup>60</sup> Consistent with the *2021 Supply Chain Order*, the Bureau has discretion to set the length of the initial filing window, which is not limited to 30 days and may be longer if the Bureau finds that applicants need help navigating the application filing portal to compile the necessary documentation required for the filing requirements.<sup>61</sup> RWA, in its comments, indicated a 60-day filing window would ensure that applicants could timely file their Application Requests for Funding Allocation.<sup>62</sup> We agree with RWA that applicants would benefit from having a longer filing window and will consider this comment when we determine the duration of the filing window. We are working toward a target date of late October for the opening of the filing window.<sup>63</sup> We anticipate that the filing window period will run at least 60 days, and potentially longer. Until the filing window closes, we will allow applicants to initiate, save, submit, and make changes to submitted applications as proposed.<sup>64</sup>

### 4. Reimbursement Program Eligibility Verification

21. In the *2021 Supply Chain Order*, the Commission amended its rules to align eligibility for the Reimbursement Program with the CAA's amendments to the Secure Networks Act.<sup>65</sup> Consistent with the CAA, as implemented by the *2021 Supply Chain Order*, participation in the Reimbursement Program is limited to providers of advanced communications service with 10 million or fewer customers.<sup>66</sup> As the Commission determined in the *2020 Supply Chain Order*, "customers" is interpreted to include customers of the applicant and customers of any affiliate taking advanced communications service from the provider and its affiliates as of the date the application is filed.<sup>67</sup> Eligibility to participate in the Reimbursement Program is limited to "providers of advanced communications service," which is defined as providers of "high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology with connection speeds of at least 200 kbps in either direction."<sup>68</sup> A school, library or health care provider, or consortium thereof, providing facilities-based non-commercial educational broadband service connections of at least 200 kbps in one direction would qualify as a provider of advanced

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<sup>59</sup> 47 CFR § 1.50004(b).

<sup>60</sup> The Rural Wireless Broadband Coalition (RWBC) indicated that the process is burdensome on applicants and that it will take a significant amount of time to gather the information necessary to file an application request for funding allocation. RWBC Reimbursement Process Public Notice Comments at 8. RWBC suggests delaying the opening of the filing window by six months if the Commission adopted its proposed processes. *Id.* at 8. As we have not yet announced the opening of the filing window and have provided notice of our expectations and the information required in the application, we do not find it in the public interest to delay the opening of the filing window by six months. Moreover, given the national security threat posed by the communications equipment and services that will be removed, replaced, and disposed of, time is of the essence and we intend to open the filing window in due course.

<sup>61</sup> *2021 Supply Chain Order* at 39, para. 95.

<sup>62</sup> See RWA Reimbursement Process Public Notice Comments at 4-5.

<sup>63</sup> See *2021 Supply Chain Order* (accompanying statement by Acting Chairwoman Rosenworcel (July 14, 2021)).

<sup>64</sup> *Id.* at 5.

<sup>65</sup> *2021 Supply Chain Order* at 5, para. 11.

<sup>66</sup> *Id.*

<sup>67</sup> *2020 Supply Chain Order*, 35 FCC Rcd at 14333, para. 114.

<sup>68</sup> 47 CFR § 1.50001(a).

communication service for the purposes of the Reimbursement Program and is eligible for reimbursement funding.<sup>69</sup> The Commission in the *2021 Supply Chain Order* also modified the scope of covered communications equipment and services eligible for Reimbursement Program support consistent with the amendments to the Secure Networks Act by the CAA.<sup>70</sup> The modification limits eligibility for reimbursement to communications equipment or services produced or provided by Huawei or ZTE obtained on or before June 30, 2020.<sup>71</sup>

22. We will review, with the assistance of the Reimbursement Program Fund Administrator, Application Requests for Funding Allocation to verify Reimbursement Program eligibility as required by the Commission's rules.<sup>72</sup> The Application Request for Funding Allocation contains questions to assist with Reimbursement Program eligibility verification. For example, each applicant must answer "yes" or "no" as to whether it is a provider of advanced communications service with 10 million or fewer customers.<sup>73</sup> Applicants must also indicate "yes" or "no" to whether they have obtained covered communications equipment or service eligible for Reimbursement Program support on or before June 30, 2020.<sup>74</sup> In addition, applicants are required to identify the eligible covered communications equipment or service that they intend to remove, replace, and dispose of with Reimbursement Program support by site location.

23. The standard the Commission adopted to determine whether a provider is classified as a provider of advanced communications service is the same standard used to determine whether a provider must file FCC Form 477 to report broadband deployment data, i.e., the provision of a facilities-based broadband connection to an end user with a speed of at least 200 kbps in either direction.<sup>75</sup> Accordingly, as part of our internal verification process, we will cross-check applicants against the list of FCC Form 477 filers as of the most recent filing deadline. Applicants not identified on the most recent FCC Form 477 filer list may need to provide additional information to support Reimbursement Program eligibility in response to a Reimbursement Program Fund Administrator request for information.<sup>76</sup>

24. We find the validation of eligibility using FCC Form 477 filing information, coupled with requesting additional information evidencing eligibility where an entity has not recently filed an FCC Form 477, appropriate in our efforts to ensure the Reimbursement Program supports providers of advanced communications services with 10 million or fewer customers and protect against waste, fraud, and abuse.<sup>77</sup>

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<sup>69</sup> *2020 Supply Chain Order*, 35 FCC Rcd at 14332-33, para. 112.

<sup>70</sup> *2021 Supply Chain Order* at 16-21, paras. 13-45.

<sup>71</sup> *Id.* at 21-22, paras. 46-48. In the *2021 Supply Chain Order*, the Commission clarified that Huawei and ZTE equipment obtained but not in use could potentially be eligible for reimbursement. *Id.* at 23 & n.157.

<sup>72</sup> 47 CFR § 1.50004(d).

<sup>73</sup> See *Reimbursement Process Public Notice*, Appx. A, Item Number 23.

<sup>74</sup> See *id.*, Appx. A, Item Number 25

<sup>75</sup> *Id.* at 2-3.

<sup>76</sup> See *Reimbursement Process Public Notice*, Appx. A, Item Number 23 ("Note: If Applicant answers "yes" and there is no record of the applicant filing the Form 477 "Local Telephone Competition and Broadband Reporting" to report broadband deployment in the most recent reporting period, then Applicant will need to provide additional information supporting attestation."). Applicants that should have filed an FCC Form 477 but did not will need to provide additional documentation demonstrating Reimbursement Program eligibility and may separately have to file a Form 477, if required.

<sup>77</sup> 47 U.S.C. § 1603(e)(1) ("The Commission shall take all necessary steps to avoid waste, fraud, and abuse with respect to the Program.").

## 5. Cost Estimates

25. As required by the Secure Networks Act and the Commission's rules, the Application Request for Funding Allocation requires applicants to submit initial estimates of costs reasonably incurred for the permanent removal, replacement, and disposal of covered communications equipment or services.<sup>78</sup> Both the Secure Networks Act and the Commission's rules require applicants to provide cost estimates in their applications.<sup>79</sup> The Secure Networks Act specifically states that the "Commission shall require an applicant to provide an initial reimbursement cost estimate at the time of application, with supporting materials substantiating the costs," which the Commission "may require an applicant to . . . update," and "submit additional supporting materials."<sup>80</sup>

26. To help applicants submit cost estimates with their applications, the Commission permitted applicants to rely on estimated costs identified in the Catalog, which contains categories of quantifiable costs typically incurred in the removal, replacement, and disposal process. For costs not covered by the Catalog, or if applicants want to use a cost estimate that differs from the Catalog, the applicant can instead provide an individualized cost estimate supported by documentation (e.g., vendor quotes).<sup>81</sup> The finalization of the Catalog is discussed in Part III.B of this Public Notice, but here we address the proposals and comments related to the submission of cost estimates generally.

27. *Technology Upgrades.* In the *2021 Supply Chain Order*, the Commission clarified that "the 'costs reasonably incurred' standard . . . make[s] providers responsible for the additional incremental cost of funding upgrades that exceed what is reasonably necessary to transition to a comparable replacement."<sup>82</sup> The Commission acknowledged that whether an upgrade is a "reasonable, comparable replacement necessary for the transition" to a replacement "will likely depend on the facts in each case."<sup>83</sup> The Commission directed the Bureau, with the assistance of the Reimbursement Program Fund Administrator, to "first consider whether the cost is typically incurred when transitioning from covered communications equipment and services to a replacement."<sup>84</sup> Other factors we may consider include the "costs in relation to the alternative equipment and services and the capabilities and functions performed by the replacement equipment and service as compared to the equipment and services removed."<sup>85</sup>

28. As provided in the *2021 Supply Chain Order*, participants may obtain Reimbursement Program support for an amount equivalent to the cost estimate of a comparable replacement.<sup>86</sup> Participants electing to upgrade their equipment or service in excess of the costs of a comparable replacement, however, bear the difference in cost between the comparable replacement and the technology upgrade.<sup>87</sup> Participants seeking funding for a technology upgrade in excess of the costs of a comparable replacement will be required to provide price quotes for the comparable replacement with

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<sup>78</sup> See 47 U.S.C. § 1603(d)(2)(B); 47 CFR § 1.50004(c)(1)(i) (not yet effective).

<sup>79</sup> See *id.*

<sup>80</sup> 47 U.S.C. § 1603(d)(2)(B)(ii).

<sup>81</sup> 47 CFR § 1.50004(c)(1)(i) (not yet effective); *2020 Supply Chain Order*, 35 FCC Rcd at 14339-40, paras. 128-129.

<sup>82</sup> *2021 Supply Chain Order* at 36-37, para. 88.

<sup>83</sup> *Id.* at 37, para. 89.

<sup>84</sup> *Id.*

<sup>85</sup> *Id.*

<sup>86</sup> *Id.* at 37-38, para. 91.

<sup>87</sup> *Id.*

their Application Request for Funding Allocation—they may not rely on the cost estimates contained in the Catalog—and they must also separately certify that the cost estimate is made in good faith.<sup>88</sup>

29. While the Commission encourages providers to upgrade their networks, Congress directed the Commission to “preclude network upgrades that go beyond the replacement of covered communications equipment or services from eligibility.”<sup>89</sup> Providers are responsible for the additional incremental costs of funding upgrades that exceed what is reasonably necessary to transition to a comparable replacement.<sup>90</sup> In the *2021 Supply Chain Order*, the Commission found, as a general matter, expenses incurred replacing microwave backhaul with fiber backhaul or replacing last-mile fixed wireless links with fiber-to-the-premises (FTTP) are not reasonably necessary to transition to a comparable replacement.<sup>91</sup> Thus, consistent with the *2021 Supply Chain Order*, while we will view fiber replacements as a technology upgrade, not a reasonable, comparable replacement, Reimbursement Program participants may be reimbursed for a portion of their expenses up to the difference in cost between a comparable replacement and the fiber upgrade.<sup>92</sup> However, additional sources of federal funding outside the scope of Reimbursement Program may be available to applicants for fiber deployments which could account for costs that exceed the costs of a comparable replacement. We encourage providers to explore all available funding options to upgrade their networks with fiber. Additionally, the Commission found that handset upgrades and certain other customer-premises equipment (CPE) are ineligible for reimbursement because replacing such handsets is not reasonably necessary to the removal, replacement, and disposal of covered communications equipment or service.<sup>93</sup>

30. *Average Catalog Cost Estimate.* Separately, we adopt our proposals in the *Reimbursement Process Public Notice* related to the submission of cost estimates for the purposes of granting funding allocations. We adopt our proposal to base our evaluation of applicant’s cost estimates on the average between the minimum and maximum range of estimated costs for a particular itemized expense listed in the Catalog, rather than allowing applicants to choose any amount within the cost estimate range.<sup>94</sup> The preliminary catalog included a low-end and high-end range of cost estimates for each particular itemized expense identified to help develop a record on reasonable expenses associated with the relevant expenses. In addition to a range of cost estimates, the final Catalog now includes the average between the low-end and high-end range of cost estimates for each itemized expense identified. Applicants relying on Catalog cost estimates for their applications will select the predetermined average cost estimate for a particular itemized expense identified in the Catalog as opposed to providing a cost estimate that is within the range of cost estimates.<sup>95</sup> This approach will reduce the likelihood of applicants overestimating costs, and will thus minimize overallocation of limited funding to the detriment of other Reimbursement Program participants. Some commenters object to the use of average cost estimates, arguing that equipment types within the ranges are too varied, and that applicants will regularly exceed the averages.<sup>96</sup> We reject this argument. If an applicant finds that a Catalog cost estimate average

<sup>88</sup> 47 CFR § 1.50004(c)(1)(i) (not yet effective); *2021 Supply Chain Order* at 37-38, para. 91.

<sup>89</sup> *2021 Supply Chain Order* at 36, para. 88 (quoting H.R. Rep. No. 116-352, at 8 (2019)).

<sup>90</sup> *Id.*

<sup>91</sup> *Id.* at 37, para. 90.

<sup>92</sup> *See 2021 Supply Chain Order* at 37-38, paras. 90-91.

<sup>93</sup> *Id.* at 38-39, para. 93.

<sup>94</sup> *Reimbursement Process Public Notice* at 3-4.

<sup>95</sup> *Id.* at 3.

<sup>96</sup> Nokia Reimbursement Process Public Notice Comments at 6-7; RWA Reimbursement Process Public Notice Comments at 3 (requesting that additional documentation not be required if the estimate is above the average but within the range of the Catalog range); *see also* CCA July 15, 2021 *Ex Parte* at 2 (raising concerns about use of average cost).

does not fully account for its costs, or if a cost category is not identified in the Catalog, applicants are permitted to provide individualized cost estimates based on supporting documentation (e.g., vendor quotes) and certify the cost estimate is made in good faith.<sup>97</sup> This approach balances the Commission's goals of protecting against waste, fraud, and abuse while facilitating the production of estimates of costs reasonably incurred by applicants.

31. As indicated above, we will also collect cost-estimate information on a site-specific basis because it enables the review of cost estimates for reasonableness and promotes clear identification and tracking to assist with the invoicing process, as well as protecting against waste fraud and abuse. Applicants may, however, report in their applications network-wide costs, such as disposal costs or software upgrades, that apply to several site locations.<sup>98</sup>

32. Nokia asks us to permit applicants to submit cost estimates that are based on reasonable costs incurred by the applicant over an 18-month project timeline.<sup>99</sup> We decline to accept a cost estimate covering such a lengthy period of time. The removal, replacement, and disposal term provided for in the Secure Networks Act and the Commission's rules ends one year after the participant receives its initial disbursement of support.<sup>100</sup> Accordingly, participants should submit cost estimates accounting for a one-year term as currently provided under the Commission's rules that commences when the participant receives its initial draw down disbursement.

## 6. Reviewing Applications

33. The Commission's rules direct the Bureau to review applications to determine completeness, program eligibility, and the reasonableness of cost estimates.<sup>101</sup> The Bureau must "approve or deny" applications no later than 90 days after the close of the relevant filing window.<sup>102</sup> If additional time is needed to review the applications, the Bureau may extend the deadline up to an additional 45 days.<sup>103</sup> Consistent with the Secure Networks Act, the Commission's rules state "[i]f the . . . Bureau determines that an application is materially deficient (including by lacking an adequate cost estimate or adequate supporting materials), the . . . Bureau shall provide the applicant a 15-day period to cure the defect before denying the application."<sup>104</sup> We sought comment on additional facets of the review process and received limited comment on the opportunity to cure and the filing of amendments during the 90-day review period as discussed herein.<sup>105</sup>

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<sup>97</sup> See 47 CFR § 1.50004(c)(1)(i), (v) (not yet effective). Individualized cost estimates are made in lieu of the Catalog estimates.

<sup>98</sup> See *Reimbursement Process Public Notice* at 4.

<sup>99</sup> Nokia Reimbursement Process Public Notice Comments at 5 ("We ask that the Commission provide certainty that all carriers have 18 months to complete their network swaps (not 12 months) immediately, prior to commencement of the application process, so that all cost estimates take into account (at least) an 18 month time horizon rather than 12 months.").

<sup>100</sup> 47 CFR § 1.50004(h); 47 U.S.C. § 1603(h); Secure Networks Act § 4(h).

<sup>101</sup> 47 CFR § 1.50004(d).

<sup>102</sup> 47 U.S.C. § 1603 (d)(3)(A)(i); 47 CFR § 1.50004(d).

<sup>103</sup> 47 U.S.C. § 1603(d)(3)(A)(ii); 47 CFR § 1.50004(d). The Bureau may grant the 45-day extension if it determines that an excessive number of applications have been filed during the window and additional time is needed to review the applications.

<sup>104</sup> 47 CFR § 1.50004(d)(1).

<sup>105</sup> *Reimbursement Process Public Notice* at 5.

34. The 90-day review period will commence on the next business day following the close of the filing window, per the Commission's rules.<sup>106</sup> As proposed, after the filing window closes and the 90-day review period commences, the Reimbursement Program Fund Administrator will conduct an initial review of the applications to help the Bureau determine whether the applications are initially considered eligible and acceptable for filing and to evaluate the gross estimate demand contained in those applications.<sup>107</sup> The Bureau will then issue a public notice "announcing those applications initially found eligible" and acceptable for filing, and those applications considered materially deficient.<sup>108</sup> The Reimbursement Program Fund Administrator will proceed with processing those applications considered acceptable. Applicants filing applications found unacceptable for filing will need to amend and provide additional information demonstrating program eligibility before the Reimbursement Program Fund Administrator can proceed with processing their applications as acceptable for filing.

35. *15-Day Opportunity to Cure.* As required by the Secure Networks Act and the Commission's rules, we will give applicants whose applications are found materially deficient a 15-day opportunity to cure the deficiency before their application is denied.<sup>109</sup> As proposed, we will individually notify each applicant that its application is deficient and that it has 15 days to cure all of the identified deficiencies.<sup>110</sup> Such notice will be distinct from the public notice announcing applications accepted for filing and applications with material defects. RWA questions whether the 15-day cure period starts on the date of the public notice release or the individual notification date.<sup>111</sup> Accordingly, we clarify the 15-day cure period will commence on the date of the individual email notification is sent by the Commission and received by the applicant.

36. We also broadly interpret the statutory 15-day opportunity to cure as providing all applicants an opportunity to cure material defects that would lead to the denial or partial denial of an Application Request for Funding Allocation, even filers of applications that were initially found acceptable. In those instances, should the Bureau subsequently find, after further review, that the application is materially deficient and subject to denial, the applicant will be afforded the 15-day cure period.

37. *Requests for Additional Information.* During the application review process there may be multiple instances where the Reimbursement Program Fund Administrator seeks additional information from an applicant prior to an application being granted or denied. These additional opportunities to amend an application or provide supplemental information prior to any official decision will ensure that all applicants have sufficient opportunities to present the most complete application seeking reimbursement, and we clarify that these opportunities are separate and distinct from, and do not count

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<sup>106</sup> 47 CFR § 1.50004(d).

<sup>107</sup> *Reimbursement Program Process Public Notice* at 5-6. The evaluation of gross demand estimate will assist the Bureau in determining whether demand for reimbursement funds exceeds the allocated funding, triggering the need for prioritization in accordance with the Commission's rules. 47 CFR § 1.50004(f); *2021 Supply Chain Order* at 24-26, paras. 53-59. In evaluating gross cost estimate demand versus available funding, as well as when calculating net estimate demand after applications are fully processed, we direct the Reimbursement Program Fund Administrator to first account for expenses incurred by the Commission to implement and operate the Reimbursement Program which are provided for by the \$1.9 billion congressional appropriation, e.g., expenses related to the hiring of a Reimbursement Program Fund Administrator, to first determine how much funding is available for allocation. See *Reimbursement Process Public Notice* at 6 & n.40.

<sup>108</sup> *Reimbursement Process Public Notice* at 6 ("Initial findings that an application is eligible and accepted for filing would provide no guarantee that the applicant will ultimately be determined eligible by the Bureau or will receive a funding allocation or disbursement.").

<sup>109</sup> 47 U.S.C. § 1603(d)(3)(B); 47 CFR § 1.50004(d)(1).

<sup>110</sup> *Reimbursement Process Public Notice* at 5 & n.39.

<sup>111</sup> RWA Reimbursement Process Public Notice Comments at 6.



against, the formal 15-day opportunity to cure period. We find this clarification of the process mitigates RWA's concerns of having only a single 15-day cure period.<sup>112</sup>

38. *Amendments during the Application Review Period.* As proposed, we will allow applicants to make amendments to the filings during the 90-day review period.<sup>113</sup> Additionally, we adopt our proposal to deny, as a general matter, amendment requests to an Application Request for Funding Allocation that would result in an increase to the total cost estimate.<sup>114</sup> We therefore deny RWA's request to allow increases to applicant cost estimates.<sup>115</sup> Reimbursement Program support is limited and subject to prioritization requirements should demand exceed supply. Allowing amendments to increase cost estimates would hinder the review of applications within the statutory 90-day review period, as the Reimbursement Program Fund Administrator would need to restart its cost estimate review for reasonableness with each amendment filed. Moreover, amendments increasing total cost estimate demand could ultimately delay the issuance of allocations to all participants because the Bureau and Reimbursement Program Fund Administrator will not be able to determine if prioritization is necessary until all applications are processed and the last application is granted.

39. We also reject Nokia's request to allow applicants to build in an overrun allowance of 10% to account for unexpected costs. Nokia asks that applicants receive a funding allocation for 10% more than their reported cost estimates.<sup>116</sup> Applicants are required by the Commission's rules to provide good-faith cost estimates for removal, replacement, and disposal.<sup>117</sup> Applicants are thus encouraged to provide cost estimates that are as accurate as possible based on all available information. Allowing applicants to build in overrun allowances would undermine the goal of the Reimbursement Program of efficiently allocating funding support to help as many eligible providers as possible.

40. *45-Day Extension Period.* As proposed, and consistent with the Secure Networks Act,<sup>118</sup> we direct the Reimbursement Program Fund Administrator to advise the Bureau, based on its initial review of the applications filed, whether to extend the 90-day deadline for granting or denying applications by up to an additional 45-day period.<sup>119</sup> The Reimbursement Program Fund Administrator shall indicate whether it needs additional time to review the applications based on the number and complexity of the applications received. If the Bureau finds an extension justified, it will issue a public notice announcing the extension of the 90-day review period by a specified duration, not to exceed 45 days.

## 7. Funding Allocation

41. *Allocation.* Based on the cost estimates provided by applicants, the Reimbursement Program Fund Administrator will recommend for the Bureau's consideration a funding allocation for each approved application. The Bureau will review each recommendation and, following any modifications to cure deficiencies following the 15 day cure period, will either grant or deny the application and proceed with issuing the allocation. Should total allocation demand exceed the funding available, the

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<sup>112</sup> *Id.* at 6 (arguing that a single 15-day cure period will be very difficult for small carriers to meet and should only be invoked as a last resort).

<sup>113</sup> See *supra* III.A.1 (providing additional details on the filing of amendments).

<sup>114</sup> *Reimbursement Process Public Notice* at 7.

<sup>115</sup> RWA Reimbursement Process Public Notice Comments at 8 (asserting that recipients should be allowed to submit requests beyond the allocated funds in case Congress appropriates more funding for the Program).

<sup>116</sup> Nokia Reimbursement Process Public Notice Comments at 9.

<sup>117</sup> 47 CFR § 1.50004(c)(1)(i) (not yet effective).

<sup>118</sup> Secure Networks Act § 4(d)(3)(A)(ii).

<sup>119</sup> *Reimbursement Process Public Notice* at 5.

Reimbursement Program Fund Administrator's allocation recommendations will be adjusted in accordance with the prioritization scheme required by the amended Secure Networks Act and adopted by the Commission in the *2021 Supply Chain Order*.<sup>120</sup>

42. *No Allocation Adjustments.* As directed by the Commission in the *2020 Supply Chain Order*, "the funding amount allocated represents the maximum amount eligible for draw down by an eligible provider unless a subsequent funding allocation is made."<sup>121</sup> Accordingly, we emphasize that once the Bureau makes a funding allocation determination, the Bureau will not adjust the funding allocation amount even if there is a change in the participant's plans or if actual costs exceed estimated costs. To the extent a participant requires funding in excess of its allocated amount, the participant will be required to file a new application in a subsequent filing window, if and when such a filing window is announced. The Bureau will only issue funding disbursements for reasonable expenses actually incurred.<sup>122</sup>

43. *Allocation Announcement Schedule.* We adopt our proposal to periodically release public notices announcing funding recipients and the amount of their funding allocations as well as to notify recipients directly by email.<sup>123</sup> No commenter filed comments on this proposal. This approach ensures administrative efficiency while also providing transparency to Reimbursement Program applicants and recipients, as well as the public.

## 8. Reimbursement Claim Requests

44. Pursuant to the Commission's rules, after eligible providers receive funding allocations and incur actual costs, they must file reimbursement claims along with supporting invoices and other cost documentation to draw from their allocation.<sup>124</sup> Each Reimbursement Program recipient must file at least one reimbursement claim within one year of the approval of its Application Request for Funding Allocation.<sup>125</sup> Failure to file within the year will result in the expiration of the funding allocation and the provider will be unable to receive any reimbursement funds from the allocation as the unused funds would revert back to the Reimbursement Program.<sup>126</sup> The Commission would be able to then reallocate to other applications in a future filing window any funds from the expired allocation.<sup>127</sup> In this section, we adopt proposals related to the filing of reimbursement claims and extensions of the reimbursement claim deadline permitted under the Commission's rules.

45. *Filing Reimbursement Claim Requests.* We adopt several of our proposals related to processing recipients' requests for reimbursement and will finalize the FCC Form 5640 Reimbursement Claim Request as proposed.<sup>128</sup> Additionally, we adopt our proposal to allow recipients to submit multiple Reimbursement Claim Requests as they incur expenses throughout the reimbursement period.<sup>129</sup> The Bureau, with the assistance of the Reimbursement Program Fund Administrator, will review and grant or

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<sup>120</sup> 47 CFR § 1.50004(f); *2021 Supply Chain Order* at 24-26, paras. 53-59.

<sup>121</sup> See *2020 Supply Chain Order*, 35 FCC Rcd at 14347, para. 152.

<sup>122</sup> See *infra* III.A.8 (discussing Reimbursement Claim Requests Process).

<sup>123</sup> *Reimbursement Process Public Notice* at 6.

<sup>124</sup> See 47 CFR § 1.50004(g) (not yet effective); *2020 Supply Chain Order*, 35 FCC Rcd at 14353, para. 165.

<sup>125</sup> 47 CFR § 1.50004(g)(1) (not yet effective).

<sup>126</sup> *2020 Supply Chain Order*, 35 FCC Rcd at 14353, para. 165.

<sup>127</sup> *Id.*

<sup>128</sup> *Reimbursement Process Public Notice*, Appx. B.

<sup>129</sup> *Id.* at 6-7.

deny Reimbursement Claim Requests for actual costs reasonably incurred.<sup>130</sup>

46. We adopt the approach for processing Reimbursement Claim Requests proposed in the *Reimbursement Process Public Notice*.<sup>131</sup> Accordingly, using the features available in the online filing portal, recipients will be required to link actual costs incurred and the supporting invoice documentation to their itemized cost estimates previously filed with the Bureau to complete the claim.<sup>132</sup> Recipients must submit invoices through the online portal as attachments to their Reimbursement Claim Requests.<sup>133</sup> With each invoice submitted, recipients must provide specific details related to the invoice (vendor name, date issued, description of contents, etc.) to assist reviewers in linking invoices to specific itemized cost estimates. Further, recipients seeking disbursements must have previously provided a vendor and supplier quote associated with the invoice included with the Application Request for Funding Allocation before submitting the Reimbursement Claim Request.<sup>134</sup> Recipients who have not yet provided a vendor and supplier quote associated with the invoice because they relied on the Catalog cost estimates when completing their Application Request for Funding Allocation will need to file a modification before submitting the Reimbursement Claim Request. The Reimbursement Program Fund Administrator will not review Reimbursement Claim Requests that rely on invoices not substantiated by a corresponding quote previously filed.<sup>135</sup>

47. Pursuant to the Commission's rules and the *2020 Supply Chain Order*, recipients may seek reimbursement only for actual expenses incurred during the period beginning on April 17, 2018 and ending at the expiration of the one-year removal, replacement, and disposal term.<sup>136</sup> Consistent with the *2020 Supply Chain Order*, we will allow providers to obtain reimbursement for costs reasonably incurred prior to the creation and funding of the Reimbursement Program, but on or after April 17, 2018, for the removal, replacement, and disposal of covered equipment and services.<sup>137</sup> The Bureau must authorize the payments from the Reimbursement Program fund in the United States Treasury to providers that have submitted valid claims for reimbursement.

48. RWA requests the Bureau allow the filing of requests "beyond the allocated funds so that the [Reimbursement Program] Fund Administrator can approve costs even though there may not yet be funding to pay such invoices."<sup>138</sup> We agree, and the filing portal system will allow recipients to file Reimbursement Claim Requests, even when the amount requested exceeds the amount allocated to the

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<sup>130</sup> *Id.* at 7.

<sup>131</sup> *Id.* at 6-7.

<sup>132</sup> *Id.* at 7.

<sup>133</sup> *Id.*

<sup>134</sup> While vendor and provider quotes are not required at the funding allocation stage for those relying on the Catalog, we require quotes when requesting disbursement to verify actual costs. *Id.* These quotes if not included in the previously granted Application Request for Funding Allocation would need to be submitted by the participant pursuant to a modification filing.

<sup>135</sup> See Treasury Financial Manual, Vol. 1, Part 4a, Ch. 3000, § 3040 – Designation of Certifying Officers, <https://tfm.fiscal.treasury.gov/v1/p4/ac3000.html>.

<sup>136</sup> 47 CFR § 1.50004(g) (not yet effective); *2020 Supply Chain Order*, 35 FCC Rcd 14340-42, paras. 130-35 (“[W]e will reimburse reasonable costs associated with the removal, replacement and disposal of covered equipment that were incurred on or after April 17, 2018 . . . . Costs incurred before that date are ineligible.”); *id.* at 14341, para. 133. Any expenses incurred after the one-year term ends are ineligible for reimbursement. *2021 Supply Chain Order* at 41-42, para. 100.

<sup>137</sup> *2020 Supply Chain Order*, 35 FCC Rcd at 14340-42, paras. 130-33.

<sup>138</sup> RWA Reimbursement Process Public Notice Comments at 8.

recipient, up until the deadline for filing Reimbursement Claim Requests has expired. These requests will, however, remain in pending status if there is insufficient funding to grant the requests in full.<sup>139</sup>

49. Nokia requests that the Commission expedite disbursements to contractors involved in creating cost estimates for Application Requests for Funding Allocation that are initially accepted for filing prior to allocating the funds to all applicants.<sup>140</sup> Specifically, it argues that expedited disbursements for costs associated with application preparation “will relieve financial stresses on the industry and encourage more complete and accurate applications.”<sup>141</sup> The Commission’s rules, however, do not allow for disbursements prior to a funding allocation.<sup>142</sup> Further, the Commission did not establish a separate disbursement process to reimburse for expenses incurred for applications initially found acceptable for filing. Providing a disbursement at this early stage would also trigger the recipient’s obligation to complete the removal, replacement, and disposal process within one year and many applicants would be unable to meet that deadline. That said, costs associated with preparing applications are potentially eligible for reimbursement and applicants may file reimbursement claims for such costs once an allocation is issued.

50. *Reimbursement Claim Request Deadline.* All Reimbursement Claim Requests must be filed no later than 120 days following the expiration of the removal, replacement, and disposal term.<sup>143</sup> Prior to the expiration of the claim request deadline, recipients under the Commission’s rules are permitted to request and, if timely requested, will automatically receive a 120-day extension.<sup>144</sup> RWA notes that the one-year removal, replacement, and disposal term can be extended and argues that the corresponding 120-day reimbursement claim deadline should also be extended if the underlying one-year term is extended.<sup>145</sup> We agree and confirm that if the Commission or the Bureau extends the one-year removal, replacement, and disposal term, the corresponding 120-day reimbursement claim deadline will also be extended and start from the new extended term date expiration.

51. Finally, as required by the Commission’s rules, after the Reimbursement Claim Request filing deadline, the remaining unclaimed amounts in the allocation will expire. The remaining funds in the expired allocation will be available for Commission reallocation in a future filing window.<sup>146</sup> However, as proposed in the *Reimbursement Process Public Notice*, a timely submitted extension request, while pending, will toll the expiration of the funding allocation.

## **9. Amendments, Modifications, Administrative Updates, and Notification of Ownership Changes**

52. *Amendments, Modifications, and Administrative Updates.* In the *Reimbursement Program Process Public Notice*, we sought comment on proposals to allow program participants to update information on file with the Commission through the filing of amendments, modifications, and/or

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<sup>139</sup> This leaves open the possibility for further Congressional appropriations or other funding that would allow for the granting of such requests. However, if such funding did not become available, then the Bureau would ultimately deny these requests.

<sup>140</sup> Nokia Reimbursement Process Public Notice Comments at 2-4. This request is substantively an untimely filed petition for reconsideration of the *2020 Supply Chain Order*, which established the funding disbursement process. Regardless of the procedural failures, we also reject the request on substantive grounds.

<sup>141</sup> *See id.*

<sup>142</sup> 47 CFR § 1.50004(g) (not yet effective) (stating an allocation must be made before a disbursement can occur).

<sup>143</sup> *Reimbursement Process Public Notice* at 7.

<sup>144</sup> *Id.*

<sup>145</sup> RWA Reimbursement Process Public Notice Comments at 8.

<sup>146</sup> 47 CFR § 1.50004(g)(1)-(2) (not yet effective).

administrative updates. We did not receive comments regarding modifications or administrative updates. We did, however, receive comments objecting to the general denial of amendments to the Application Request for Funding Allocation that would increase cost estimate submissions, as discussed elsewhere herein.<sup>147</sup> Accordingly, we will allow participants to amend, modify, and file administrative updates using the online filing portal.

53. To file an amendment the participant must notify the Reimbursement Program Fund Administrator of its intent to amend its application through the Reimbursement Program Fund Administrator Help Desk.<sup>148</sup> Notification of an intent to amend through the Reimbursement Program Fund Administrator Help Desk is necessary to unlock the underlying application in the online filing portal to allow for the filing of an amendment. This notice of intent to amend alerts the Reimbursement Program Fund Administrator to pause application processing pending the filing of additional changes that may impact the review process. Amendment filings are only permitted for underlying filings that are in a pending status.

54. We also will allow modification filings after an application is granted. For a granted Application Request for Funding Allocation, we will allow recipients to submit modification filings to change itemized expenses and locations identified on their filings and to provide vendor and supplier quotes for review by the Reimbursement Program Fund Administrator.<sup>149</sup> We reiterate that if the modification filing would change the cost of the project, we will not alter the funding allocation issued.<sup>150</sup> Additionally, participants are allowed to file administrative updates for routine, non-material changes to filings such as changes to the applicant's contact information (e.g., address, phone number, and contact name).<sup>151</sup> The online filing portal will accept and automatically process administrative updates once filed.<sup>152</sup>

55. *Notifications of Changes in Ownership.* Recognizing that the Reimbursement Program will be administered over multiple years and changes in ownership may occur, we adopt our proposal to adapt the online filing system to account for changes in ownership, including changes due to bankruptcy. Specifically, we will institute a streamlined process whereby, post-consummation, the recipient of record will file a notification signed by both parties to the transaction that includes an explanation of the ownership changes.<sup>153</sup> In the event of an involuntary change of control and/or ownership, such as, but not limited to, the appointment of a trustee in bankruptcy or a receiver, the process shall include a mechanism for a rightful recipient to file the notification without the signature of the other party to the transaction upon a showing of appropriate documentation regarding the change of control and/or ownership. The Bureau, with the assistance of the Reimbursement Program Fund Administrator, will determine the amount of the funding allocation remaining, i.e., the amount not yet claimed and disbursed through the reimbursement claim process, and how to handle transactions involving the acquisition of discrete network components, e.g., the sale of a portion of the network and not the entire network. Commenters

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<sup>147</sup> See *supra* III.A.6 (discussing amendments during the application review period).

<sup>148</sup> We will subsequently provide the public with additional information on how to contact the Reimbursement Program Fund Administrator Help Desk once that capability is made operational.

<sup>149</sup> While such modifications may change the cost of the project, as directed by the Commission in the *2020 Supply Chain Order*, we will not alter the funding allocation issued. See *2020 Supply Chain Order*, 35 FCC Rcd at 14347, para. 152. Any funding remaining at the end of the one-year removal, replacement, and disposal term will revert to the Reimbursement Program for potential allocation to other Reimbursement Program participants. 47 CFR § 1.50004(g)(1)-(2) (not yet effective).

<sup>150</sup> See *2020 Supply Chain Order*, 35 FCC Rcd at 14347, para. 152.

<sup>151</sup> *Reimbursement Process Public Notice* at 8.

<sup>152</sup> *Id.*

<sup>153</sup> Commission requirements related to transfers of control not expressly mentioned herein remain effective.

support this approach.<sup>154</sup> We note, however, that while we are not requiring prior approval for new owners to participate in the Reimbursement Program, the new owners would still have to be eligible to participate in the program to receive funding under the Commission's rules.<sup>155</sup> Providers with more than 10 million customers are not eligible to participate in the Reimbursement Program.<sup>156</sup>

### 10. Removal, Replacement, and Disposal Term

56. Consistent with the Secure Networks Act, the Commission's rules require Reimbursement Program participants to complete the removal, replacement, and disposal process within one year from the initial disbursement of funds.<sup>157</sup> The initial disbursement is deemed to occur on the date on which the Commission first distributes reimbursement funds to the recipient.<sup>158</sup> Participants must file to receive their initial disbursement within one year of receiving the funding allocation approval.<sup>159</sup>

57. Both the Secure Networks Act and the Commission's rules authorize extensions of the one-year removal, replacement, and disposal term.<sup>160</sup> Specifically, under section 1.50004(h)(1) of the Reimbursement Program rules, the Commission may grant a general extension of the one-year term by a period of six months to all Reimbursement Program recipients if the Commission: (1) finds the supply of replacement communications equipment or services needed by the recipients to achieve the purposes of the Reimbursement Program is inadequate to meet the needs of the recipients; and (2) provides notice and detailed justification for granting the extension to the Committee on Energy and Commerce of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.<sup>161</sup> In addition, the Bureau may grant individual extensions of time for a period not to exceed six months on a case-by-case basis.<sup>162</sup> The Commission has interpreted the Secure Networks Act to allow grant of multiple individual extensions of time to a participant.<sup>163</sup> To grant an extension, the Bureau must find that, due to no fault of the recipient, such recipient is unable to complete the permanent removal, replacement, and disposal by the end of the term.<sup>164</sup>

58. Nokia requested a blanket 6-month extension of time, noting that many applicants will have difficulty adhering to a one-year deadline for removal, replacement, and disposal because, under normal circumstances, the process would take approximately one to three years.<sup>165</sup> Additionally, Nokia

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<sup>154</sup> RWA Reimbursement Process Public Notice Comments at 9 (supporting not requiring a prior approval process for such ownership changes for purposes of the Reimbursement Program).

<sup>155</sup> See 47 CFR § 1.50004(a).

<sup>156</sup> *Id.*

<sup>157</sup> 2020 *Supply Chain Order*, 35 FCC Rcd at 14331, para. 169 (establishing a one-year timeline for removal, replacement, and disposal).

<sup>158</sup> *Id.*

<sup>159</sup> *Id.* at 14354-55, para. 170. Failure to file for initial disbursement by that date will result in the automatic reversion of the funding allocation to the program fund for reallocation to other or future program participants. *Id.*

<sup>160</sup> Secure Networks Act § 4(d)(6)(B)-(C); 47 CFR § 1.50004(h).

<sup>161</sup> 47 CFR § 1.50004(h).

<sup>162</sup> 2020 *Supply Chain Order*, 35 FCC Rcd at 14354-55, para. 171. The general extension provision authorizes the Commission to issue *sua sponte* a one-time six-month extension to all program recipients. *Id.* at 14355, para. 172. Some commenters indicated carriers may need multiple extensions. See Copper Valley Wireless Reimbursement Process Public Notice Comments at 3-4. The Bureau may grant more than one individual extension, and we expect applicants to request extensions as circumstances warrant. See 2021 *Supply Chain Order* at 40, para. 96.

<sup>163</sup> 2020 *Supply Chain Order*, 35 FCC Rcd at 14355, para. 173.

<sup>164</sup> 47 CFR § 1.50004(h)(1).

<sup>165</sup> Nokia Reimbursement Process Public Notice Comments at 4-6.



notes that a high number of carriers attempting to replace equipment during the same period of time may delay the process.<sup>166</sup> The Competitive Carriers Association (CCA) also requested a blanket 6-month extension, raising a similar concern in its comments, recognizing that carriers are “managing labor shortages, including limited availability of skilled engineers and 12 tower crews, and an extension will give carriers a more realistic opportunity to navigate staffing challenges.”<sup>167</sup> Copper Valley Wireless, Inc. (Cooper Valley Wireless) asserts that the unique issues facing Alaskan providers will result in multiple extension requests.<sup>168</sup> Thus, Copper Valley Wireless requests successive blanket extensions for Alaskan providers.<sup>169</sup>

59. We find these requests for an extension of the term for all future participants are outside the scope of the *Reimbursement Process Public Notice* and we, therefore, decline to address these requests.<sup>170</sup> In addition, we find it premature to consider a general extension before the Reimbursement Program is even launched and any removal, replacement, and disposal terms are established.<sup>171</sup> Granting an across-the-board extension at this juncture is counter to Congress’ intent of having a one-year term.<sup>172</sup>

60. In addition, some commenters have expressed concern that the Commission appears to favor O-RAN replacement options and requests that the Commission not grant an applicant’s extension request solely because of the replacement choice.<sup>173</sup> As we did not seek comment on proposals related to granting term extensions, we find these comments are also outside the scope of the *Reimbursement Process Public Notice*. These comments more accurately relate to the *2021 Supply Chain Order* where the Commission said that some replacement options, such as O-RAN or virtual RAN, may require additional time for system integration.<sup>174</sup> While we recognize it may take longer to implement certain technological solutions, that is only one factor among many that could justify an extension.<sup>175</sup> Regardless, we disagree that the Commission has demonstrated a preference for O-RAN technology solutions as compared to any other solution.

## 11. Status Updates, Spending Reports, and Final Certification and Update

61. To help mitigate against waste, fraud, and abuse, and consistent with the Secure Networks Act, the Commission required recipients to submit status updates, spending reports, and final

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<sup>166</sup> *Id.*

<sup>167</sup> CCA Reimbursement Process Public Notice Comments at 11-12; Letter from Alexi Maltas, Senior V.P. & General Counsel, CCA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-89, at 1 (filed July 20, 2021).

<sup>168</sup> Copper Valley Wireless Reimbursement Process Public Notice Comments at 3-4.

<sup>169</sup> *Id.*

<sup>170</sup> *2021 Supply Chain Order* at 41-42, para. 100.

<sup>171</sup> *Id.*

<sup>172</sup> Nokia Reimbursement Process Public Notice Comments at 4-6 (requesting the Commission grant the general six-month extension to all applicants and permit participants to request individual extensions after receiving funding allocations); *see* CCA Reimbursement Process Public Notice Comments at 11-12 (requesting the Commission grant a six-month extension of the one-year term to all applicants due to the limited availability of equipment, services, chip shortages, and post-coronavirus recovery efforts); Copper Valley Wireless Reimbursement Process Public Notice Comments at 3-4 (requesting that Commission grant blanket waivers for Alaskan carriers due to the unique circumstances).

<sup>173</sup> Nokia Reimbursement Process Public Notice Comments at 12-13.

<sup>174</sup> *2021 Supply Chain Order* at 40-41, para. 97.

<sup>175</sup> *Id.*

certifications and updates.<sup>176</sup> We take this opportunity to reiterate these requirements as set forth in the Secure Networks Act and the Commission's rules.

62. *Status Updates.* The Secure Networks Act requires that “[n]ot less frequently than once every 90 days beginning on the date on which the Commission approves an application for a reimbursement under the Program, the recipient of the reimbursement shall submit to the Commission a status update on the work of the recipient to permanently remove, replace, and dispose of the covered communications equipment or services.”<sup>177</sup> The Secure Networks Act also provides that “[n]ot earlier than 30 days after the date on which the Commission receives a status update,” the Commission “shall make such status update public on the website of the Commission.”<sup>178</sup>

63. In the *2020 Supply Chain Order*, the Commission required recipients to file the first status updates within 90 days of receiving their funding allocations.<sup>179</sup> In the status updates, recipients are required to report on the efforts undertaken and challenges encountered in permanently removing, replacing, and disposing of their covered communications equipment or services. Recipients shall also report in detail on the availability of replacement equipment in the marketplace so the Commission can assess whether a general, six-month extension permitted by the statute is appropriate. Each status update must include a certification that affirms the information in the update is accurate. The obligation to file status updates expires after the recipient has notified the Commission of the completion of the permanent removal, replacement, and disposal of the covered communications equipment or service pursuant to a final certification.<sup>180</sup> Status updates will be public, consistent with the Commission's rules, and the Commission directed the Bureau to post on the Commission's website the status update filings within 30 days of submission.<sup>181</sup>

64. *Spending Reports.* The Secure Networks Act requires Reimbursement Program recipients to submit “reports regarding how reimbursement funds have been spent, including detailed accounting of the covered communications equipment or services permanently removed and disposed of, and the replacement equipment or services purchased, rented, leased or otherwise obtained, using reimbursement funds.”<sup>182</sup> In the *2020 Supply Chain Order*, the Commission required Reimbursement Program recipients to file spending reports within 10 calendar days after the end of January and July, starting with the recipient's initial draw down of disbursement funds and terminating once the recipient has filed a final spending report showing the expenditure of all funds received as compared to the estimated costs submitted.<sup>183</sup> The Commission directed “program participants to submit the final spending report no later than 60 days following the expiration of the program participant's reimbursement claim deadline.”<sup>184</sup> The Bureau is required to make spending reports, except for detailed accounting information, available to the public via a portal on the Commission's website.<sup>185</sup>

65. *Final Certifications.* Within 10 days following the expiration of the removal,

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<sup>176</sup> 47 CFR § 1.50004(k), (l), (m) (not yet effective); *2020 Supply Chain Order*, 35 FCC Rcd at 14358-61, paras. 183-93.

<sup>177</sup> 47 U.S.C. § 1603(d)(8)(A).

<sup>178</sup> *Id.*

<sup>179</sup> *2020 Supply Chain Order*, 35 FCC Rcd at 14359, para. 183.

<sup>180</sup> *Id.* at 14359, para. 184.

<sup>181</sup> 47 CFR § 1.50004(k)(2) (not yet effective).

<sup>182</sup> 47 U.S.C. § 1603(e)(2); *2020 Supply Chain Order*, 35 FCC Rcd at 14359-60, para. 186.

<sup>183</sup> 47 CFR § 1.50004(l) (not yet effective); *2020 Supply Chain Order*, 35 FCC Rcd at 14359-60, paras. 186-189.

<sup>184</sup> *2021 Supply Chain Order* at 43, para. 104.

<sup>185</sup> 47 CFR § 1.50004(l)(3) (not yet effective).

replacement, and disposal term, recipients must file a final certification with the Commission. The final certification must indicate whether the recipient has fully complied with all terms and conditions of the program, the commitments made in its application, and the timeline submitted.<sup>186</sup> The final certification must also indicate whether the recipient has permanently removed covered communications equipment and services that were in its network as of the date of application submission.<sup>187</sup> Pursuant to the Secure Networks Act and the *2020 Supply Chain Order*, if an applicant indicates that it has not fully complied with all terms of program participation, the applicant must file an updated final certification “when the recipient has fully complied.”<sup>188</sup> Program participants failing to timely submit a final certification or updated final certification may be subject to forfeitures and other penalties.<sup>189</sup>

## 12. Public Search Portal and Confidentiality

66. The Secure Networks Act directed the Commission to make public on the Commission’s website status updates submitted by recipients under the Reimbursement Program.<sup>190</sup> In the *2020 Supply Chain Order*, the Commission directed the Bureau to make filed spending reports available to the public through an online portal.<sup>191</sup> The Commission also directed us to treat as presumptively confidential detailed accounting information on the covered communications equipment or services subject to removal, replacement, and disposal, and the replacement equipment or services being reimbursed, and to withhold such disaggregated information from routine public inspection.<sup>192</sup> The Commission also directed us to treat as presumptively confidential “[o]ther information, such as location of the equipment and services; removal or replacement plans that include sensitive information; the specific type of equipment or service; and any other provider specific information,” which the Commission found would likely qualify as trade secrets under the Freedom of Information Act (FOIA) the public release of which could raise security and confidentiality concerns.<sup>193</sup> However, as a condition of receiving funding, the Commission required Reimbursement Program recipients to provide consent to allow vendors or contractors used by the recipient to release confidential information to an auditor, reviewer, or other representative as part of the auditing process, which is discussed in further detail in Part III.A.13.<sup>194</sup>

67. We will treat certain specified information submitted by Reimbursement Program participants as public or presumptively confidential consistent with the Secure Networks Act, the Freedom of Information Act, and the Commission’s rules. As proposed in the *Reimbursement Process Public Notice*, and consistent with our rules, we will make publicly available, through an online search portal, general and summary information submitted by participants.<sup>195</sup> This includes the name of the applicant who submitted a FCC Form 5640, Application Request for Funding Allocation, and the funding

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<sup>186</sup> 47 U.S.C. § 1603(e)(4)(A); 47 CFR § 1.50004(m)(1) (not yet effective).

<sup>187</sup> *Id.*

<sup>188</sup> See 47 U.S.C. § 1603(e)(4)(B); 47 CFR § 1.50004(m)(2) (not yet effective); *2020 Supply Chain Order*, 35 FCC Rcd at 14360, para. 190.

<sup>189</sup> *2021 Supply Chain Order* at 43, para. 104.

<sup>190</sup> 47 U.S.C. § 1603(d)(8).

<sup>191</sup> *2020 Supply Chain Order*, 35 FCC Rcd at 14370, para. 215.

<sup>192</sup> *Id.* at 14360, para. 189.

<sup>193</sup> *2020 Supply Chain Order*, 35 FCC Rcd at 14369-70, para. 214 & n.610; *Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs*, WC Docket No. 18-89, Declaratory Ruling and Second Further Notice of Proposed Rulemaking, 35 FCC Rcd 7821, 7838, para. 56 (2020).

<sup>194</sup> *2020 Supply Chain Order*, 35 FCC Rcd at 14361, para. 193.

<sup>195</sup> As a condition of receiving funding, recipients “must provide consent to allow vendors or contractors used by the recipient in connection with the Reimbursement Program to release confidential information to the auditor, reviewer, or other representative.” 47 CFR § 1.50004(o).

amount requested. This also includes the Reimbursement Program participants selected for funding allocation and the funding amount awarded. Consistent with the *2020 Supply Chain Order*, we will also make public on the Commission's website recipients' filed spending reports.<sup>196</sup> We find that the public interest is best served by making this information available to the public to ensure transparency and accountability.

68. Commenters agreed with the proposal to treat certain sensitive information collected as part of the Program as presumptively confidential and withhold that information from routine public inspection. For example, ADTRAN "fully supports the proposal to maintain the confidentiality of proprietary information with regard to the prices of the replacement equipment and services."<sup>197</sup> ADTRAN asserts that "such information constitutes trade secrets," and ADTRAN "takes steps to protect that information by requiring its customers (and potential customers) to enter into non-disclosure agreements to maintain confidentiality."<sup>198</sup> ADTRAN agrees that "information on the specific replacement equipment and location of that equipment... should not be made publicly-available, particularly because such information on what is critical infrastructure could provide roadmaps to malefactors."<sup>199</sup> RWA agrees with the proposal to treat as presumptively confidential and withhold from public inspection information including "detailed accounting information," "location of the equipment and services; removal or replacement plans that include sensitive information; the specific type of equipment and service; and any other provider specific information that qualifies as trade secrets under the Freedom of Information Act."<sup>200</sup>

69. Accordingly, as contemplated by the *2020 Supply Chain Order* and proposed in the *Reimbursement Process Public Notice*, we find that certain information likely constitutes confidential commercial or financial information or trade secrets under the FOIA, and consistent with the *2020 Supply Chain Order* and the Commission's rules,<sup>201</sup> we will treat this information as presumptively confidential and will withhold from routine public inspection such information, including:

- Detailed accounting information on the covered communications equipment or services removed, replaced, and disposed of, and the replacement equipment or services purchased, rented, leased, or otherwise obtained using Reimbursement Program funds;<sup>202</sup>
- Vendor price quotes submitted with the FCC Form 5640, Application Request for Funding Allocation, or in a Modification filing;
- Invoices submitted with the FCC Form 5640, Reimbursement Claim Requests;
- Equipment or services location, including address, latitude/longitude, etc.;
- Removal or replacement plans that include sensitive information;
- Specific equipment or service type;

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<sup>196</sup> 47 CFR § 1.50004(1)(3) (not yet effective); *2020 Supply Chain Order*, 35 FCC Rcd at 14360, para. 189.

<sup>197</sup> ADTRAN Reimbursement Process Public Notice Comments at 6-7.

<sup>198</sup> *Id.* at 6-7.

<sup>199</sup> ADTRAN Reimbursement Process Public Notice Comments at 7. We note that under FOIA and the Communications Act of 1934, as amended, the Commission is authorized to withhold publication of records containing secret information affecting the national defense. *See* 5 U.S.C. § 552(b)(3) (exempting from required public disclosure under the FOIA records that are specifically exempted from disclosure by another statute); 47 U.S.C. § 154(j) (authorizing the Commission to "withhold publication of records or proceedings containing secret information affecting the national defense").

<sup>200</sup> RWA Reimbursement Process Public Notice Comments at 9.

<sup>201</sup> 47 CFR § 0.457(d).

<sup>202</sup> *See* 5 U.S.C. § 552(b); 47 CFR § 0.457(d)(2); *2020 Supply Chain Order*, 35 FCC Rcd at 14360, para. 189.

- Other provider-specific information;<sup>203</sup> and,
- Specific timeline for the permanent removal, replacement, and disposal of covered communications equipment and services.<sup>204</sup>

We find, consistent with the *2020 Supply Chain Order*, that this information would likely qualify as confidential commercial or financial information or trade secrets under the Freedom of Information Act and therefore should be withheld from routine public inspection.<sup>205</sup>

70. Finally, we adopt the approach proposed in the *Reimbursement Process Public Notice* to allow filers uploading attachments to the online portal to categorize whether the attachment is “confidential” or “public.” RWA argues that “anything attached to the FCC Form 5640 by an applicant that is clearly marked confidential should be treated as such and withheld from public inspection.”<sup>206</sup> We clarify that participants may submit requests to treat documentation as confidential information to be withheld from public inspection; however, such requests must be consistent with FOIA and the Commission’s rules. Requests for confidential treatment that are overbroad or otherwise inconsistent with our rules will be rejected. Attachments designated as “confidential” will be withheld from routine public inspection, subject to FOIA and the Commission’s rules, whereas attachments designated as “public” may be made publicly available.<sup>207</sup>

### 13. Audits, Reviews, and Field Investigations

71. The Secure Networks Act directed the Commission to “take all necessary steps to avoid waste, fraud, and abuse with respect to the Program,”<sup>208</sup> including “regular audits and reviews of reimbursements under the Program to confirm that recipients of such reimbursements are complying with this Act,” and “random field investigations to ensure that recipients of reimbursements under the Program are performing the work such recipients are required to perform.”<sup>209</sup> In the *2020 Supply Chain Order*, the Commission adopted a number of measures as directed by the Secure Networks Act to combat waste, fraud, and abuse, including requiring audits, reviews, and field inspections.<sup>210</sup> In particular, the Commission directed the Office of the Managing Director (OMD), or a third-party identified by OMD, to prepare a system to audit Reimbursement Program recipients to ensure compliance with the

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<sup>203</sup> See 47 CFR § 1.50004(a)(3)(i)(A) (requiring applicants to certify as of the date of application submission that the provider has developed a plan for the permanent removal, replacement, and disposal of covered communications equipment or services); *2020 Supply Chain Order*, 35 FCC Rcd at 14369-70, para. 214 & n.610 (citing 5 U.S.C. § 552(b)(4)).

<sup>204</sup> See 47 CFR § 1.50004(a)(3)(i)(A) (requiring applicants to certify as of the date of application submission that the provider has developed a specific timeline for the permanent removal, replacement, and disposal of covered communications equipment or services); *id.* § 1.50005(c)(1)(iv) (requests for funding allocation must include a specific timeline for the permanent removal, replacement, and disposal of covered communications equipment and services).

<sup>205</sup> See 5 U.S.C. § 552(b)(4) (exempting from disclosure “trade secrets and commercial or financial information obtained from a person and privileged or confidential”); 47 CFR § 0.457(d)(2) (“In the absence of a request for nondisclosure, the Commission may . . . determine on its own motion that the materials should not be routinely available for public inspection.”); *2020 Supply Chain Order*, 35 FCC Rcd at 14360, para. 189.

<sup>206</sup> RWA Reimbursement Process Public Notice Comments at 9.

<sup>207</sup> See 47 CFR § 0.459(a)(4) (Commission may use abbreviated means for submitters to request confidential treatment of information); *id.* § 0.459 (procedures for requesting that materials or information submitted to the Commission be withheld from public inspection); *id.* § 0.457 (listing records that are not routinely available for public inspection pursuant to 5 U.S.C. § 552(b)).

<sup>208</sup> 47 U.S.C. § 1603(e)(1).

<sup>209</sup> *Id.* § 1603(e)(3)(A)-(B).

<sup>210</sup> *2020 Supply Chain Order*, 35 FCC Rcd at 14331, para. 109.

Commission's rules.<sup>211</sup> Recipients are subject to audits and other investigations to evaluate their compliance with the statutory and regulatory requirements for the program.<sup>212</sup> To facilitate audits and field investigations, recipients must provide consent to allow vendors or contractors used by the recipient to release confidential information to the auditor, reviewer, or other representative.<sup>213</sup> Recipients must also allow any representative appointed by the Commission to enter the premises of the recipient to conduct compliance inspections.<sup>214</sup>

72. In the *2021 Supply Chain Order*, the Commission delegated financial oversight of the Reimbursement Program to OMD, in coordination with the Bureau and the Reimbursement Program Fund Administrator, to ensure that all financial aspects of the program have adequate internal controls.<sup>215</sup> OMD, in coordination the Bureau, may issue additional directions to the Reimbursement Program Fund Administrator and program participants in furtherance of its responsibilities.<sup>216</sup> We will continue to work with OMD, any third-party identified by OMD, and the Reimbursement Program Fund Administrator to develop an audit, review, and field investigations process for the Reimbursement Program to protect against waste, fraud, and abuse. Pursuant to the *2020 Supply Chain Order*, participants must allow any representative appointed by the Commission to enter the participant's premises to conduct compliance inspections so, at a minimum, the audit process may include site visits to participant's premises to conduct these compliance inspections.<sup>217</sup>

### **B. Catalog of Eligible Expenses and Estimated Costs**

73. In this section, we adopt a final Catalog which applicants may rely on, where applicable, when submitting cost estimates in their Application Request for Funding Allocation, and we provide additional guidance regarding whether certain costs are reasonably incurred and may be reimbursable under the Reimbursement Program.

74. Section 4(d)(1) of the Secure Networks Act requires the Commission to “develop a list of suggested replacements” for covered equipment and services and for applicants to submit “initial reimbursement cost estimate[s] at the time of application.”<sup>218</sup> To accomplish this objective, the Commission delegated authority to the Bureau to develop and finalize a Cost Catalog in the *2020 Supply Chain Order*.<sup>219</sup> The Commission's rules provide that eligible providers may rely upon the predetermined estimated costs identified in the Catalog when submitting their cost estimates with their requests for funding allocation.<sup>220</sup> The Bureau contracted with Widelity to produce a preliminary catalog containing a non-exhaustive list of cost categories and a range of cost estimates for communications equipment and

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<sup>211</sup> *Id.* at 14362, para. 193.

<sup>212</sup> 47 CFR § 1.50004(o).

<sup>213</sup> *Id.*

<sup>214</sup> *Id.*

<sup>215</sup> *2021 Supply Chain Order* at 45-46, para. 113.

<sup>216</sup> *Id.*

<sup>217</sup> See *2020 Supply Chain Order*, 35 FCC Rcd at 14361-62, para. 193. As provided for in the statute, a violation of the Secure Networks Act or a regulation adopted pursuant to this statute shall constitute a violation of the Communications Act and, as such, the Commission has authority to impose fines and forfeitures under the Communications Act and Commission's rules. See 47 U.S.C. § 1606; Secure Networks Act § 7; *2020 Supply Chain Order*, 35 FCC Rcd at 14362, para. 194 & n.547 (discussing the Commission's authority to impose fines and forfeitures).

<sup>218</sup> Secure Networks Act § 4(d)(1), (2)(B); 47 U.S.C. § 1603(d)(1), (2)(B).

<sup>219</sup> See *2020 Supply Chain Order*, 35 FCC Rcd at 14339, para. 128; see also 47 CFR § 1.50004(p).

<sup>220</sup> See 47 CFR § 1.50004(c)(1)(i) (not yet effective).



services potentially eligible for reimbursement.<sup>221</sup> Widely developed the preliminary catalog based on a series of confidential interviews with communications industry stakeholders to understand the process and costs associated with removing, replacing, and disposing of covered communications equipment and services.<sup>222</sup> In the *Catalog Public Notice*, the Bureau sought comment on the preliminary catalog, the suggested ranges of estimated costs and cost categories identified therein, and how the Catalog should inform the Reimbursement Program.<sup>223</sup> Widely subsequently conducted a thorough review of the preliminary catalog, based on comments received in response to the *Catalog Public Notice*, and conducted additional engagement with communications industry stakeholders and the Bureau, resulting in additional improvements to the Catalog.

75. After considering comments received in response to the *Catalog Public Notice* and in consultation with Widely, we revise and finalize the Catalog as set forth in Appendix C. The final Catalog includes as an attachment a chart indexing changes from the preliminary catalog to the final Catalog. In particular, we added an index number to reference line item cost categories, clarified certain expenses that we find are highly variable, clarified units of measurement, clarified cost categories and descriptions, amended certain ranges of cost estimates, and corrected typographical errors. For the reasons discussed below, the Bureau adopts the Catalog in Appendix C for use in the Reimbursement Program. The Catalog will be made available on the Commission's website, and the line items and cost estimate averages taken from the ranges identified in the Catalog will be incorporated into the online filing portal for use by applicants when completing the FCC Form 5640, Application Request for Funding Allocation.

76. The Catalog identifies cost categories and a range of estimated costs that providers of advanced communications services would typically incur when removing, replacing, and disposing of covered communications equipment or service. We emphasize the Catalog is not intended to be a definitive or exhaustive list of all reimbursable expenses but rather is an additional tool to help applicants with their application submissions.<sup>224</sup> Inclusion or exclusion in the Catalog of a particular category of costs should not be interpreted as a determination whether the expense will be eligible for reimbursement.<sup>225</sup> Applicants may reference the line item cost estimates identified in the Catalog when submitting their initial cost estimates.<sup>226</sup> Consistent with the Secure Networks Act, applicants relying on the Catalog when requesting a funding allocation will still be required to provide supporting materials substantiating their cost estimates with documentation such as quotes or invoices before receiving a disbursement of funds for reimbursement.<sup>227</sup> To the extent that certain reimbursable expenses are not explicitly listed in the Catalog or certain cost categories do not fully account for an applicant's reimbursable expenses, applicants may request reimbursement by submitting individualized cost estimates, with supporting materials substantiating the costs.<sup>228</sup> The cost estimates identified in the final

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<sup>221</sup> *Catalog Public Notice* at 3.

<sup>222</sup> *Id.*

<sup>223</sup> *Id.* at 3 & Attach. 2.

<sup>224</sup> *2020 Supply Chain Order*, 35 FCC Rcd at 14340, para. 129.

<sup>225</sup> *See Catalog Public Notice* at 3.

<sup>226</sup> To be considered for funding, applicants are required to submit an initial estimate of costs reasonably incurred removing, replacing, and disposing of covered communications equipment and services. 47 CFR § 1.50004(c)(i) (not yet effective); *2020 Supply Chain Order*, 35 FCC Rcd at 14346, para. 148 (citing Secure Networks Act § 4(d)(2)(B)).

<sup>227</sup> *See* Secure Networks Act § 4(d)(2)(B)(i); 47 USC § 1603(d)(2)(B)(i).

<sup>228</sup> *See* 47 CFR § 1.50004(c)(1)(i), (v) (not yet effective). Individualized cost estimates are made in lieu of the Catalog estimates.

Catalog do not guarantee the ultimate disbursement of funds for any individual expense.<sup>229</sup> Participants' requests for reimbursement will be evaluated based on supporting documentation regardless of whether the initial cost estimates were based on the Catalog or individualized cost estimates.

77. As noted above, cost estimates based on the Catalog will be the average of the low- and high-end range of cost estimates identified in the Catalog. If an applicant believes a cost estimate identified in the Catalog does not fully account for its specific circumstances or a cost category is not identified in the Catalog, the applicant may provide an individualized cost estimate. Applicants providing individualized cost estimates will be required to submit additional supporting documentation (e.g., vendor quotes) and certify that the cost estimate is made in good faith.<sup>230</sup> All cost estimates are subject to review by Commission staff, with the assistance of the Reimbursement Program Fund Administrator, to ensure that an expense is eligible for reimbursement under the costs reasonably incurred standard.<sup>231</sup>

78. We received 13 comments in response to the *Catalog Public Notice*, including comments addressing the preliminary catalog. Comments addressing the preliminary catalog were generally favorable;<sup>232</sup> however, commenters also proposed changes to the preliminary catalog. Commenters requested clarifications to the units of measurement for particular cost estimates, requested modifications or clarifications to certain cost categories, and requested modifications to certain ranges of cost estimates. Commenters proposed changes to the access layer, distribution layer, and core layer equipment, as well as software and services. Commenters also requested clarification on whether certain costs are reimbursable under the Reimbursement Program. We address these comments below. We also highlight modifications to the Catalog proposed by Widelity based on its own thorough review of the preliminary catalog and additional engagement with communications industry stakeholders.

79. *Clarifying Units of Measurement.* USTelecom—The Broadband Association (USTelecom) asked the Commission to clarify whether wavelength division multiplexing (WDM) and optical transport network (OTN) equipment “prices are ‘per node’ and ... not ‘per route.’”<sup>233</sup> WDM and OTN equipment is typically priced in the communications industry on a per node basis as opposed to per route, and we clarify that the range of cost estimates for WDM and OTN equipment in the Catalog is priced on a per node basis.<sup>234</sup> USTelecom also asked the Commission to clarify “whether the range of prices identified in the preliminary Catalog for the ‘existing co[]location’ expense type” are “per-month or a flat fee for each lease.”<sup>235</sup> Because colocation is typically priced on a per-site, flat-fee basis, as opposed to a per-month basis, we revise the Catalog to clarify that the range of cost estimates for colocation is priced on a per-site basis to more accurately describe the per-unit cost of these expenses.<sup>236</sup>

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<sup>229</sup> 2020 *Supply Chain Order*, 35 FCC Rcd at 14339, para. 128.

<sup>230</sup> *Id.* at 14346, para. 149.

<sup>231</sup> *Id.* at 14339, para. 128.

<sup>232</sup> See Airspan Catalog Public Notice Comments at 1 (“Airspan believes the Report and Cost Catalog generally take a fair and reasonable approach to identifying the various concerns carriers will face as part of the...Reimbursement Program.”); RWA Catalog Public Notice Comments at 1-2 (“Overall, the Cost Catalog presents a fair representation of the costs associated removing replacing and disposing of Huawei and ZTE equipment and services.”); USTelecom Catalog Public Notice Comments at 1 (“The catalog thoroughly identifies significant eligible engineering and project management expenses; we are in general agreement with the identified project components and the expenses deemed eligible.”).

<sup>233</sup> USTelecom Catalog Public Notice Comments at 4.

<sup>234</sup> Appx. C, § 2.7.0.

<sup>235</sup> USTelecom Catalog Public Notice Comments at 3 (citing *Cost Catalog Public Notice*, Attach. 2 at 21).

<sup>236</sup> 47 CFR § 1.50004(p) (the Commission’s delegation of authority to the Bureau to establish a Catalog); see 2020 *Supply Chain Order*, 35 FCC Rcd at 14339, para. 128 (the Commission delegated to the Bureau the responsibility to develop and finalize the Catalog); Appx. C, §§ 5.2.1.

80. *Requests to Include Additional Cost Categories.* CCA asked us to “include in the Cost Catalog an entry for preparation of the cell site closeout package, which may include photos, red line/as-built drawings, documents, and other relevant information to confirm that the site has been completed to specified standards and requirements.”<sup>237</sup> We agree. We find that cell site closeout costs may be reasonably necessary to remove and replace covered communications equipment or services, and revised the Catalog to include under the “Services,” “Site Work” cost category, a subcategory for “Closeout Package – Microwave” and general “Closeout Package.”<sup>238</sup> The range of cost estimates for these new cost categories was developed by Widelity based on confidential interviews with communications industry stakeholders.

81. RWA requested we add an “Attorney fees” cost category to the Catalog for “legal fees spent on the advocacy surrounding the development of the rules,” or “legal fees related to the ongoing rulemaking process.”<sup>239</sup> We note that the preliminary catalog included a “Participation in FCC Rulemaking” cost category with a range of cost estimates.<sup>240</sup> We deny RWA’s request because attorney’s fees related to the rulemaking proceeding are not reasonably necessary for the removal, replacement, and disposal of covered communications equipment or services. We modify the Catalog to remove the “Participation in FCC Rulemaking” cost category and range of cost estimates identified in the preliminary Catalog.<sup>241</sup> We clarify, however, that certain attorney’s fees and legal expenses incurred for purposes of participating in the Reimbursement Program, such as preparing application forms, reimbursement forms, extension requests, and waiver requests, may be reimbursable to the extent they are reasonably incurred for the removal, replacement, and disposal of covered communications equipment and services and the allocation request is substantiated with supporting documentation. We also note that, for example, attorney fees associated with negotiating and reviewing vendor contracts and legal fees associated with zoning and permitting are included in the Catalog range of cost estimates and potentially eligible for reimbursement.<sup>242</sup>

82. *Clarifying Reimbursable Expenses.* CCA asked us to provide “additional clarification on allowable reimbursements for internal employee time, including what type of documentation will be required.”<sup>243</sup> As CCA noted, the preliminary catalog included a range of cost estimates related to internal labor costs, including carrier internal project management.<sup>244</sup> We recognize that the Reimbursement Program will demand significant employee time and resources. Internal labor costs, like other program costs, are reimbursable to the extent they are reasonably incurred removing, replacing, and disposing of covered communications equipment and services. However, for internal labor costs to be reimbursable, they must be entirely related to transition efforts, that is, the costs would not have been incurred but for Reimbursement Program participation removing, replacing, and disposing of covered communications equipment and services. In other words, participants are only eligible to recover that portion of employee time attributable to transitioning equipment and services, not unrelated employee time or expenses related to overhead. Labor costs associated with normal system or network maintenance and administration, conducted in the ordinary course of business, are not reimbursable. We will review internal labor costs with heightened scrutiny to ensure that such expenses are reasonably necessary for removal, replacement, and disposal of covered communications equipment or services, and to avoid waste, fraud, and abuse in

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<sup>237</sup> CCA Catalog Public Notice Comments at 6.

<sup>238</sup> Appx. C, §§ 5.21.25, 5.21.26.

<sup>239</sup> RWA Catalog Public Notice Comments at 7.

<sup>240</sup> *Catalog Public Notice*, Attach. 2 at 20.

<sup>241</sup> *See id.*

<sup>242</sup> Appx. C, §§ 5.35, 5.36, 5.37.

<sup>243</sup> CCA Catalog Public Notice Comments at 5; CCA July 15, 2021 *Ex Parte* at 2-3.

<sup>244</sup> *See id.*; *Catalog Public Notice*, Appx. B at 22.

the Program. Generally, we expect cost estimates for internal labor to be lower than cost estimates for outside services for the same work.

83. We find that the Catalog adequately identifies and accounts for employee time, i.e. internal labor costs, that could be quantified for a range of cost estimates based on pricing data submitted by industry stakeholders to Wideline. For example, the Catalog includes a range of cost estimates for internal labor including project management<sup>245</sup> and engineer/staff network operations<sup>246</sup> which are on a per person per month basis. We make no changes to the Catalog with respect to internal labor costs. Internal labor costs identified in the Catalog are reimbursable to the extent they are reasonably incurred removing, replacing, and disposing of covered communications equipment and services. Applicants may rely on the Catalog to estimate internal labor costs for their application submissions where applicable but will be required to submit additional documentation accounting for actual costs during the reimbursement stage to ensure that reimbursement funds are entirely related to transition efforts.

84. Applicants seeking reimbursement for internal labor costs that are not identified in the Catalog will be required to submit individualized cost estimates and documentation and certify that the estimates are made in good faith.<sup>247</sup> In particular, to ensure that internal labor costs are entirely related to transition efforts, such costs must be estimated on a per-hour and per-project basis, providing both an estimate of labor hours to be incurred for each project and the internal labor rate to be used. Evidence of the salary/hourly rate of internal labor must be provided to establish the reimbursable portion of labor costs. Labor rates may be inclusive of salary and benefits. When submitting cost estimates for internal labor costs, the applicant should provide the employee hourly rates, a description of the work performed, and the number of hours to be worked (e.g. copies of employee timesheets or paystubs with hours worked, and Internal Revenue Service Form W-2, Wage and Tax Statement).

85. The Bureau will exercise its discretion in determining whether the hours and/or labor rates satisfy the costs reasonably incurred standard. When submitting actual costs for reimbursement for internal labor, participants should provide: a report listing the hours incurred for each transition task, the applicable labor rate, and the resulting cost; and copies of employee timesheets showing hours worked on each transition task, by day. Timesheet hours must match the totals reported by the task above. Timesheets either may come from the participants' time and expense reporting systems or can be manually prepared using spreadsheets or other means. The Bureau may request additional supporting information for internal labor costs, such as payroll, human resources, or financial records.

86. RWA argues that costs associated with "long term maintenance contracts or managed service contracts to maintain and operate Huawei and ZTE networks may need to be terminated prior to the service terms being completed and that the costs associated with the termination . . . should be reimbursed as part of the costs associated with replacing the networks."<sup>248</sup> Observing that "other prepaid service contracts may need to be terminated prior to the service terms being completed," RWA argues that "[t]hese costs should be eligible for reimbursement and included in the Cost Catalog because they are outlays already made that are not otherwise recoverable."<sup>249</sup> We reject RWA's request because these expenses are incurred to maintain Huawei and ZTE networks that the Reimbursement Program is

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<sup>245</sup> Appx. C, § 5.7.1

<sup>246</sup> Appx. C, §§ 5.10.0.

<sup>247</sup> See 47 CFR § 1.50004(c)(1) (not yet effective) ("Eligible providers that submit their own cost estimates must submit supporting documentation and certify that the estimate is made in good faith."); see also *2020 Supply Chain Order*, 35 FCC Rcd at 14346, para. 149 ("If an applicant believes the predetermined cost estimate does not fully account for its specific circumstance or a predetermined cost estimate is not provided in the Catalog of Eligible Expenses for the cost identified by the applicant, the applicant can provide its own individualized cost estimate.").

<sup>248</sup> RWA Catalog Public Notice Comments at 8.

<sup>249</sup> *Id.*

designed to replace. These expenses are not reasonably necessary to remove, replace, and dispose of covered communications equipment and services.

87. We do, however, clarify that early termination fees incurred by providers terminating long term service contracts, managed service contracts, or other prepaid contracts entered into prior to their application submission may be reimbursable to the extent they are reasonably necessary for removing, replacing, and disposing of covered communications equipment and services. We will not reimburse early termination fees for contracts entered into after June 30, 2020, as Congress has established that date as the eligibility cut-off for eligible expenses.<sup>250</sup> Beyond our statutory obligation, after June 30, 2020, the date on which the Public Safety and Homeland Security Bureau released orders designating Huawei and ZTE as covered companies under our rule 54.9, no Universal Service Funds could be used to purchase, obtain, maintain, improve, modify, or support Huawei or ZTE equipment or services.<sup>251</sup> We decline to reward business decisions where a participant should be on notice to not enter into arrangements with such fees given the program's goals to incentivize providers to remove, replace, and dispose of Huawei and ZTE equipment and services. Participants seeking reimbursement for early termination fees must provide supporting documentation, including copies of vendor contracts with the early termination fee provisions.

88. CCA requested that certain integration costs be included in the Catalog. CCA requested that any Citizens Broadband Radio Service (CBRS) equipment being replaced should include "the costs of re-integration of the new CBRS equipment with Spectrum Access Systems."<sup>252</sup> Because Spectrum Access Systems (SAS) integration costs may be reasonably necessary to replace CBRS equipment, these costs may be reimbursable under the program. We revise the Catalog to include cost categories for access layer and distribution layer SAS Integration Costs and a range of cost estimates based on Widelity's confidential interviews with communications industry stakeholders.<sup>253</sup>

89. CCA also requested inclusion in the Catalog of a cost category for "third-party integration costs" such as "billing software, messaging platforms, roaming services, WEAS systems, and robocall blocking services."<sup>254</sup> While these expenses are not in the Catalog, some of these expenses may be reimbursable. However, we reject CCA's request because network integration costs are highly variable, making it difficult to develop a quantifiable range of cost estimates based on the record and information provided by communications industry stakeholders to Widelity. As noted above, the final Catalog does, however, include specific integration costs, such as SAS integration, that are specific to the type of equipment which may be eligible for reimbursement.<sup>255</sup> Participants seeking reimbursement for network integration costs not identified in the Catalog will need to provide individualized cost estimates with supporting documentation.

90. RWA asked us to modify the Catalog to include "VoLTE compatible replacement subscriber handsets" to replace "CDMA-capable voice services on some handheld devices."<sup>256</sup> Relatedly, CCA asked us to modify the Catalog to clarify that replacements to "add, upgrade, or replace HSS, IMS, PCRF, etc. to support UMTS/LTE/VoLTE devices" fall within the catalog's "purview."<sup>257</sup> In the 2021

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<sup>250</sup> See CAA § 906; 2021 Supply Chain Order at 21-24, paras. 46-52.

<sup>251</sup> See generally *Huawei Designation Order*; *ZTE Designation Order*.

<sup>252</sup> CCA Catalog Public Notice Comments at 6.

<sup>253</sup> Appx. C, §§ 1.7.3, 2.30.0.

<sup>254</sup> CCA Catalog Public Notice Comments at 6.

<sup>255</sup> Appx. C, § 1.7.3.

<sup>256</sup> See Letter from Carri Bennet, General Counsel, Rural Wireless Association, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-89, at 2 (filed June 1, 2021).

<sup>257</sup> CCA Catalog Public Notice Comments at 5.

*Supply Chain Order*, however, the Commission rejected RWA’s request, finding “CDMA-capable handsets not produced or provided by Huawei or ZTE ineligible for reimbursement under the Reimbursement Program rules because replacing such handsets with VoLTE-compatible subscriber handsets is not reasonably necessary to the removal, replacement, and disposal of covered communications equipment or service.”<sup>258</sup> Consistent with the *2021 Supply Chain Order*, we decline to modify the Catalog to include handsets and other end user customer premises equipment (CPE) outside of the limited CPE already accounted for in the Catalog.<sup>259</sup>

91. RWBC asked us to modify the Catalog to “include cost estimates for deploying fiber backhaul equipment,”<sup>260</sup> arguing that “fiber backhaul facilities should be considered comparable to microwave backhaul facilities under the ‘*Emerging Technologies*’ compatibility standard.”<sup>261</sup> Similarly, USTelecom asked us to clarify whether leasing “additional capacity on a long-term basis (like a fiber IRU) that would support the parallel network” is eligible for reimbursement.<sup>262</sup> In the *2021 Supply Chain Order*, however, the Commission did not consider “replacing microwave backhaul with fiber backhaul . . . necessary for the removal, replacement, and disposal of” covered communications equipment or services.”<sup>263</sup> Instead, the Commission viewed such “fiber link replacements as a technology upgrade, and not a reasonable, comparable replacement.”<sup>264</sup> As the Commission explained in the *2021 Supply Chain Order*, if the participant decides to upgrade its equipment, it will bear the difference in cost between the comparable replacement and the upgrade, must provide price quotes for the comparable replacement with its application, as opposed to relying on the cost estimates in the Catalog, and must certify that the estimated cost is in good faith.<sup>265</sup> Fiber backhaul facilities and additional capacity would be considered an upgrade, not a reasonable, comparable replacement. Accordingly, we decline to add this equipment as a separate cost category to the Catalog.

92. Ericsson argues that the preliminary catalog “only included Internet of Things (‘IoT’) software licenses associated with core network nodes,” which does “not reflect the need to replace existing Machine-to-Machine (‘M2M’) and IoT software licenses in the Radio Access Networks (‘RAN’) nodes.”<sup>266</sup> Ericsson asked us to “expand the current Catalog to include specific RAN software licenses for existing functionality, such as M2M, Cat-M1, Narrowband IoT, and similar items” because it would “ensure the continuation of IoT capabilities in one frequency band in all sectors of an existing LTE site with typical 2, 4, and 8-port radios.”<sup>267</sup> We decline to implement Ericsson’s request because the functionality cited, Internet of Things capabilities, is not reasonably necessary for core network operations and therefore is outside of the scope of the Catalog. The cost categories Ericsson requests to include in the Catalog are not part of the core network but rather are used by end users to connect to advanced communications services. In the *2021 Supply Chain Order*, the Commission found that “Internet of Things devices, used by end users to access and utilize advanced communications services are distinctly different from the cell sites, backhaul, core network, etc. used to operate a network and

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<sup>258</sup> *2021 Supply Chain Order* at 38-39, para. 93.

<sup>259</sup> *See id.*

<sup>260</sup> Rural Wireless Broadband Coalition Catalog Public Notice Comments at 3-4.

<sup>261</sup> *Id.* at 5-6.

<sup>262</sup> USTelecom Catalog Public Notice Comments at 3.

<sup>263</sup> *2021 Supply Chain Order* at 37, para. 90.

<sup>264</sup> *Id.*

<sup>265</sup> *Id.* at 37-38, para. 91.

<sup>266</sup> Ericsson Catalog Public Notice Comments at 2-3 (citing *Catalog Public Notice*, Attach. 2 at 20).

<sup>267</sup> *Id.*

provide advanced communications services,” and were “not reasonably necessary to the removal, replacement, and disposal of covered communications equipment or service.”<sup>268</sup>

93. Vantage Point argues that “annual software or license fees” are “a true cost of network replacement and should be included in Catalog replacement estimates.”<sup>269</sup> While these expenses may be reimbursable, we decline to implement Vantage Point’s proposed change because specific software licensing fees are already included in the Catalog based on Widelity’s engagement with industry stakeholders.<sup>270</sup> Participants seeking reimbursement for software and licensing fees not identified in the Catalog will need to provide individualized cost estimates with supporting documentation.

94. *Requests to Clarify or Modify Cost Categories.* CCA asks us to “clarify that the full range of 911 implementation costs are reasonable,” including “third-party integration costs.”<sup>271</sup> The Catalog includes cost estimates for “911 and E911 Services and Test Services” which we find are sufficiently specific.<sup>272</sup> To the extent that there are additional costs associated with 911 and E911 (Enhanced 911) implementation as CCA suggests, there is no evidence in the record or provided to Widelity that would form a basis for altering the Catalog 911 and E911 services cost categories. Accordingly, we decline to implement the change proposed by CCA.

95. USTelecom asked us to clarify that the “Leasing” cost category is not limited to “wireless networks,” but that “wireline networks may also need to obtain or modify leases, such as, for example, for space in third-party datacenters.”<sup>273</sup> In particular, USTelecom asserts that the “existing colocation” expense type” is “unclear.”<sup>274</sup> We clarify that providers of wireline networks may be eligible for reimbursement of leasing expenses, including colocation expenses, reasonably incurred in removing, replacing, or disposing of covered communications equipment and services.<sup>275</sup> We decline, however, to modify the Catalog to account for costs of leasing space in third-party data centers. We note that there is no documentation in the record to quantify costs for leasing space in third-party data centers, and Widelity did not receive cost data on leasing space in third-party data centers.

96. *Amendments to the Range of Cost Estimates.* Commenters requested that we modify the range of cost estimates for certain cost categories identified in the preliminary Catalog. Mavenir argues that the low range of cost estimates identified in the preliminary Catalog for “‘Open vRAN eNodeB’, ‘RAN (Open RAN/ vRAN) Components’ or [Distributed Unit]...need to be changed to reflect that costs provided by Mavenir.”<sup>276</sup> We agree with Mavenir that we should modify the Catalog to reduce the low end of the range of estimated costs for “Open vRAN eNodeB,”<sup>277</sup> and “RAN (Open RAN/ vRAN Components)” to reflect the lower pricing information Mavenir submitted to Widelity.<sup>278</sup> Accordingly, we implement these clarifications in the Catalog. However, we reject Mavenir’s request to lower the low end of the range of cost estimates for the distribution layer Distributed Unit cost category because Widelity had already factored in the pricing information Mavenir submitted to Widelity when developing

<sup>268</sup> 2021 Supply Chain Order at 39, para. 94.

<sup>269</sup> Vantage Point Catalog Public Notice Comments at 6.

<sup>270</sup> Appx. C, § 4.

<sup>271</sup> CCA Catalog Public Notice Comments at 5.

<sup>272</sup> Appx. C, § 5.48.

<sup>273</sup> USTelecom Catalog Public Notice Comments at 3.

<sup>274</sup> *Id.* at 3.

<sup>275</sup> Appx. C, §§ 5.6, 5.6.7.

<sup>276</sup> *See* Mavenir Catalog Public Notice Comments at 3.

<sup>277</sup> Appx. C, § 2.31.0.

<sup>278</sup> Appx. C, §§ 2.34, 2.35, 2.36.

the range of cost estimates for the preliminary catalog.<sup>279</sup> Because we find the range of cost estimates for Distributed Unit identified in the preliminary catalog to be reasonable, we include it in the final Catalog.

97. USTelecom asked us to “reexamine and confirm the appropriate prices” for WDM and OTN equipment. USTelecom asserted that it was “unclear why” cost estimates for access layer “Access WDM & OTN” equipment “matches” core layer “Metro WDM & OTN” equipment, “yet the apparently similar” distribution layer “Metro WDM & OTN” cost estimates are “very different.”<sup>280</sup> To remove a potential source of confusion for participants, we removed the core layer “Metro WDM & OTN” cost category since this equipment is identical to distribution layer WDM and OTN equipment and thus the cost estimates were duplicative. As a result, we adjusted the range of cost estimates for “WDM & OTN – Core Equipment” to reflect the removal of distribution layer WDM and OTN equipment and the associated range of cost estimates. Accordingly, we adopt this revision in the Catalog.<sup>281</sup> WDM and OTN associated equipment costs are included for the access layer,<sup>282</sup> distribution layer,<sup>283</sup> and core layer<sup>284</sup> equipment cost categories.

98. USTelecom states that a member has “Huawei equipment that would appear to be classified as Coaxial Media Converters in the proposed catalog” and reports that it “paid well in excess of the maximum allowed,” and “the cost to replace Huawei with equal functionality will range from \$13,000-\$16,000 per replacement.”<sup>285</sup> USTelecom notes that the carrier “typically refers to” the “Coaxial Media Converters” equipment as a “cable modem termination system (CMTS) and, while CMTS systems are generally deployed in a cable operator’s headend, these particular Huawei CMTS devices are field-deployed.”<sup>286</sup> Because we find that the costs for replacing CMTS are reasonably necessary to comply with the Reimbursement Program, we find that the Catalog should be revised to account for CMTS costs. We agree with USTelecom that the high-end cost estimate should be \$16,000 per node but, based on cost estimates recommended by Widelity based on industry engagement, we find that the low-end cost estimate should be \$8,500 per node. We modify the Catalog to include this range of cost estimates for CMTS (per node).<sup>287</sup>

99. CCA asks us to “add the costs of cell site routers to the Catalog, with an estimated cost of \$3,000 per site” because “[e]ach cell site typically has a router installed.”<sup>288</sup> The preliminary catalog identified a Distribution Layer cost subcategory and range of cost estimates for “Cell Site Routers.”<sup>289</sup> We revised the Catalog to include additional Distribution Layer cost subcategories and ranges of cost estimates for small, medium, and large cell site routers based on Widelity’s additional engagement with industry stakeholders.<sup>290</sup> We find that Widelity’s thorough survey of communications industry manufacturers and service providers reasonably identified relevant ranges of estimated costs for cell site

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<sup>279</sup> *Catalog Public Notice*, Appx. B at 14; Appx. C, § 2.33.0.

<sup>280</sup> USTelecom Catalog Public Notice Comments at 4.

<sup>281</sup> Appx. C, § 1.2.1.

<sup>282</sup> *Id.*, § 1.2.0.

<sup>283</sup> *Id.*, § 2.7.0.

<sup>284</sup> *Id.*, § 3.4.0.

<sup>285</sup> USTelecom Catalog Public Notice Comments at 2-3.

<sup>286</sup> *Id.* at 3.

<sup>287</sup> Appx. C, § 1.9.1.

<sup>288</sup> CCA Catalog Public Notice Comments at 5.

<sup>289</sup> *Catalog Public Notice*, Attach. 2 at 8.

<sup>290</sup> *See* Appx. C, § 2.1.0.



routers. To the extent that applicants disagree with the Catalog cost estimates, they may submit individualized cost estimates along with supporting documentation.

100. We also take this opportunity to clarify that costs associated with removing, replacing, and disposing of wired (Wi-Fi) and wireless routers that constitute CPE are not be reimbursable under the program and revise the Catalog accordingly. The preliminary catalog included a subcategory (without cost estimates) for “Smart Home” CPE but clarified that “IP cameras, wifi doorbells, wifi, light switches, etc. would not be reimbursable.”<sup>291</sup> In the preliminary Report, Widelity noted that for wireless networks, CPE can include an “internal modem and broadband router possibly with a wireless access point to distribute a signal throughout the premises or office,” and for wired networks, CPE can include a “broadband router, or a premise gateway with wireless (Wi-Fi) capabilities.”<sup>292</sup> In the *2021 Supply Chain Order*, the Commission found that certain CPE equipment including end-user handsets were “distinctly different from cell sites, backhaul, core network, etc. used to operate a network and provide advanced communications services.”<sup>293</sup> In particular, the Commission found this equipment was not reasonably necessary to the removal, replacement and disposal of covered communications equipment.<sup>294</sup> Wired (Wi-Fi) and wireless routers may constitute CPE used by end users to access non-core network elements and, consistent with the *2021 Supply Chain Order*, are not reasonably necessary for the removal, replacement, and disposal of covered communications equipment or services.<sup>295</sup> Accordingly, we revise the Catalog “Smart Home” subcategory to clarify that “Wi-Fi Routers” would not be reimbursable under the program.<sup>296</sup>

101. Airspan argues that the “Cost Catalog’s pricing appears grossly inflated,” noting that “some of the lower bound cost estimates listed in the Cost Catalog are as much as three times (3x) the price Airspan currently offers for equivalent hardware and other network elements,” and that network equipment and services are becoming less expensive by the day due to the ongoing evolution of network architecture design and equipment manufacturing.”<sup>297</sup> Airspan did not sufficiently quantify with specificity the changes to the range of cost estimates it envisioned. We thus decline to modify the Catalog in response to Airspan’s comment because we believe that Widelity’s thorough survey of communications industry manufacturers and service providers reasonably identified relevant ranges of estimated costs. We note that we modified the Catalog in parts to reduce the low-end of the range of cost estimates where appropriate.<sup>298</sup>

102. Vantage Point argues that the preliminary Catalog underestimates shipping costs in Alaska, failing to account for “shipping costs to any other major Alaskan port,” other than Seattle to Dutch Harbor, and failing to account for “inland transportation costs.”<sup>299</sup> We decline to modify the Catalog to account for additional shipping costs in Alaska raised by Vantage Point. The Catalog accounts for shipping costs to Alaska based on the longest shipping route, Seattle to Dutch Harbor, as an example for the costs typically incurred. Cost estimates for other outlying regions, which vary depending on

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<sup>291</sup> *Catalog Public Notice*, Attach. 2 at 7.

<sup>292</sup> *Id.*

<sup>293</sup> *2021 Supply Chain Order* at 39, para. 94.

<sup>294</sup> *Id.*

<sup>295</sup> *Id.* at 38-39, paras. 93-94.

<sup>296</sup> Appx. C, § 1.8.2.

<sup>297</sup> Airspan Catalog Public Notice Comments at 4.

<sup>298</sup> See Appx. C, § 1.2.1 (decreasing the low-end of the range of estimated costs for “Access WDM & OTN equipment, Small network” from \$83,000.00 to \$3,454.00); *id.*, §§ 2.31.0 to 2.31.7 (decreasing the low-end of the range of estimated costs for various “Open vRAN eNodeB” subcategories).

<sup>299</sup> Vantage Point Catalog Public Notice Comments at 2-3.

multiple cost factors, including distance, time of year, freight weight, etc., would be too variable to include in the Catalog. To the extent that providers believe the Catalog does not adequately represent their shipping costs, they may submit individualized cost estimates with supporting documentation.

103. *Widely Proposed Revisions.* Widely also proposed various modifications, clarifications, and improvements to the preliminary catalog, based on additional engagement with communications industry stakeholders and its own thorough review. Widely proposed various clarifications to the descriptions of the cost categories. For example, Widely proposed clarifying that the “Virtual/Cloud Core Deployment Cloud – Virtual IMS” cost category range of estimated costs is for equipment providing service to “up to 100,000 subscribers.”<sup>300</sup> Widely also proposed revising the description for “Antenna – LTE (Long Term Evolution)” to represent costs for a typical 10-port antenna, instead of an 8-port antenna, resulting in a decrease to the low-range of cost estimates from \$2,087 to \$1,479.<sup>301</sup> Widely also proposed adding additional cost subcategories to provide further specificity and guidance to applicants. For example, Widely proposed adding a Distribution Layer Equipment cost category for “Hybrid Cable & Radio Jumpers, Tower Ancillary Components” with a range of cost estimates.<sup>302</sup> Widely also proposed changes to the range of cost estimates proposed in the preliminary catalog to more accurately reflect reasonable costs typically incurred managing a network. For example, Widely proposed increasing the high-end of the range of cost estimates for “Tower/Installation Crews,” “Mobilization Less than or Equal to 250 Miles (2-4 Member Crew),” from \$3,000 to \$6,000.<sup>303</sup>

104. Because we find that Widely’s proposed modifications and clarifications improve the accuracy and quality of the Catalog and will aid participants preparing their initial cost estimates, we revise the Catalog to include additional changes identified by Widely. A complete listing of the changes to the preliminary catalog that are reflected in the final Catalog are included as an attachment to the Catalog in Appendix C.

105. *Highly Variable Expenses.* For certain expenses identified in the preliminary catalog—such as costs associated with network security equipment, network automation, and network integrator services—a range could not be quantified, most often due to the highly variable nature of the cost. Taxes, for example, vary by state and locality and/or tax exemption and therefore could not be quantified for the Catalog. The same holds true for special access site costs which vary by site and region. For these expenses, while we recognize they are potentially reimbursable, applicants will not be able to rely on the Catalog as there is no quantified range. Accordingly, for such expenses, applicants will need to provide an individual cost estimate with supporting documentation. We have moved those expense descriptions to the back of the Catalog merely as an acknowledgement that we have considered such costs and recognize they are potentially eligible for reimbursement even though a cost estimate range could not be quantified.

### C. Final Replacement List

106. We adopt a final List of Categories of Suggested Replacement Equipment and Services (Replacement List) to guide providers removing, replacing, and disposing of covered communications equipment and services. Section 4(d)(1) of the Secure Networks Act directs the Commission to “develop a list of suggested replacements of both physical and virtual communications equipment, application and management software, and services or categories of replacements of both physical and virtual communications equipment, application and management software and services.”<sup>304</sup> The list must be “technology neutral and may not advantage the use of reimbursement funds for capital expenditures over

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<sup>300</sup> Appx. C, § 5.28.5.

<sup>301</sup> *Id.*, § 2.14.2.

<sup>302</sup> *Id.*, § 2.17.

<sup>303</sup> Compare Appx. C, § 5.24.1 with *Catalog Public Notice*, Attach. 2 at 27.

<sup>304</sup> Secure Networks Act § 4(d)(1)(A); 47 U.S.C. § 1603(d)(1)(A).

operational expenditures.”<sup>305</sup> Accordingly, in the *2020 Supply Chain Order*, the Commission mandated the development of a Replacement List “that will identify the categories of suggested replacements of real and virtual hardware and software equipment and services to guide providers removing covered communications equipment from their networks.”<sup>306</sup> and directed the Bureau to issue a public notice announcing the Replacement List.<sup>307</sup> The Bureau sought and received comment on a preliminary Replacement List prepared by Widelity in the *Catalog Public Notice*.<sup>308</sup> After considering the comments addressing the preliminary Replacement List received in response to the *Catalog Public Notice*, the Bureau declines to make any changes to the preliminary Replacement List.

107. Santel Communications Cooperative, Inc. (Santel) asked the Bureau to “add a statement in the Replacement List acknowledging that replacing covered equipment with other advanced communications services equipment, specifically including [fiber-to-the-premises (FTTP)] equipment, qualifies for reimbursement under the Supply Chain Reimbursement Program.”<sup>309</sup> In the *2021 Supply Chain Order*, however, the Commission explained that it generally views fiber link replacements, including FTTP, as a technology upgrade and not a reasonable, comparable replacement for covered communications equipment and services.<sup>310</sup> Participants may upgrade communications equipment and services under the Reimbursement Program but, as the Commission explained, will ultimately bear the difference in cost between the comparable replacement and the upgrade.<sup>311</sup> Because cost determinations are very case-by-case specific, and FTTP is generally considered an upgrade, not a reasonable, comparable replacement, we decline to adopt Santel’s proposed modification to the Replacement List.<sup>312</sup>

108. ADTRAN seeks to “incorporate a ‘Buy American’ preference into the suggested Replacement Equipment.”<sup>313</sup> However, when Congress created the Reimbursement Program it did not express a preference for providers to replace covered communications equipment and services with equipment and services provided by U.S. companies. Similarly, and by ADTRAN’s own admission, Congress did not include a “Buy American” preference for the Reimbursement Program in sections 901 or 906 of the Secure Networks Act.<sup>314</sup> Furthermore, in the *2020 Supply Chain Order* the Commission

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<sup>305</sup> Secure Networks Act § 4(d)(1)(B); 47 U.S.C. § 1603(d)(1)(B).

<sup>306</sup> *2020 Supply Chain Order*, 35 FCC Rcd at 14363-64, para. 198; 47 CFR § 1.50006.

<sup>307</sup> *Id.* at 14368, para. 208.

<sup>308</sup> *Catalog Public Notice* at 3-4.

<sup>309</sup> Santel *Catalog Public Notice* Comments at 2.

<sup>310</sup> *2021 Supply Chain Order* at 37, para. 90.

<sup>311</sup> *Id.* at 37-38, para. 91.

<sup>312</sup> NTCA—The Rural Broadband Association (NTCA) requested that the “Commission include a statement in the Replacement List...that specifically allows providers to replace covered equipment or services with any equipment or technology that is capable of providing advanced communications,” encouraging the Commission to clarify that “providers can choose the equipment and technology to install in their networks...[t]hus, for example, a provider of fixed wireless services could choose to replace covered fixed wireless equipment with a fiber network solution.” NTCA Cost Catalog Public Notice Comments at 2. In the *2021 Supply Chain Order*, the Commission addressed the issues raised by NTCA and provided additional guidance on the treatment of technology upgrades in excess of a comparable replacement under the Reimbursement Program. See *2021 Supply Chain Order* at 35-38, paras. 86-92; *id.* at 37-38, para. 87 & n.264 (citing NTCA Cost Catalog Public Notice Comments at 2). Further revisions to the Replacement List are therefore unnecessary to address NTCA’s comments. The Replacement List is technology neutral as required by the Secure Networks Act and is not intended to be exhaustive of all replacement options. See Secure Networks Act § 4(d)(1)(B); 47 U.S.C. § 1603(d)(1)(B).

<sup>313</sup> ADTRAN *Catalog Public Notice* Comments at 3; see ADTRAN Reimbursement Process Public Notice Comments at 2-6.

<sup>314</sup> See ADTRAN Reimbursement Process Public Notice Comments at 2.

explained that the Replacement List should “provide carriers with the flexibility to select the equipment or services that fit their needs from categories of equipment and services.”<sup>315</sup> Consistent with the *2020 Supply Chain Order*, we provide participants with the flexibility to select U.S. and non-U.S. equipment or services (excluding, of course, Huawei and ZTE equipment or services) that satisfy their obligations under the Reimbursement Program. Accordingly, we decline to adopt ADTRAN’s proposed modification to the Replacement List.

109. Accordingly, for the reasons stated herein, we adopt the preliminary replacement list proposed in the *Catalog Public Notice*, without changes, as the final Replacement List for use in the Reimbursement Program.<sup>316</sup> Consistent with the *2020 Supply Chain Order*, the Bureau will publish the final Replacement List on the Commission’s website and issue a public notice at least annually announcing any updates to the Replacement List, to the extent there are any updates, to ensure that the Replacement List remains current.<sup>317</sup> The final Replacement List is attached as Appendix D.

#### **D. Widelity Report**

110. The Bureau also sought comment in the *Catalog Public Notice* on the Supply Chain Reimbursement Program Study (Report) prepared by Widelity.<sup>318</sup> The Report represents the views of Widelity, not the views of the Commission or the Bureau, and is not an official Commission document. While the Bureau appreciates comments received addressing and proposing changes to the Report, the Bureau did not intend for further revisions to the Report by Widelity and instead sought comment only to help gauge the adequacy and sufficiency of the subjects covered in the Report as the Bureau works to implement the Reimbursement Program. Specifically, the Report was intended “as an industry and technology overview and explains Widelity’s methodologies used to develop the initial version of the proposed Catalog and Replacement List.”<sup>319</sup> Comments on the Report are relevant only to the extent they inform the finalization of the Catalog and Replacement List. The final Catalog will be used by participants to estimate initial costs, and the final Replacement List will serve as a suggested guide to participants replacing equipment and services. Accordingly, the Bureau finds it unnecessary to require further revisions to the Widelity Report.

#### **IV. PROCEDURAL MATTERS**

111. *Legal Authority.* We establish procedures for the Reimbursement Program pursuant to the authority contained in section 4 of the Secure Networks Act, as amended, 47 U.S.C. § 1603, and section 1.50004(p) of the Commission’s rules, 47 CFR § 1.50004(p).

112. *Treasury Offset.* The U.S. Department of the Treasury (Treasury) has a number of collection tools, including the Treasury Offset Program (TOP), whereby it collects delinquent debts owed to federal agencies and states by individuals and entities, by offsetting those debts against federal monies owed to the debtors.<sup>320</sup> As noted in the Reimbursement Process Public Notice, TOP will apply to disbursements from the Reimbursement Program. Reimbursement Program participants owing past-due debt to a federal agency or a state may have all or part of their disbursement payments offset by Treasury to satisfy such debt. Prior to referral of its debt to Treasury, an entity is notified of the debt owed,

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<sup>315</sup> See *2020 Supply Chain Order*, 35 FCC Rcd at 14364, para. 198 (explaining that the replacement list “should provide carriers with the flexibility to select the equipment or services that fit their needs from categories of equipment and services.”).

<sup>316</sup> *Catalog Public Notice*, Attach. 3.

<sup>317</sup> 47 CFR § 1.50006(b); *2020 Supply Chain Order*, 35 FCC Rcd at 14368, paras. 207-208.

<sup>318</sup> *Catalog Public Notice*, Attach. 1.

<sup>319</sup> *Id.* at 2.

<sup>320</sup> See 31 U.S.C. § 3716 *et seq.*; U.S. Department of the Treasury, Treasury Offset Program, <https://fiscal.treasury.gov/top/> (last visited July 22, 2021).

including repayment instructions.<sup>321</sup> If the referred debt of a Reimbursement Program participant remains outstanding at the time of a disbursement payment from the Reimbursement Program to that participant, the participant will be notified by Treasury that some or all of its payment has been offset to satisfy an outstanding federal or state debt. Program participants that owe past due federal or state debts that have been referred to Treasury are encouraged to resolve such debts prior to submitting their Application Request for Funding Allocation.<sup>322</sup> The Bureau lacks discretion to deviate from the requirements of the TOP.

113. RWA recognizes the Commission lacks the authority to deviate from the TOP requirements but “encourages the Reimbursement Program Fund Administrator and the FCC to work through any debt collection issues with the applicant prior to funds being released so that an applicant can cure any outstanding debts in order to receive funding.”<sup>323</sup> We will endeavor to work with participants, to the extent practicable, on Treasury Offset debt collection issues in connection with the disbursement process. Participants are, however, encouraged to proactively identify and resolve any outstanding federal and state debt issues before participating in the Reimbursement Program that could lead to a Treasury Offset.

114. *Do Not Pay*. Absent comment on the issue, the Commission adopts the proposal for the Bureau in coordination with the Commission’s Office of Managing Director to “conduct a thorough review of the federal “Do Not Pay” system database to verify an applicant’s eligibility for payments and awards”<sup>324</sup> before distributing the funding. Pursuant to the Payment Integrity Information Act of 2019 (PIIA), the Commission is required to ensure that a thorough review of available databases with relevant information on eligibility occurs to determine program or award eligibility and prevent improper payments before the release of any federal funds.<sup>325</sup> The Department of Treasury’s Do Not Pay system is designed to decrease improper payments in federal programs such as the payment of funds to ineligible recipients, overpayment, or underpayment.<sup>326</sup>

115. Under the PIIA, the Commission is required to verify the eligibility of the funding recipient in multiple databases before allocating and distributing the funding.<sup>327</sup> The Reimbursement Program Fund Administrator will initially check whether an applicant is identified in the Do Not Pay system. If an applicant is ineligible for funding under the Do Not Pay system, the Reimbursement Program Fund Administrator will notify the applicant and provide an opportunity for the applicant to expeditiously resolve the matter with the Do Not Pay system. The Bureau will not allocate funding to the applicant if an applicant is ineligible for funding under the Do Not Pay system.<sup>328</sup> If a check of the Do Not Pay system results in a finding that a Reimbursement Program applicant is ineligible for funding or payment, the Commission will withhold funding and/or payments as appropriate. The Program

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<sup>321</sup> See 31 U.S.C. § 3716(a)(1)-(4).

<sup>322</sup> See U.S. Department of the Treasury, TOP Frequently Asked Questions, <https://fiscal.treasury.gov/top/faqs-for-the-public.html> (last visited Aug. 2, 2021).

<sup>323</sup> RWA Reimbursement Process Public Notice Comments at 10.

<sup>324</sup> See *Reimbursement Process Public Notice* at 10.

<sup>325</sup> Payment Integrity Information Act of 2019, PL 116-17, § 3351(3), 134 Stat 113, 114 (2020) (PIIA).PIIA recodifies and amends the prior improper payment statutes (*i.e.*, The Improper Payments Information Act of 2002, Pub. L. 107-300; The Improper Payments Elimination and Recovery Act of 2010, Pub. L. No. 114–204; The Improper Payments Elimination and Recovery Improvement Act of 2012, Pub. L. No. 112-248; and The Fraud Reduction and Data Analytics Act of 2015, Pub. L. No. 114-186).

<sup>326</sup> See generally Payment Integrity Information Act of 2019; U.S. Bureau of the Fiscal Service, *Do Not Pay*, <https://fiscal.treasury.gov/DNP/> (last visited Aug. w, 2021).

<sup>327</sup> Payment Integrity Information Act of 2019, § 3354(a).

<sup>328</sup> See *Reimbursement Process Public Notice* at 10.

Administrator may work with the applicant to give it an opportunity to resolve its listing in the Department of the Treasury's Do Not Pay system if the applicant can produce evidence that its listing in the Do Not Pay system should be removed. However, the applicant or program participant will be responsible for working with the relevant agency to correct its information before funding can be allocated or payment can be made by the Commission."<sup>329</sup>

116. *Red Light Rule.* In the *Reimbursement Procedures Public Notice*, we sought comment on waiving the Commission's "red light rule" for all funding allocations and disbursements from the Reimbursement Program.<sup>330</sup> RWA supported this proposal.<sup>331</sup> Accordingly, we will waive the "red light rule" for the Reimbursement Program as discussed herein.

117. The Commission's "red light rule" prevents parties who are delinquent on debts owed to the Commission from receiving benefits from the Commission while the debts remain unpaid.<sup>332</sup> The Commission adopted the "red light rule" in implementation of the Federal Debt Collection Improvement Act of 1996 that sought to "maximize collections of delinquent debts owed to the Government . . ."<sup>333</sup> The Commission has the authority to waive the "red light rule" for "good cause shown" under the Commission's rules.<sup>334</sup> The Commission can waive compliance with its own regulations when "particular facts would make strict compliance [with the regulation] inconsistent with the public interest."<sup>335</sup> The Commission finds that the waiver of the "red light rule" is justified in this instance given the national security risks posed to U.S. networks by Huawei and ZTE covered communications equipment and services.<sup>336</sup>

118. *Paperwork Reduction Act.* This document implements the information collections adopted in the *2020 Supply Chain Order* and does not contain any additional information collection(s) subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. The Commission is separately seeking to obtain the approval of the Office of Management and Budget (OMB) for the information collection requirements contained in the *2020 Supply Chain Order* per the Paperwork Reduction Act.<sup>337</sup> Therefore, this document does not contain any new or modified information collection burden for small business concerns with fewer than 25 employees, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198.<sup>338</sup>

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<sup>329</sup> See *Reimbursement Process Public Notice* at 10; see U.S. Bureau of the Fiscal Service, *Privacy Program*, <https://fiscal.treasury.gov/dnp/privacy-program.html#data-correction-process> (last visited Aug. 2, 2021).

<sup>330</sup> See *Reimbursement Process Public Notice* at 9.

<sup>331</sup> RWA Reimbursement Process Public Notice Comment at 10.

<sup>332</sup> See Federal Communications Commission, *Debt Collection Improvement Act Implementation* (last visited Aug. 2, 2021), <https://www.fcc.gov/licensing-databases/fees/debt-collection-improvement-act-implementation> ("The red light rule requires the Commission to withhold action on applications and other requests for benefits when the entity applying for or seeking benefits is delinquent in non-tax debts owed to the Commission . . .").

<sup>333</sup> Debt Collection Improvement Act of 1996, Pub. L. No. 104-134 §31001(b)(1), 110 Stat 1321 (1996).

<sup>334</sup> 47 CFR §1.3. The Commission recently waived the "red light rule" for health care providers seeking funding under the COVID-19 Telehealth program. See *Office of Managing Director and Wireline Competition Bureau Suspend the Red Light Rule for the COVID-19 Telehealth Program*, WC Docket No. 20-89, Public Notice, DA 20-436 (WCB Apr. 21, 2021).

<sup>335</sup> *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990).

<sup>336</sup> *Reimbursement Process Public Notice*, at 9-10.

<sup>337</sup> See *Information Collection Being Reviewed by the FCC*, 86 Fed. Reg. 22050 (Apr. 26, 2021).

<sup>338</sup> See 44 U.S.C. § 3506(c)(4).

119. *Final Regulatory Flexibility Certification.* The Regulatory Flexibility Act of 1980, as amended (RFA),<sup>339</sup> requires that an agency prepare a regulatory flexibility analysis for notice and comment rulemakings, unless the agency certifies that “the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities.” The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”<sup>340</sup> In addition, the term “small business” has the same meaning as the term “small business concerns” under the Small Business Act.<sup>341</sup> A “small business concern” is one that: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).<sup>342</sup>

120. The Commission prepared Initial Regulatory Flexibility Analyses (IRFAs) in connection with the *2020 Supply Chain Declaratory Ruling and Second Further Notice* and the *2021 Supply Chain Third Further Notice*.<sup>343</sup> The Commission sought written public comment on the proposals in the *2020 Supply Chain Declaratory Ruling and Second Further Notice* and the *2021 Supply Chain Third Further Notice*, including comments on the IRFAs. No comments were filed addressing the IRFAs. The Commission included Final Regulatory Flexibility Analyses (FRFAs) in connection with the *2020 Supply Chain Order* and the *2021 Supply Chain Order*.<sup>344</sup>

121. This Public Notice establishes procedures for the Reimbursement Program to implement the rules adopted by the Commission for the Reimbursement Program in the *2020 Supply Chain Order* and in the *2021 Supply Chain Order*.<sup>345</sup> In particular, this Public Notice establishes procedures for, among other things, determining program eligibility and participating in the program, including the filing and processing of applications. The procedures established in this Public Notice flow from the proposals set forth in the *2020 Supply Chain Declaratory Ruling and Second Further Notice* and the *2021 Supply Chain Third Further Notice* and discussed in the IRFAs accompanying those Notices, and are consistent with the requirements established in the *2020 Supply Chain Order* and the *2021 Supply Chain Order* and addressed in the FRFAs accompanying those Orders. Accordingly, no changes to our earlier analyses are required.

122. We have determined that the impact on the entities affected by the requirements contained in this Public Notice will not be significant. The effect of these measures is to establish for the benefit of those entities, including small entities, the procedures for filing an application consistent with existing rules, to participate in the Reimbursement Program to obtain funding support to remove from

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<sup>339</sup> 5 U.S.C. § 603. The RFA, 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Public L. No. 104-121, Title II, 110 Stat. 857 (1996).

<sup>340</sup> 5 U.S.C. § 605(b).

<sup>341</sup> *Id.* § 601(6).

<sup>342</sup> *Id.* § 601(3) (incorporating by reference the definition of “small-business concern” in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies “unless an agency, after consultation with the Office of Advocacy of the SBA and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register.”

<sup>343</sup> *Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs*, WC Docket No. 18-89, Declaratory Ruling and Second Further Notice of Proposed Rulemaking, 35 FCC Rcd 7821 (2020) (*2020 Supply Chain Declaratory Ruling and Second Further Notice*); *Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs*, WC Docket No. 18-89, Third Further Notice of Proposed Rulemaking, FCC 21-26 (Feb. 22, 2021) (*2021 Supply Chain Further Notice*).

<sup>344</sup> *2020 Supply Chain Order*, 35 FCC Rcd at 14385 (Appx. B, Final Regulatory Flexibility Analysis); *2021 Supply Chain Order* (Appx. B, Final Regulatory Flexibility Analysis).

<sup>345</sup> *2020 Supply Chain Order*, 35 FCC Rcd at 14374, Appx. A; *2021 Supply Chain Order*, FCC 21-86, Appx. A.

their networks, replace, and dispose of communications equipment and service considered a national security risk.

123. We therefore certify that the requirements of this Public Notice will not have a significant economic impact on a substantial number of small entities. The Bureau will send a copy of the Public Notice including a copy of this Final Regulatory Flexibility Certification, in a report to Congress pursuant to the Congressional Review Act.<sup>346</sup> In addition, the Public Notice and this final certification will be sent to the Chief Counsel for Advocacy of the SBA, and will be published in the Federal Register.<sup>347</sup>

124. *Report to Congress.* The Commission has determined, and the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget, concurs, that these requirements are non-major under the Congressional Review Act, 5 U.S.C. § 804(2). The Bureau will send a copy of this Public Notice to Congress and the Government Accountability Office pursuant to 5 U.S.C. § 801(a)(1)(A).

For additional information on this matter, please email [supplychain@fcc.gov](mailto:supplychain@fcc.gov).

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<sup>346</sup> 5 U.S.C. § 801(a)(1)(A).

<sup>347</sup> 5 U.S.C. § 605(b).



**APPENDIX A**

**Secure and Trusted Communications Networks Reimbursement Program**  
 FCC Form 5640: Application Request for Funding Allocation, Section 1.50004(c)  
 Information Submitted Using Online Portal

Note: This is a representative description of the information to be collected via the online portal and is not intended to be a visual representation of what each applicant will see, the order in which they will see information, or the exact wording or directions used to collect the information.

<b>Item Number</b>	<b>Field(s) Description</b>	<b>Purpose/Instructions</b>
<b>Applicant Information</b>		
1	Applicant FCC Registration Number (FRN)	A 10-digit number that is assigned by the Commission Registration System (CORES) to a business or individual registering with the FCC, <a href="https://apps.fcc.gov/cores/userLogin.do">https://apps.fcc.gov/cores/userLogin.do</a> . This unique FRN is used to identify the registrant's business dealings with the FCC.
2	Applicant Name	This is the name of the Applicant submitting this request. This information will be auto-generated by system based on the FRN submitted.
3	Applicant Contact Information: <ul style="list-style-type: none"> <li>• Applicant Street Name;</li> <li>• Applicant City;</li> <li>• Applicant State;</li> <li>• Applicant Zip Code;</li> <li>• Applicant Phone Number;</li> <li>• Applicant Email.</li> </ul>	This information on the Applicant will be auto-generated based on the FRN submitted.
<b>Applicant Payment Information</b>		
4	Commercial and Government Entity (CAGE) Code	The CAGE code is a five-character identifier, which is used by entities doing business with the Federal government to provide banking and other related information. The System Award Management (SAM) is a government-wide portal that consolidates the capabilities of multiple systems and information sources used by the Federal government in conducting the acquisition and financial assistance (which includes grants and cooperative agreements) processes,

Item Number	Field(s) Description	Purpose/Instructions
		<a href="https://www.sam.gov/SAM/">https://www.sam.gov/SAM/</a> . The CAGE Code is also referred to as a SAM registration number.
5	Data Universal Numbering System (DUNS) Number	A Data Universal Numbering System (DUNS) Number is a unique nine-digit number assigned by Dun & Bradstreet that is used to identify organizations, <a href="https://www.dnb.com/duns-number.html">https://www.dnb.com/duns-number.html</a> . Applicant will need to provide the DUNS number associated with the SAM CAGE coder identified in response to Item 4.
6	DUNS+4	A DUNS+4 is the DUNS number plus a 4-character suffix. It is created by the SAM registrant to establish additional Electronic Funds Transfer (EFT) accounts for a given DUNS number registration. (DUNS+4 has no affiliation with Dun & Bradstreet), SAM Non-Federal User Guide, <a href="https://sam.gov/SAM/SAM_Guide/SAM_Non_Federal_User_Guide/SAM_Non_Fed_User_Guide.html">https://sam.gov/SAM/SAM_Guide/SAM_Non_Federal_User_Guide/SAM_Non_Fed_User_Guide.html</a> .
<b>Real Party in Interest Information</b>		
7	FCC Registration Number (FRN) for Real Party in Interest	If a party other than the Applicant is the real party in interest (e.g., a parent or other controlling entity), enter that party's 10-digit FCC Registration Number (FRN). The FRN is assigned by CORES to a business or individual registering with the FCC. This unique FRN is used to identify the registrant's business dealings with the FCC. This information helps the FCC identify the controlling party and affiliated applicants.
8	Name of Real Party in Interest	If a party other than the Applicant is the real party in interest (e.g., a parent or other controlling entity), enter that party's name in this item. If there is more than one real party in interest, attach an exhibit detailing all parties in interest. The name will be auto-generated based on the FRN submitted for Real Party in Interest.
<b>Contact Information</b>		
9	Contact same as Applicant. <ul style="list-style-type: none"> <li>• Contact Name;</li> <li>• Contact Street Name;</li> <li>• Contact City;</li> <li>• Contact State;</li> <li>• Contact Zip Code;</li> </ul>	This can be selected to auto-populate the Contact Information if the Contact is the same as the Applicant. This information on the Applicant will be auto-generated based on the FRN submitted.

Item Number	Field(s) Description	Purpose/Instructions
	<ul style="list-style-type: none"> <li>• Contact Phone Number;</li> <li>• Contact Email.</li> </ul>	
10	<p>Contact different than Applicant.</p> <ul style="list-style-type: none"> <li>• Contact Name;</li> <li>• Contact Street Name;</li> <li>• Contact City;</li> <li>• Contact State;</li> <li>• Contact Zip Code;</li> <li>• Contact Phone Number;</li> <li>• Contact Email.</li> </ul>	<p>These items identify the contact representative, if different from the Applicant. This is usually the headquarters offices of a large company, the law firm or other representative of the Applicant, or the person or company that prepared or submitted the application on behalf of the Applicant. If there is a question about the application, an FCC representative will communicate with the Applicant’s contact representative.</p>
<b>Identifying Applicant Type</b>		
11	<p>Please identify the primary U.S. state, District of Columbia, or U.S. territory in which reimbursement support will be applied.</p>	<p>This is the U.S. State, District of Columbia, or U.S. territory in which you expect a majority of your request for allocation will be utilized. This information is used to assist the FCC in reporting funding allocation information to Congress as required by applicable statutes.</p>

Item Number	Field(s) Description	Purpose/Instructions
12	<p>Identify your Applicant type. Select up to 3.</p> <ul style="list-style-type: none"> <li>A - State Government;</li> <li>B - County Government;</li> <li>C - City or Township Government;</li> <li>D - Special District Government;</li> <li>E - Regional Organization;</li> <li>F - U.S. Territory or Possession;</li> <li>G - Independent School District;</li> <li>H - Public/State Controlled Institution of Higher Education;</li> <li>I - Indian/Native American Tribal Government (Federally -Recognized);</li> <li>J - Indian/Native American Tribal Government (Other than Federally-Recognized);</li> <li>K - Indian/Native American Tribal Designated Organization;</li> <li>L - Public/Indian Housing Authority;</li> <li>M - Nonprofit with section 501(c)(3) IRS Status (Other than an Institution of Higher Education);</li> <li>N - Nonprofit without section 501(c)(3) IRS Status (Other than an Institution of Higher Education);</li> <li>O - Private Institution of Higher Education;</li> <li>P – Individual;</li> <li>Q - For-Profit Organization (Other than Small Business);</li> <li>R - Small Business;</li> <li>S - Hispanic-serving Institution;</li> <li>T - Historically Black College or University (HBCU);</li> <li>U - Tribally Controlled College or University (TCCU);</li> <li>V - Alaska Native and Native Hawaiian Serving Institutions;</li> <li>W - Non-domestic (non-U.S.) Entity;</li> <li>X – Other.</li> </ul>	<p>This information is used to assist the FCC in reporting funding allocation information to Congress as required by applicable statutes. If Applicant selects “Other,” Applicant will be able to utilize an information field to elaborate on the Applicant’s description that was not adequately captured by the listed options.</p>

Item Number	Field(s) Description	Purpose/Instructions
13	Is the Applicant a commercial broadband provider?	Information will help the FCC identify applicant type and track and analyze funding allocations. The FCC can also use this information to assist with the prioritization of funding among different categories of applicants should funding demand exceed funding available.
14	Is the Applicant an Eligible Telecommunications Carrier (ETC)?	Eligible telecommunications carriers (ETCs) as defined in 47 CFR § 54.201 receiving universal service fund support. Information will help the FCC identify applicant type and track and analyze funding allocations.
15	If Applicant is an ETC, then identify your ETC Status (ILEC or Non-ILEC).	Information used to identify if the filer as an ETC. ILEC refers to the term Incumbent Local Exchange Carrier.
16	If Applicant is an ETC, please enter a list of Service Provider Identification Numbers (SPINs) that your company uses to conduct transactions with the Universal Service Administrative Company (USAC).	A Service Provider Identification Number (SPIN) (also known as a 498 ID) is a unique nine-digit number assigned to service providers that conduct business with the Universal Service Administrative Company (USAC). A SPIN is assigned when an FCC Form 498 is filed with USAC.
17	If Applicant is an ETC, then identify the Study Area Code(s), where you are designated as an ETC.	Information used to identify geographic areas where filer is designated as an ETC.
18	Applicant FCC Form 499 Filer ID Number(s) (if applicable).	An FCC Form 499 Filer ID Number is a 6-digit identifier assigned to telecommunications providers that report quarterly and annual revenue to the FCC. This information is used to cross-check filer information with other FCC records.
19	Is Applicant subject to the Commission's Part 32 - Uniform System of Accounts for Telecommunications Companies regulations, 47 CFR §§ 32.01 et seq.? (Yes or No)	Question aimed at identifying Applicants that may raise duplicate recovery concerns. The Commission's Part 32 – Uniform System of Accounts for Telecommunications Companies applies to “every incumbent local exchange carrier, as defined in section 251(h) of the Communications Act, and any other carrier that the Commission designates by order. This part refers to such carriers as ‘companies’ or ‘Class B companies.’ Incumbent local exchange carriers’ successor or assign companies, as defined in section 251(h)(1)(B)(ii) of the Communications Act, that are found to be non-dominant by the Commission, will not be subject to this Uniform System of Accounts.” 47 CFR § 32.11.
<b>Program Eligibility</b>		

Item Number	Field(s) Description	Purpose/Instructions
20	Is the Applicant a health care provider? (Yes or No)	Information will help the FCC identify applicant type and track and analyze funding allocations.
21	Is the Applicant a school? (Yes or No)	Information will help the FCC identify applicant type and track and analyze funding allocations.
22	Is the Applicant a library? (Yes or No)	Information will help the FCC identify applicant type and track and analyze funding allocations.
23	Is Applicant a provider of advanced communications service with 10 million or fewer customers? (Yes or No)	<p>The term “advanced communications service” means high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology with connection speeds of at least 200 kbps in either direction.” 47 CFR § 1.50001(a). For additional information on the meaning of a provider of advanced communications please refer to the <i>Second Report and Order</i>, WC Docket No. 18-89, 35 FCC Rcd 14284, paras. 110-116 (2020). “Customers” is interpreted to include customers of the Applicant and customers of any affiliate taking advanced communications service from the provider and its affiliates as of the date the application is filed. <i>Id.</i> at paras. 114-115.</p> <p>Note: If Applicant answers “yes” and there is no record of the applicant filing the Form 477 “Local Telephone Competition and Broadband Reporting” to report broadband deployment in the most recent reporting period, then Applicant will need to provide additional information supporting attestation.</p>
24	Is Applicant a provider of advanced communications service with 2 million or fewer customers? (Yes or No)	Information will assist the FCC in determining whether applicant is eligible for prioritization in funding per statutory scheme. “Customers” includes customers of the Applicant and customers of any affiliate taking advanced communications service from the provider and its affiliates as of the date the application is filed. <i>Second Report and Order</i> , WC Docket No. 18-89, 35 FCC Rcd 14284, paras. 114-115.
25	Have you previously purchased, leased, or otherwise obtained communications equipment or services on the Covered List that was produced or provided by Huawei Technologies Company or ZTE Corporation, including their affiliates and subsidiaries, on or before June 30, 2020? (Yes or No)	Information needed to determine whether applicant is eligible to participate in the Reimbursement Program. By statute, program is limited to the permanent removal, replacement, and disposal of certain communications equipment or service deemed “covered” and that was obtained by the eligible provider of advanced communications service by a certain date. Consistent with amendments to the Secure Networks

Item Number	Field(s) Description	Purpose/Instructions
		Act by the Consolidated Appropriations Act, 2021, the Commission limited reimbursement eligibility to covered communications equipment or services produced or provided by Huawei Technologies Company or ZTE Corporation that was obtained on or before June 30, 2020.
<b>Locations</b>		
26	Location ID	A number auto-generated by system, starting with 00001, that uniquely identifies the location that is subject to the removal, replacement, and disposal of covered communications equipment and service.
27	Location Name	Name commonly used by Applicant to refer to site location.
28	Latitude of Location	Latitude of the location to which service the provider has made service available.
29	Longitude of Location	Longitude of the location to which service the provider has made service available.
30	Location Address – Number & Street	Number and street address of the location.
31	Location Address – City	City associated with the street address of the location.
32	Location Address – State	2 letter postal abbreviation of the state associated with the street address of the location.
33	Location Address – Zip Code	5-digit ZIP code associated with the street address of the location.
34	Location Address – No Postal Address Available	In those cases where postal address is not available, alternate address information.
35	What type of site location is this (cell site, mobile switching center, central office, network operations center, headquarters, or other? If “other,” briefly describe.	Information assists in identifying the type of site location to help the FCC determine the type of costs most likely incurred at the location for the removal, replacement, and disposal of equipment and services on the Covered List.
<b>Cost Estimates</b>		
36	Identify if the cost estimate is associated with a single site, multiple sites, across all sites, or non site-specific (select one).	Reimbursement Program is designed to provide eligible applicants with support available for draw down based on cost estimates for the removal, replacement, and disposal of covered communications equipment or service. This information will assist with the FCC’s cost estimate assessment and award of a funding allocation.

Item Number	Field(s) Description	Purpose/Instructions
		Applicant will need to provide detailed information by site Location ID on (1) the covered equipment or services being replaced, removed, and disposed; (2) the replacement equipment and services; and (3) costs related to the overall removal, replacement, and disposal process.
37	Identify the Location ID associated with the cost estimate.	This information will help the FCC link up cost estimates to the location that is subject to the removal, replacement, and disposal of covered communications equipment and service.
38	Indicate whether cost estimated is associated with a technology upgrade that exceeds a comparable replacement?	Question will help identify participants seeking a technology upgrade solution so that the Fund Administrator and the Bureau can review the applications accordingly. Participants may obtain Reimbursement Program support for an amount equivalent to the cost estimate of a comparable replacement. If a participant upgrades to a higher quality, more advanced, non-comparable replacement, then the participant bears the difference in cost between the comparable replacement and the technology upgrade solution chosen.
39	Indicate whether cost estimate is related to the following categories (select all that apply): <ul style="list-style-type: none"> <li>• Access layer;</li> <li>• Distribution layer;</li> <li>• Core layer;</li> <li>• Software; and/or</li> <li>• Services.</li> </ul>	This information will assist with the FCC's cost estimate assessment and award of a funding allocation.
40	Indicate if the cost estimate average is not identified in the Cost Catalog (Yes or No).	Applicants can reference the Catalog of Eligible Expenses and Estimated Costs (Cost Catalog) prepared by the Wireline Competition Bureau for pre-determined average cost estimates for typically anticipated categories of costs associated with the removal, replacement, and disposal of covered communications equipment and service. Applicants that submit their own cost estimates must submit supporting documentation and certify that the estimate is made in good faith.
41	Identify a cost by referencing the Catalog of Eligible Expenses prepared by the Wireline Competition Bureau for pre-determined cost estimate ranges for typically anticipated categories of cost associated with	This will auto-populate with the average cost of the item selected in the Cost Catalog. The cost estimate will be based on the average of the low-end and high-end range of cost estimates identified in the Cost Catalog.



Item Number	Field(s) Description	Purpose/Instructions
	the removal, replacement, and disposal of covered communications equipment and service. (Cost Catalog)	
42	For individualized cost estimates not based on the Cost Catalog, provide a cost estimate reasonably incurred for the permanent removal, replacement, and disposal of covered communications equipment or service.	If an applicant finds a Cost Catalog cost estimate average does not fully account for its costs or a cost category is not identified in the Cost Catalog, the applicant can instead provide its own individualized cost estimate. Applicants providing individualized cost estimates must submit additional supporting documentation (e.g., quotes issued by vendor) and certify the cost estimate is made in good faith, as required by the Commission's rules.
43	Provide justification as to why Applicant is submitting individualized cost estimate including additional documentation.	Applicants providing individualized cost estimates must submit additional supporting documentation (e.g., quotes issued by vendor).
<b>Timeline and Plan Information</b>		
44	Provide a specific timeline for the permanent removal, replacement, and disposal of the covered communications equipment or service.	Timeline required by statute. Applicant will need to upload timeline detailing all relevant steps in the removal, replacement, and disposal process. Applicant will separately complete field in system identifying anticipated completion date for completing the process.
45	Does the applicant request that some or all of the contents of the timeline be kept confidential? (Yes or No).	Applicants will be able to submit confidential and public/redacted versions of their timeline. Applicants must upload a request for confidentiality.
46	Provide description of Applicant's plan for the permanent removal, replacement and disposal of covered communications equipment or service.	Applicant will need to upload attachment describing all relevant steps in its plan for the permanent removal, replacement, and disposal of covered communications equipment and service.
47	Do you expect major service disruptions to subscribers in the process of removing and replacing covered equipment and services? (Yes or No)	Applicant will need to provide a description of the services and equipment if "Yes."
<b>Equipment or Service</b>		
48	Is the equipment or service an existing equipment or service or a replacement equipment or service?	This will help the FCC track existing equipment or services and replacement equipment or services.

Item Number	Field(s) Description	Purpose/Instructions
49	Is the Equipment or Service a Covered Equipment or Service? (Yes or No)	This will ensure that providers are not seeking reimbursement for removal, replacement, and disposal of covered communications equipment or services with other covered communications equipment or services provided by Huawei or ZTE that is prohibited from reimbursement.
50	<p>For Covered Equipment or Service that is being removed, replaced, and/or disposed identify:</p> <ul style="list-style-type: none"> <li>• Location ID of equipment or service;</li> <li>• Equipment or service make;</li> <li>• Equipment or service model;</li> <li>• Equipment or service type;</li> <li>• Description of equipment or service capabilities;</li> <li>• Number of units at site;</li> <li>• Date obtained;</li> <li>• Whether equipment or service is functional.</li> </ul>	Provide make, model, description of equipment type, description of equipment capabilities, location ID of existing equipment, number of units of existing equipment at site, and whether equipment is functional. This information will help the FCC link cost estimates to the location that is subject to the removal, replacement, and disposal of covered communications equipment and service. Applicant will need to provide supporting documentation demonstrating acquisition and/or possession of covered equipment, e.g., pictures of equipment at site, purchase orders, etc.
51	<p>For Replacement Equipment or Service, identify:</p> <ul style="list-style-type: none"> <li>• Location ID of equipment or service;</li> <li>• Equipment ID or Service ID;</li> <li>• Equipment or service make;</li> <li>• Equipment or service model;</li> <li>• Equipment manufacturer's or service provider's country of origin;</li> <li>• Description of equipment or service type;</li> <li>• Description of equipment or service capabilities;</li> <li>• Number of units at site.</li> </ul>	Provide make, model, description of equipment type, description of equipment capabilities, location ID of new equipment replacing existing equipment, number of units of new equipment at site. This information will help the FCC link cost estimates to the location that is subject to the removal, replacement, and disposal of covered communications equipment and service. The "country of origin" question will help the Commission track and analyze technology trends. The Equipment ID or Service ID will be auto-generated.
52	Supporting Documentation	Provide documentation of the equipment or service such as a purchase order or a photograph.

Item Number	Field(s) Description	Purpose/Instructions
53	Does the proposed replacement of covered equipment and service involve reasonable costs incurred for the replacement of older mobile wireless networks with fourth generation LTE equipment or services that are 5G ready? (Yes or No)	Applicant will need to provide a description of the services and equipment if "Yes."
54	Does the proposed replacement of covered equipment and services involve Open RAN or virtualized network solutions? (Yes/No)	Applicant will need to provide a description of the services and equipment if "Yes."
55	Is the equipment or service replacing the covered equipment compatible with or does it include standardized open and interoperable interfaces in the fronthaul Radio Access Network and Core Network? (Yes or No)	Information collected to help analyze technology trends.
56	If the answer to Item 55 is "Yes," is this equipment or service compliant with O-RAN Alliance 7.2 fronthaul standards? (Yes or No)	Information collected to help analyze technology trends and technology choices by providers, which does not suggest or otherwise encourage an applicant to select a particular technology solution.
57	If the answer to Item 55 is "No," can it be upgraded to be O-RAN Alliance 7.2 fronthaul standards, and is there a commitment to do so? (Yes or No)	Information collected to help analyze technology trends and technology choices by providers, which does not suggest or otherwise encourage an applicant to select a particular technology solution.
58	Is the equipment or service compliant with the 3GPP X2 standard and other 3GPP open interfaces?	Information collected to help analyze technology trends and technology choices by providers, which does not suggest or otherwise encourage an applicant to select a particular technology solution.
59	If the answer to Item 59 is "Yes," then is there an associated fee to make this equipment interoperable or open?	Information collected to help analyze technology trends and technology choices by providers, which does not suggest or otherwise encourage an applicant to select a particular technology solution.
60	Provide documentation of the equipment such as a purchase order or a photograph.	Information will help verify answers.
<b>Certifications</b>		
61	Applicant must certify under penalty of perjury in (via electronic signature of authorized representative) the following that as of the date of submission of this	Certifications required by statute.

Item Number	Field(s) Description	Purpose/Instructions
	application following that Applicant has developed a specific plan and timeline for the permanent removal, replacement, and disposal of covered communications equipment or service.	
62	Applicant must certify under penalty of perjury in (via electronic signature of authorized representative) the following that beginning on the date of the approval of the application, the Applicant: (1) will not purchase, rent, lease or otherwise obtain covered communications equipment or service, using reimbursement funds (including funds derived from private sources) and (2) in developing risk management practices, will consult and consider the standards, guidelines, and best practices set forth in the cybersecurity framework developed by the National Institute of Standards and Technology.	Certifications required by statute.
63	Applicant must certify in good faith under penalty of perjury (via electronic signature of authorized representative) the following: (1) Applicant will reasonably incur the estimated costs claimed as eligible for reimbursement; (2) Applicant will use all money received from the Reimbursement Program only for expenses eligible for reimbursement; (3) Applicant will comply with all policies and procedures relating to allocations, draw downs, payments, obligations, and expenditures of money from the Reimbursement Program; (4) Applicant will maintain detailed records, including receipts, of all costs eligible for reimbursement actually incurred for a period of 10 years; and (5) Applicant will file all required documentation for its expenses.	Certifications necessary to protect Reimbursement Program against waste, fraud, and abuse.

Item Number	Field(s) Description	Purpose/Instructions
64	Applicant certifies that all information provided in this filing is true and correct to the best of Applicant's knowledge.	Certification necessary to ensure accuracy of information provided.
65	Certifying Official Name	Name of certifying official.
66	Certifying Official Title	Job title of certifying official.
67	Certifying Official Phone Number	Phone number of the certifying official.
68	Certifying Official Email Address	Email address of the certifying official.
69	Certifying Date Signed	The date on which the filing is certified will be auto-generated.

**APPENDIX B**

**Secure and Trusted Communications Networks Reimbursement Program**  
 FCC Form 5640: Reimbursement Claim Request, Section 1.50004(g)  
 Information Submitted Using Online Portal

Note: This is a representative description of the information to be collected via the online portal and is not intended to be a visual representation of what each applicant will see, the order in which they will see information, or the exact wording or directions used to collect the information.

Item Number	Field(s) Description	Purpose/Instructions
<b>Applicant Information</b>		
1	Applicant FCC Registration Number (FRN)	An FRN is a 10-digit number that is assigned by the Commission Registration System (CORES) to a business or individual registering with the FCC. This unique FRN is used to identify the registrant’s business dealings with the FCC. This information will be auto-generated from the information provided in the Application Request for Funding Allocation.
2	Applicant Name	This is the name of the Applicant submitting this request. This information will be auto-generated from the information provided in the Application Request for Funding Allocation.
3	Applicant Information: <ul style="list-style-type: none"> <li>• Applicant Street Name;</li> <li>• Applicant City;</li> <li>• Applicant State;</li> <li>• Applicant Zip Code;</li> <li>• Applicant Phone Number;</li> <li>• Applicant Email.</li> </ul>	This information will be auto-generated from the information provided in the Application Request for Funding Allocation.
<b>Contact Information</b>		

Item Number	Field(s) Description	Purpose/Instructions
4	Contact different than Applicant: <ul style="list-style-type: none"> <li>• Contact Name;</li> <li>• Contact Street Name;</li> <li>• Contact City;</li> <li>• Contact State;</li> <li>• Contact Zip Code;</li> <li>• Contact Phone #;</li> <li>• Contact Email.</li> </ul>	These items identify the contact representative, if different from the Applicant. This is usually the headquarters offices of a large company, the law firm or other representative of the Applicant, or the person or company that prepared or submitted the application on behalf of the Applicant. If there is a question about the application, an FCC representative will communicate with the Applicant's contact representative. This information will be auto-generated from the information provided in the Application Request for Funding Allocation but filer will have the opportunity to change information to designate a different contact for the filing.
5	Contact same as Applicant: <ul style="list-style-type: none"> <li>• Contact Name;</li> <li>• Contact Street Name;</li> <li>• Contact City;</li> <li>• Contact State;</li> <li>• Contact Zip Code;</li> <li>• Contact Phone #;</li> <li>• Contact Email.</li> </ul>	These items identify the contact representative. This is usually the headquarters offices of a large company, the law firm or other representative of the Applicant, or the person or company that prepared or submitted the application on behalf of the Applicant. If there is a question about the application, an FCC representative will communicate with the Applicant's contact representative. This information will be auto-generated from the information provided in the Application Request for Funding Allocation but filer will have the opportunity to change information to designate a different contact for the filing.
<b>Invoice Information</b>		
6	For each invoice submitted for reimbursement, provide the following information: <ul style="list-style-type: none"> <li>• Description of invoice to be reimbursed;</li> <li>• Vendor Name;</li> <li>• Vendor Employer Identification Number (EIN) or Tax Identification Number (TIN);</li> <li>• Invoice Number;</li> <li>• Invoice date;</li> <li>• Invoice due date.</li> </ul>	The applicant must answer these questions for each invoice that is seeking reimbursement on the same reimbursement request. Information will help the FCC evaluate accuracy and reasonableness of reimbursement request.
7	Does the attached invoice contain costs ineligible for reimbursement? (Yes or No)	The applicant must answer these questions for each invoice that is seeking reimbursement on the same reimbursement request. Information will help the FCC evaluate accuracy and reasonableness of

Item Number	Field(s) Description	Purpose/Instructions
		reimbursement request.
8	Provide copy of invoice for demonstrating cost actually incurred for which you are seeking reimbursement.	Information will help FCC evaluate accuracy and reasonableness of reimbursement request. If invoice relates to quote issued by vendor that has not been previously submitted and reviewed by Fund Administrator, then filer will need to attach copy of associated quote from vendor.
9	Reimbursement Request Amount.	Recipients must show actual expenses on invoice reasonably incurred for the removal, replacement, and disposal of covered communications equipment or service. Information will help FCC evaluate accuracy and reasonableness of reimbursement request.
10	Description of equipment or services being reimbursed.	Information will help FCC evaluate accuracy and reasonableness of reimbursement request.
11	Does the invoice contain expense(s) related to a technology upgrade that are not eligible for reimbursement as a comparable replacement?	Information will help FCC evaluate accuracy and reasonableness of reimbursement request.
12	Identify if cost is associated with a single site, multiple sites, across all sites, or non-site-specific.	Information will help FCC evaluate accuracy and reasonableness of reimbursement request.
13	Identify locations associated with cost estimate.	Information will help FCC track where money is spent and help to evaluate money spent by location. For single or multiple sites, filer will need to identify sites by Location ID, i.e., site(s) previously identified by filer in system through Application Request for Funding Allocation or subsequently filed Modification application.
14	Identify percentage of cost allocated to location.	Information required if multiple sites identified and will help FCC evaluate accuracy and reasonableness of reimbursement request and track funding disbursements.
15	Identify Cost Estimate to which this cost is related.	Information will help FCC evaluate accuracy and reasonableness of the reimbursement request. Filer will need to select a Cost Estimate as previously identified by filer in an earlier filed Application Request for Funding Allocation or subsequently filed Modification application.
16	If cost incurred for which reimbursement sought (combined with other expenses incurred) significantly exceeds original cost estimate, provide explanation for deviation.	Information will help FCC evaluate accuracy of cost estimates for future cost estimation.



Item Number	Field(s) Description	Purpose/Instructions
<b>Certifications</b>		
17	Applicant must certify in good faith under penalty of perjury (via electronic signature of authorized representative) the following: (1) Applicant will reasonably incur the estimated costs claimed as eligible for reimbursement; (2) Applicant will use all money received from the Reimbursement Program only for expenses eligible for reimbursement; (3) Applicant will comply with all policies and procedures relating to allocations, draw downs, payments, obligations, and expenditures of money from the Reimbursement Program; (4) Applicant will maintain detailed records, including receipts, of all costs eligible for reimbursement actually incurred for a period of 10 years; and (5) Applicant will file all required documentation for its expenses.	Certifications necessary to protect Reimbursement Program against waste, fraud, and abuse.
18	Applicant certifies that all information provided in this filing is true and correct to the best of Applicant's knowledge.	Certification necessary to ensure accuracy of information provided.
19	Certifying Official Name	Name of certifying official.
20	Certifying Official Title	Job title of certifying official.
21	Certifying Official Phone Number	Phone number of the certifying official.
22	Certifying Official Email Address	Email address of the certifying official.
23	Certifying Date Signed	The date on which the filing is certified will be auto-generated.



# FINAL CATALOG OF ELIGIBLE EXPENSES AND ESTIMATED COSTS

FEDERAL COMMUNICATIONS COMMISSION (FCC)  
SECURE AND TRUSTED COMMUNICATIONS  
NETWORKS REIMBURSEMENT PROGRAM

DATED AUGUST 3, 2021

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Secure and Trusted Communications Networks Reimbursement Program: Final Catalog of Eligible Expenses and Estimated Costs

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Secure and Trusted Communications Networks Reimbursement Program: Final Catalog of Eligible Expenses and Estimated Costs

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Secure and Trusted Communications Networks Reimbursement Program: Final Catalog of Eligible Expenses and Estimated Costs

**ABOUT THIS CATALOG**

As directed by the Federal Communications Commission (Commission), the Wireline Competition Bureau (Bureau) adopted this Final Catalog of Eligible Expenses and Estimated Costs (Catalog) for use in the Secure and Trusted Communications Networks Reimbursement Program (Reimbursement Program). The Commission requires providers of advanced communications services with 10 million or fewer customers seeking to participate in the Reimbursement Program to file a FCC Form 5640, Application Request for Funding Allocation. 47 CFR § 1.50004(c). The application must include an “estimate of costs reasonably incurred for the permanent removal, replacement, and disposal” of communications equipment or services that were produced or provided by Huawei Technologies Company and ZTE Corporation and obtained by the applicant on or before June 30, 2020. 47 CFR § 1.50004(a), (c)(1)(i). The Commission’s rules allow “[e]ligible providers [to] rely upon the predetermined estimated costs identified in the [Catalog]” when submitting their application cost estimates. *Id.*

The Catalog consists of categories and subcategories of costs that eligible providers of advanced communications services are expected to incur during the removal, replacement, and disposal process. The Catalog is organized by five basic components of a communications network: Core Layer, Distribution Layer, Access Layer, Software, and Services. For each itemized cost identified with a range, the applicant may rely on the cost estimate average identified when submitting their application. The Catalog is not a definitive list of what is considered eligible for reimbursement under the Reimbursement Program. If an applicant believes a cost estimate identified in the Catalog does not fully account for its specific circumstances or a cost category is not identified in the Catalog with a cost estimate range, then the applicant may provide an individualized cost estimate with supporting documentation in their application. The cost estimates identified in this Catalog do not guarantee a funding allocation or disbursement of funds from the Reimbursement Program.

The Commission contracted with Widelity, Inc. to produce a preliminary version of the Catalog based on a series of confidential interviews with communications industry stakeholders to understand the process and costs associated with removing, replacing, and disposing of covered communications equipment and services. After seeking and considering public comments, the Bureau revised and adopted this final version of the Catalog. At the end of the Catalog, there is a chart detailing the changes made to the preliminary version that are reflect in the final version.

The Catalog will be made available on the Commission’s website, and the line items and cost estimate averages taken from the ranges identified in the Catalog will be incorporated into the online filing portal for use by applicants when completing the Form 5640, Application Request for Funding Allocation.

Index	Description	Range of Estimated Costs		Costs
		Low	High	Average
1	<b>Access Layer Equipment</b> <b>The access layer is responsible for connecting users to their immediate service providers. First, the communications start by enabling users to communicate with the communication system to allow the start of information exchange/transmission. These communications can either be wired or wireless.</b>			
1.1.0	<b>Optical line terminal equipment (OLT)</b>	\$ 1,200.00	\$ 39,000.00	\$ 20,100.00

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Index	Description	Range of Estimated Costs		Costs
		Low	High	Average
1.2.0	<b>Access WDM (Wavelength Division Multiplexing) &amp; OTN (Optical Transport Network)</b>			
1.2.1	Access WDM & OTN equipment, Small network, includes subscription (per node)	\$ 3,454.00	\$ 120,000.00	\$ 61,727.00
1.2.2	Access WDM & OTN equipment, Medium to Large network, includes subscription (per node)	\$ 65,000.00	\$ 330,000.00	\$ 197,500.00

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Index	Description	Range of Estimated Costs		Costs
		Low	High	Average
1.3.0	<b>End-User Termination Point - FTTH</b>			
1.3.1	Customer ONT - indoor	\$ 100.00	\$ 425.00	\$ 262.50
1.3.2	Customer ONT - outdoor	\$ 270.00	\$ 535.00	\$ 402.50
1.3.3	Small Business/SOHO - Distribution Node to Multiple End-User (per node)	\$ 595.00	\$ 30,000.00	\$ 15,297.50
1.3.4	Large Business/Enterprise - Distribution Node to Multiple End-User (per node)	\$ 6,400.00	\$ 25,000.00	\$ 15,700.00
1.4.0	<b>Multi-service Access Node and Digital Subscriber Line Access Multiplexing Equipment (MSAN &amp; DSLAM)</b>			
1.5.0	<b>Ethernet Service Access Node (ESAN) (includes outdoor cabinet &amp; install)</b>	\$ 8,146.56	\$ 8,146.56	\$ 8,146.56
1.6.0	<b>LAN MDUs</b>			
1.6.1	LAN MDUs (Local Area Network Multi-Dwelling Units), Small, includes subscription	\$ 2,500.00	\$ 79,000.00	\$ 40,750.00
1.6.2	LAN MDUs (Local Area Network Multi-Dwelling Units), Medium, includes subscription	\$ 40,000.00	\$ 117,000.00	\$ 78,500.00
1.6.3	LAN MDUs (Local Area Network Multi-Dwelling Units), Large, includes subscription	\$ 115,000.00	\$ 240,000.00	\$ 177,500.00
1.7.0	<b>Home Network and Customer Premises Equipment (CPE)</b>			
1.7.1	CBRS/B48 Category 15 15-19 dBi Gain Outdoor Unit	\$ 200.00	\$ 375.00	\$ 287.50
1.7.2	CBRS/B48 Category 15 High Gain Indoor Unit	\$ 200.00	\$ 260.00	\$ 230.00
1.7.3	SAS Integration Costs (per Radio)	\$ 62.00	\$ 124.00	\$ 93.00
1.8.0	<b>Customer Outreach to End-User - Public Relations/Notification</b>			
1.8.1	Legal review of customer notices & communications; public relations - (2-4 hours)	\$ 1,000.00	\$ 2,000.00	\$ 1,500.00
1.8.2	Smart Home - Reimbursable portions of Smart Homes are in the CPE (other portions: IP cameras, Wi-Fi doorbells, Wi-Fi Routers, Wi-Fi light switches, etc. would not be reimbursable)			
1.9.0	<b>Cable Coaxial Media Converters</b>	\$ 89.00	\$ 289.00	\$ 189.00
1.9.1	CMTS (per node)	\$ 8,500.00	\$ 16,000.00	\$ 12,250.00
1.10.0	<b>WLAN (Wireless Local Area Network)</b>			

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Index	Description	Range of Estimated Costs		Costs
		Low	High	Average
1.10.1	WLAN - small	\$ 795.00	\$ 2,300.00	\$ 1,547.50
1.10.2	WLAN - medium to large network	\$ 2,400.00	\$ 3,825.00	\$ 3,112.50
1.11.0	<b>Site Cabinets - Optical Network Units (ONU)</b>	\$ 5,780.00	\$ 7,225.00	\$ 6,502.50
1.11.1	Fiber - FTTP (Fiber To The Premises) - per mile, trenched & buried, rural, flat, rocky - to urban	\$ 22,500.00	\$ 61,116.00	\$ 41,808.00
1.11.2	Fiber - FTTP (Fiber To The Premises) - per mile, aerial lashed, rural - to urban	\$ 18,500.00	\$ 34,000.00	\$ 26,250.00
2	<b>Distribution Layer Equipment Middle-mile, backhaul, or RAN (radio access network) equipment layered between the access and core layers of the network in which network traffic management policies are defined and enforced.</b>			
2.1.0	<b>Routers</b>			
2.1.1	Small Cell Site Router capable of L2/Ethernet and IP/MPLS with a mix of 1GE (8 or fewer) and 10GE interfaces (2 or fewer)	\$ 795.00	\$ 10,750.00	\$ 5,772.50
2.1.2	Medium Cell Site Router capable of L2/Ethernet and IP/MPLS with a mix of 1GE (20 or fewer) and 10GE interfaces (8 or fewer)	\$ 1,616.00	\$ 19,500.00	\$ 1,616.00
2.1.3	Large Cell Site Router capable of L2/Ethernet and IP/MPLS with a mix of 1GE (24 or fewer), 10GE (24 or fewer), and 100GE interfaces (4 or fewer)	\$ 2,998.00	\$ 13,068.00	\$ 13,068.00
2.1.4	CellSite Router (1 Gig Port config L2 switch - 10 Gig Port config MPLS (Multiprotocol Label Switching) L3 router)	\$ 1,182.00	\$ 12,000.00	\$ 6,591.00
2.1.5	10G L2/Ethernet only NID/CellSite Router to IP/MPLS NID/CellSite Router	\$ 4,500.00	\$ 19,995.00	\$ 12,247.50
2.1.6	100G IP/MPLS Aggregation (non-redundant - redundant controllers)	\$ 17,500.00	\$ 170,000.00	\$ 93,750.00
2.2.0	<b>Switches</b>			
2.2.1	Switches - small business and campus networks, cloud grade	\$ 2,195.00	\$ 239,270.00	\$ 120,732.50
2.2.2	Switches - medium business and campus networks, cloud grade	\$ 239,270.00	\$ 478,537.00	\$ 358,903.50
2.2.3	Switches - Large business and campus networks, cloud grade	\$ 478,537.00	\$ 720,000.00	\$ 599,268.50
2.2.4	Switches - small enterprise and service provider, cloud grade	\$ 38,200.00	\$ 270,600.00	\$ 154,400.00
2.2.5	Switches - medium enterprise and service provider, cloud grade	\$ 270,600.00	\$ 541,200.00	\$ 405,900.00
2.2.6	Switches - large enterprise and service provider, cloud grade	\$ 541,200.00	\$ 850,000.00	\$ 695,600.00

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Index	Description	Range of Estimated Costs		Costs
		Low	High	Average
2.3.0	<b>FTTH (Fiber To The Home) - GPON (Gigabyte Passive Optical Network) / XGS (10-Gigabit-capable symmetric passive optical network)</b>			
2.3.1	GPON/XGS Element Management System (10k subs)	\$ 15,000.00	\$ 190,100.00	\$ 102,550.00
2.3.2	GPON/XGS OLT	\$ 20,000.00	\$ 80,855.00	\$ 50,427.50
2.3.3	GPON/XGS OLT - Outside Plant	\$ 28,050.00	\$ 39,635.00	\$ 33,842.50
2.4.0	<b>VDSL (Very high-speed Digital Subscriber Line) Access Network</b>			
2.4.1	VDSL - ISP vs. OSP (Inside Plant vs. Outside Plant)	\$ 19,805.00	\$ 26,475.00	\$ 23,140.00
2.5.0	<b>Cell Edge Aggregation</b>			
2.5.1	Edge Aggregation - for 8 Cell Sites	\$ 312,000.00	\$ 415,000.00	\$ 363,500.00
2.5.2	Edge Aggregation - for 16 Cell Sites	\$ 450,000.00	\$ 600,000.00	\$ 525,000.00
2.5.3	Edge Aggregation - for 32 Cell Sites	\$ 628,000.00	\$ 835,000.00	\$ 731,500.00
2.6.0	<b>Network Security Equipment</b>			
2.6.1	Network security equipment - small network	\$ 1,000.00	\$ 33,667.00	\$ 17,333.50
2.6.2	Network security equipment - medium network	\$ 33,667.00	\$ 150,000.00	\$ 91,833.50
2.6.3	Network security equipment - large network	\$ 67,333.00	\$ 500,000.00	\$ 283,666.50
2.7.0	<b>Distribution WDM &amp; OTN</b>			
2.7.1	WDM & OTN equipment, Small network, includes subscription (per node)	\$ 83,000.00	\$ 102,000.00	\$ 92,500.00
2.7.2	WDM & OTN equipment, Medium to Large network, includes subscription (per node)	\$ 165,000.00	\$ 330,000.00	\$ 247,500.00
2.8.0	<b>Microwave PTP (point to point links)</b>			
2.8.1	Microwave Radio pair (5.8 GHz 2+0 500 Mbps basic hop - 11 GHz 4+0 2.8 Gbps hop with switching)	\$ 6,560.00	\$ 36,200.00	\$ 21,380.00
2.8.2	Microwave Radio pair (Indoor, split-mount, small varying radio link capacities and capabilities)	\$ 7,327.00	\$ 53,674.00	\$ 30,500.50
2.8.3	Microwave Radio pair (Indoor, split-mount, small to medium radio link capacities and capabilities)	\$ 10,318.00	\$ 56,666.00	\$ 33,492.00

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Index	Description	Range of Estimated Costs		Costs
		Low	High	Average
2.8.4	Microwave Radio pair (Indoor, split-mount, medium to large radio link capacities and capabilities)	\$ 16,043.00	\$ 62,390.00	\$ 39,216.50
2.8.5	Microwave Radio pair, 2+0, 80MHz Channel, 1.4 Gbps (11GHz or 18GHz)	\$ 10,700.00	\$ 16,000.00	\$ 13,350.00
2.8.6	Microwave Radio pair, 4+0, 80 MHz Channel, 2.8 Gbps (11GHz or 18GHz)	\$ 24,200.00	\$ 36,300.00	\$ 30,250.00
2.8.7	Microwave Radio pair, 2+0, 50MHz Channel, 850 Mbps (23 GHz)	\$ 10,700.00	\$ 16,000.00	\$ 13,350.00
2.8.8	Microwave Radio pair, 4+0, 50 MHz Channel, 1.7 Gbps (23 GHz)	\$ 24,200.00	\$ 36,300.00	\$ 30,250.00
2.8.9	Microwave Radio pair, 1+0, 2000 MHz Channel, 10 Gbps (80 GHz)	\$ 9,600.00	\$ 14,400.00	\$ 12,000.00
2.8.10	Microwave L2 Processing Shelf	\$ 5,500.00	\$ 8,500.00	\$ 7,000.00
<b>2.9.0 Microwave PTMP (point to multipoint)</b>				
2.9.1	28/39 GHz PTMP Microwave Hub Node (access point), includes 90° sector antenna (LMDS A2/A3 or B Band)	\$ 3,400.00	\$ 11,500.00	\$ 7,450.00
2.9.2	28/39 GHz PTMP Microwave Remote Node, includes 1' parabolic antenna	\$ 1,614.00	\$ 4,000.00	\$ 2,807.00
2.9.3	28/39 GHz PTMP Microwave Remote Node, includes 2' parabolic antenna	\$ 1,701.00	\$ 4,100.00	\$ 2,900.50
2.9.4	28/39 GHz PTMP Microwave Remote Node, includes 3' parabolic antenna	\$ 1,439.00	\$ 4,100.00	\$ 2,769.50
<b>2.10.0 Microwave Antennas - Single Pole</b>				
2.10.1	0.3 - 1.2 meter (1 - 4 foot)	\$ 425.00	\$ 1,850.00	\$ 1,137.50
2.10.2	1.8 - 3.0 meter (6 - 10 foot)	\$ 2,475.00	\$ 3,668.50	\$ 3,071.75
<b>2.11.0 Microwave Antennas - Dual Polarization</b>				
2.11.1	0.3 - 1.2 meter (1 - 4 foot)	\$ 425.00	\$ 1,976.70	\$ 1,200.85
2.11.2	1.8 - 3.0 meter (6 - 10 foot)	\$ 2,700.00	\$ 4,268.00	\$ 3,484.00

Secure and Trusted Communications Networks Reimbursement Program: Final Catalog of Eligible Expenses and Estimated Costs

Index	Description	Range of Estimated Costs		Costs
		Low	High	Average
<b>2.12.0</b>	<b>Microwave Antennas - Dual Polarization – Ultra High Performance</b>			
2.12.1	0.3 - 1.2 meter (1 - 4 foot)	\$ 3,490.00	\$ 5,250.00	\$ 4,370.00
2.12.2	1.8 - 3.0 meter (6 - 10 foot)	\$ 7,250.00	\$ 30,000.00	\$ 18,625.00
<b>2.13.0</b>	<b>Microwave Antennas - mmWave Flat Panel</b>			
2.13.1	Flat Panel	\$ 3,852.00	\$ 4,708.00	\$ 4,280.00
2.13.2	0.3 to 0.6 meter (1-2 foot, single polarization)	\$ 430.00	\$ 1,650.00	\$ 1,040.00
2.13.3	0.3 to 0.6 meter (1-2 foot, dual polarization)	\$ 1,400.00	\$ 2,050.00	\$ 1,725.00
<b>2.14.0</b>	<b>Antenna - LTE (Long Term Evolution) Multi-band, &gt;16dBi</b>			
2.14.1	2 port - 2T2R through 8 port - 8T8R	\$ 544.00	\$ 6,450.00	\$ 3,497.00
2.14.2	10 port - 10T10R through 20 port - 20T20R	\$ 1,479.00	\$ 10,994.50	\$ 6,236.75
<b>2.15.0</b>	<b>Antenna - LTE &amp; CBRS (Citizens Broadband Radio Service), &gt;16dBi</b>			
2.15.1	8 port - 8T8R through 20 port - 20T20R	\$ 4,455.00	\$ 9,795.50	\$ 7,125.25
<b>2.16.0</b>	<b>Antenna - CBRS only</b>			
2.16.1	2 port - 2T2R through 16 port - 16T16R	\$ 895.50	\$ 5,225.00	\$ 3,060.25
<b>2.17.0</b>	<b>Hybrid Cable &amp; Radio/Antenna Jumpers, Tower Ancillary Components</b>			
2.17.1	Cable breakout interconnect 100', maximum of 12 power conductors & 24 fiber	\$ 1,527.00	\$ 2,560.00	\$ 2,043.50
2.17.2	Cable breakout interconnect 200', maximum of 12 power conductors & 24 fiber	\$ 1,693.00	\$ 2,800.00	\$ 2,246.50
2.17.3	Cable breakout interconnect 300', maximum of 12 power conductors & 24 fiber	\$ 1,913.00	\$ 7,200.00	\$ 4,556.50
2.17.4	Cable breakout interconnect 400', maximum of 12 power conductors & 24 fiber	\$ 4,699.00	\$ 10,000.00	\$ 7,349.50
2.17.5	"Raycap" Over-voltage Protection / Fiber Management – each	\$ 1,500.00	\$ 4,000.00	\$ 2,750.00
2.17.6	OVP to radio power/fiber jumpers, coax jumpers (each)	\$ 190.00	\$ 950.00	\$ 570.00
<b>2.18.0</b>	<b>LAN MDUs (Local Area Network Multi-Dwelling Units)</b>			
2.18.1	Small Networks	\$ 1,900.00	\$ 75,000.00	\$ 38,450.00
2.18.2	Medium Networks	\$ 69,366.00	\$ 150,000.00	\$ 109,683.00

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Index	Description	Range of Estimated Costs		Costs
		Low	High	Average
2.18.3	Large Networks	\$ 139,700.00	\$ 250,000.00	\$ 194,850.00
2.19.0	<b>Bearer - 5G Transport - connects all categories of the mobile network infrastructure, including fronthaul, midhaul, and backhaul.</b>			
2.19.1	Bearer - small network	\$ 17,000.00	\$ 20,000.00	\$ 18,500.00
2.19.2	Bearer - medium to large network	\$ 23,000.00	\$ 34,000.00	\$ 28,500.00
2.20.0	<b>5G</b>			
2.21.0	<b>LTE FDD (Frequency Division Duplex)</b>			
2.21.1	2-port capable, low-mid band radio for 1 sector (5Mhz, FDD, LTE or W-CDMA (Wideband Code Division Multiple Access))	\$ 4,000.00	\$ 14,872.00	\$ 9,436.00
2.21.2	4-port capable, low-mid band radio for 1 sector (5Mhz, FDD, LTE or W-CDMA)	\$ 11,525.00	\$ 22,496.00	\$ 17,010.50
2.21.3	Expansion of 2-port low-mid band radio for 1 sector (additional 5Mhz of (FDD), nominal to large amount of power)	\$ 1,609.00	\$ 5,844.00	\$ 3,726.50
2.21.4	Expansion of 4-port low-mid band radio for 1 sector (additional 5Mhz of (FDD), nominal to large amount of power)	\$ 1,735.00	\$ 7,844.00	\$ 4,789.50
2.22.0	<b>LTE TDD (Time Division Duplex)</b>			
2.22.1	4-port capable, low-mid band radio for 1 sector (20Mhz, TDD)	\$ 4,000.00	\$ 21,842.00	\$ 12,921.00
2.22.2	8-port capable, low-mid band radio for 1 sector (20Mhz, TDD)	\$ 21,318.00	\$ 28,517.00	\$ 24,917.50
2.22.3	Expansion of 2,4,8-port low-mid band radio for 1 sector (additional 20Mhz of (TDD), nominal to large amount of power)	\$ 3,000.00	\$ 13,000.00	\$ 8,000.00
2.23.0	<b>LTE BBU (Baseband Units)</b>			
2.23.1	Rack Mounted or Outdoor Mounted baseband unit (BBU)	\$ 7,461.00	\$ 54,773.00	\$ 31,117.00
2.23.2	W-CDMA RNC (Radio Network Controller, small network, <50k subscribers)	\$ 391,278.00	\$ 840,918.00	\$ 616,098.00
2.23.3	W-CDMA RNC (Radio Network Controller, medium network, <250k subscribers)	\$ 840,918.00	\$ 1,070,246.00	\$ 955,582.00
2.23.4	W-CDMA RNC (Radio Network Controller, large network, <500k subscribers)	\$ 1,070,246.00	\$ 2,274,859.00	\$ 1,672,552.50



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Index	Description	Range of Estimated Costs		Costs
		Low	High	Average
2.24.0	<b>1 Sector Bundle - 10/20MHz channels - RU (Radio Unit), CDU (Cabinet Distributed Unit), shelf, cables, SFP's, and antennas</b>			
2.24.1	Single sector CBRS 4T4R base station and Baseband Unit - 10/20MHz channel	\$ 16,538.00	\$ 17,504.00	\$ 17,021.00
2.24.2	Single sector CBRS 64T64R base station and Baseband Unit - 10/20MHz channel	\$ 28,792.00	\$ 30,412.00	\$ 29,602.00
2.25.0	<b>1 Sector Bundle - 40MHz channels - RU, CDU, DU shelf, cables, SFP's, and antennas</b>			
2.25.1	Single sector CBRS 4T4R base station and Baseband Unit - 40MHz channel	\$ 16,538.00	\$ 17,504.00	\$ 17,021.00
2.25.2	Single sector CBRS 64T64R base station and Baseband Unit - 40MHz channel	\$ 34,365.00	\$ 36,315.00	\$ 35,340.00
2.26.0	<b>1 Sector Bundle - 60MHz channels - RU, CDU, DU shelf, cables, SFP's, and antennas</b>			
2.26.1	Single sector CBRS 4T4R base station and Baseband Unit - 60MHz channel	\$ 16,807.00	\$ 17,788.00	\$ 17,297.50
2.26.2	Single sector CBRS 64T64R base station and Baseband Unit - 60MHz channel	\$ 39,940.00	\$ 42,217.00	\$ 41,078.50
2.26.3	4T4R CBRS Radio Unit, 4T4R pole mounting bracket, 4T4R 10meter CPRI optical cable	\$ 4,842.00	\$ 5,137.00	\$ 4,989.50
2.26.4	64T64R CBRS Radio Unit, 64T64R pole mounting bracket, 64T64R CPRI Optical module, 10 meter CPRI cable	\$ 15,963.00	\$ 16,902.00	\$ 16,432.50
2.27.0	<b>Rapid Deployed, Self-contained 5G Cell Site with Attached Core</b>			
2.27.1	HIGH - 5G Fully Integrated, EMP Hardened Cellsite with Mobile Edge compute and embedded 5G Core - 600mhz - 6ghz; 30ghz and up + Counter UAS Radar & Video Surveillance	\$ 800,000.00	\$ 1,400,000.00	\$ 1,100,000.00
2.27.2	MEDIUM - 5G Fully Integrated, EMP Hardened Cellsite with Mobile Edge compute and embedded 5G Core - 600mhz - 6ghz; 30ghz and up + Diverse Backhaul (Free space Optic and/or MM wave)	\$ 500,000.00	\$ 799,000.00	\$ 649,500.00
2.27.3	LOW - 5G Fully Integrated, EMP Hardened Cellsite with Mobile Edge compute and embedded 5G Core - 600mhz - 6ghz with Fiber Media Gateway	\$ 250,000.00	\$ 500,000.00	\$ 375,000.00
2.27.4	Solar Cell Site Power Solution (<24 hour solution) - Green Power Solution	\$ 50,000.00	\$ 100,000.00	\$ 75,000.00
2.27.5	Solar Cell Site Power Solution (24 to 48 hour solution) - Green Power Solution	\$ 101,000.00	\$ 300,000.00	\$ 200,500.00
2.27.6	Generator -based power Cell Site Power Solution - Green Power Solution	\$ 75,000.00	\$ 150,000.00	\$ 112,500.00
2.27.7	5G RAN & Core Consulting – per hour	\$ 200.00	\$ 500.00	\$ 350.00

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2.28.0	<b>Bundled BBU/RRH (Base Band Unit/Remote Radio Head)</b>			
	<b>Fixed Wireless</b>			
2.28.1	2T2R-8T8R eNodeB with 3 sectors, single spectrum band of up to 20 MHz/sector. Fixed Wireless features. Range due to Low Power radio (20W) vs High Power radio (up to 320W). Price includes Remote Radio Units (RRU), Base Band Unit (BBU), Ancillaries, Software Features, and Capacity Licensing. Price excludes antennas, tower cabling, tower ancillaries and over voltage protection (OVP)	\$ 27,000.00	\$ 56,000.00	\$ 41,500.00
2.28.2	mMIMO eNodeB with 3 sectors, single spectrum band of up to 20 MHz/sector. Fixed Wireless features. Range due to Low Power radio (120W) vs High Power radio (up to 240W). Price includes Radio+Antenna, BBU, Ancillaries, Software Features, and Capacity Licensing. Price excludes tower cabling, tower ancillaries and over voltage protection (OVP)	\$ 85,000.00	\$ 115,000.00	\$ 100,000.00
	<b>Mobility Wireless - nonMIMO</b>			
2.28.3	2T2R-8T8R eNodeB with 3 sectors, single spectrum band of up to 20 MHz/sector. Mobility features. Range due to Low Power radio (20W) vs High Power radio (up to 320W). Price includes RRHs, BBU, Ancillaries, Software Features, and Capacity Licensing. Price excludes antennas, tower cabling, tower ancillaries and over voltage protection (OVP)	\$ 45,000.00	\$ 69,000.00	\$ 57,000.00
	<b>Mobility Wireless - mMIMO</b>			
2.28.4	mMIMO eNodeB 3 Sector Per Band (64T64R 20 MHz 1 Band - 64T64R 60 MHz 1 Band with Advanced Mobility Features)	\$ 85,000.00	\$ 368,172.00	\$ 226,586.00
2.29.0	<b>Bundled Open-RAN</b>			
2.29.1	Macrocell 4G 20MHz Carrier (Bundle - Antennas, RU/RRU, BBU Software, GPS Receiver, STU (Subscriber Terminal Unit), RIU (Radio Interface Unit), Mechanical Mounting, Cables and Connectors, SFPs (Small Form-Factor Pluggable))	\$ 39,000.00	\$ 52,000.00	\$ 45,500.00
2.29.2	Macrocell - 5G Sub6 100MHz Carrier (Bundle - Antennas, RU/RRU, BBU Software, GPS Receiver, STU, RIU, Mechanical Mounting, Cables and Connectors, SFPs)	\$ 91,000.00	\$ 125,000.00	\$ 108,000.00
2.29.3	Macrocell - 5G mmWave (Bundle - RU/RRU, BBU Software, GPS Receiver, DU (Open RAN Distributed Unit), Mechanical Mounting, Cables and Connectors, SFPs)	\$ 45,000.00	\$ 60,000.00	\$ 52,500.00

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2.30.0	<b>SAS Integration Costs (per Radio)</b>	\$ 62.00	\$ 124.00	\$ 93.00
2.31.0	<b>Open vRAN eNodeB Model is based on single band 50 site cluster. It includes RRU (Remote Radio Unit)/CU (Control Unit)/DU (Distributed Unit)/SW (Software)/NFVi (Network Functions Virtualization infrastructure). SW include all features, power licenses, and optional features.</b>			
2.31.1	B71 (3 sector site) or B5 (3 sector) One RRU Type	\$ 27,016.00	\$ 64,838.00	\$ 45,927.00
2.31.2	B41 (3 sector site) One RRU Type	\$ 28,196.00	\$ 67,670.00	\$ 47,933.00
2.31.3	B66 or B4(3 sector) One RRU Type	\$ 30,146.00	\$ 72,350.00	\$ 51,248.00
2.31.4	B2 or B25 (3 sector) One RRU type	\$ 30,146.00	\$ 72,350.00	\$ 51,248.00
2.31.5	B48 One RRU Type	\$ 27,971.00	\$ 67,130.00	\$ 47,550.50
2.31.6	B71/B25 (3 Sector for each RRU) Two RRU Type (dual band per sector)	\$ 43,156.00	\$ 103,574.00	\$ 73,365.00
2.31.7	B71/B12/B41 (3 Sector for each RRU) Three RRU Type (tri-band per sector)	\$ 63,229.00	\$ 151,749.00	\$ 107,489.00
2.32.0	<b>RAN (Open RAN/ vRAN) Components</b>			
2.32.1	RRU - band 71 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	\$ 5,430.00	\$ 13,032.00	\$ 9,231.00
2.32.2	RRU - band 41 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	\$ 5,690.00	\$ 13,656.00	\$ 9,673.00
2.32.3	RRU - band 12 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	\$ 6,340.00	\$ 15,216.00	\$ 10,778.00
2.32.4	RRU - band 66 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	\$ 6,340.00	\$ 15,216.00	\$ 10,778.00
2.32.5	RRU - band 25 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	\$ 6,340.00	\$ 15,216.00	\$ 10,778.00
2.32.6	RRU - band 2 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	\$ 6,340.00	\$ 15,216.00	\$ 10,778.00
2.32.7	RRU - band 5 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	\$ 6,340.00	\$ 15,216.00	\$ 10,778.00
2.32.8	RRU - band 4 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	\$ 6,340.00	\$ 15,216.00	\$ 10,778.00
2.32.9	RRU - band 48 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc. SW price is per RRU for B48	\$ 3780.00	\$ 9,072.00	\$ 6,426.00
2.33.0	<b>DU (Distributed Unit)</b>			
2.33.1	Multi-Access Edge Server (indoor)	\$ 3,680.00	\$ 5,520.00	\$ 4,600.00
2.33.2	Multi-Access Edge Server (outdoor)	\$ 9,642.40	\$ 14,463.60	\$ 12,053.00
2.33.3	vDU Server	\$ 8,000.00	\$ 10,000.00	\$ 9,000.00

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2.34.0	<b>CU (Control Unit)</b>			
2.34.1	Edge Computing vCompute NODE	\$ 11,975.20	\$ 17,962.80	\$ 14,969.00
2.34.2	vCU Server	\$ 10,000.00	\$ 12,000.00	\$ 11,000.00
2.35.0	<b>SPF - Small Form-Factor Pluggable Transceiver</b>			
2.35.1	SFP - 10G	\$ 175.00	\$ 175.00	\$ 175.00
2.36.0	<b>GPS</b>			
2.36.1	GPS Antenna, Lightning Arrestor, GPS Splitter 1:8, Cable Assembly-Coaxial (35')	\$ 1,560.00	\$ 1,694.00	\$ 1,627.00
2.37.0	<b>GSM&amp;UMTS (Universal Mobile Telecommunications System)</b>			
2.37.1	3G/UMTS RNC (Radio Network Controller) Small - Medium (50 - 1000 nodes)	\$ 300,000.00	\$ 750,000.00	\$ 525,000.00
2.37.2	3G/UMTS NodeB HW/SW addition to eNodeB	\$ 11,000.00	\$ 13,000.00	\$ 12,000.00
2.38.0	<b>Small Cell</b>			
2.38.1	Small Cell, LTE B42 B43 B48 integrated antenna eNodeB	\$ 4,000.00	\$ 20,000.00	\$ 12,000.00
2.39.0	<b>Tower Shelter</b>			
2.39.1	New shelter: Shelter, delivery, crane, labor, pad	\$ 75,000.00	\$ 85,000.00	\$ 80,000.00
2.40.0	<b>Outdoor Cabinets</b>			
2.40.1	Cabinet, Power Distribution Unit, 4 to 8 Rectifiers, 1 to 2 Battery Strings, optional Heat Exchanger	\$ 10,000.00	\$ 33,813.00	\$ 21,906.50
2.40.2	Outdoor Cabinet Install (Provide and Install)	\$ 5,250.00	\$ 6,300.00	\$ 5,775.00
2.40.3	Relocate CSR to New Cabinet	\$ 1,950.00	\$ 2,350.00	\$ 2,150.00
2.40.4	Install batteries and rectifiers	\$ 1,500.00	\$ 1,850.00	\$ 1,675.00
2.40.5	Install Outdoor Mounting Rack H-Frame	\$ 750.00	\$ 900.00	\$ 825.00

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2.41.0	<b>Indoor Cabinets</b>			
2.41.1	Indoor cabinet (small to large site, optional battery backup included).	\$ 9,766.00	\$ 29,561.00	\$ 19,663.50
2.41.2	Indoor Power Plants / Rectifiers / Batteries	\$ 6,000.00	\$ 38,000.00	\$ 22,000.00
3	<b>Core Layer Equipment</b> <b>The Core Layer of the network is the central element that provides services to those elements connected at the access layer of the network. One of the main functions of the core layer is that it is an aggregation point that provides proper routing of all voice and data traffic. All access and distribution layers of the network will be connected to the core via fiber or microwave backhaul connections.</b>			
3.1.0	<b>EPC</b>			
3.1.1	4G/5G-NSA Evolved Packet Core - Small, SGW, PGW, MME (10K subs to 50K subs, includes deployment)	\$ 250,000.00	\$ 1,200,000.00	\$ 725,000.00
3.1.2	4G/5G-NSA Evolved Packet Core - Medium, SGW, PGW, MME (50K subs to 200K subs), cost per site, includes deployment	\$ 100,000.00	\$ 2,550,000.00	\$ 1,325,000.00
3.1.3	4G/5G-NSA Evolved Packet Core - Large, Distributed, SGW, PGW, MME (greater than 200K subs - redundant solution, per site, includes deployment)	\$ 1,250,000.00	\$ 4,250,000.00	\$ 2,750,000.00
3.1.4	4G/5G-NSA Evolved Packet Core - Large, Distributed, SGW, PGW, MME (greater than 200K subs - distributed, geo-redundant solution, per site, includes deployment)	\$ 4,401,710.00	\$ 8,320,688.00	\$ 6,361,199.00
3.1.5	HSS Subscriber Data - Small, HSS (up to 50K subs, includes deployment)	\$ 400,000.00	\$ 650,000.00	\$ 525,000.00
3.1.6	HSS Subscriber Data - Medium, Per site - HSS (50K subs vs 250K subs, includes deployment)	\$ 1,250,000.00	\$ 2,250,000.00	\$ 1,750,000.00
3.1.7	HSS Subscriber Data - Medium, Per site - HSS (250K subs vs 500K subs, includes deployment)	\$ 2,500,000.00	\$ 6,000,000.00	\$ 4,250,000.00
3.1.8	Mobile Position System (MPS) - Medium (60K subs) - Large (500Ksubs)	\$ 561,000.00	\$ 1,071,000.00	\$ 816,000.00
3.1.9	PCRF Server - Small, PCRF (up to 50K subs)	\$ 150,000.00	\$ 500,000.00	\$ 325,000.00
3.1.10	PCRF Server - Small Design, Installation, Commissioning, Integration, Migration Services	\$ 70,000.00	\$ 250,000.00	\$ 160,000.00
3.1.11	3G HLR added to HSS - Small, HLR (up to 50K subs, includes deployment)	\$ 250,000.00	\$ 500,000.00	\$ 375,000.00
3.1.12	3G HLR added to HSS - Medium, Per site - HLR (50K subs vs 250K subs, includes deployment)	\$ 500,000.00	\$ 1,000,000.00	\$ 750,000.00
3.1.13	3G HLR added to HSS - Medium, Per site - HLR (250K subs vs 500K subs, includes deployment)	\$ 1,000,000.00	\$ 2,500,000.00	\$ 1,750,000.00

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3.1.14	Design, Installation, Commissioning, Integration, Migration Services - Medium solution, 3G HLR added to HSS - Medium	\$ 500,000.00	\$ 500,000.00	\$ 500,000.00
3.1.15	AAA Server - Small, AAA (up to 50K subs)	\$ 150,000.00	\$ 150,000.00	\$ 150,000.00
3.1.16	Design, Installation, Commissioning, Integration, Migration Services - Small solution, AAA Server - Small	\$ 70,000.00	\$ 80,000.00	\$ 75,000.00
3.1.17	AAA Server - Medium, Per site - AAA (50K subs vs 250K subs)	\$ 250,000.00	\$ 400,000.00	\$ 325,000.00
3.1.18	AAA Server - Medium, Per site - AAA (250K subs vs 500K subs)	\$ 400,000.00	\$ 800,000.00	\$ 600,000.00
3.1.19	Design, Installation, Commissioning, Integration, Migration Services - Medium solution, AAA Server - Medium	\$ 375,000.00	\$ 425,000.00	\$ 400,000.00
3.1.20	Design, Installation, Commissioning, Integration Services, Mobile Switching Center	\$ 475,000.00	\$ 525,000.00	\$ 500,000.00
3.1.21	IMS Core, Per site - CSCF, TAS, A-SBC, ES, LIG, MRF, DRA/DEA, DNS, ENUM (50K - 250K subs)	\$ 6,250,000.00	\$ 6,250,000.00	\$ 6,250,000.00
3.1.22	IMS Core, Per site - CSCF, TAS, A-SBC, ES, LIG, MRF, DRA/DEA, DNS, ENUM (250K - 500K subs)	\$ 10,000,000.00	\$ 10,000,000.00	\$ 10,000,000.00
3.1.23	3G Packet Core addition to 4G EPC - Small to Medium, SGSN, GGSN (up to 500K subs, includes deployment)	\$ 750,000.00	\$ 1,409,947.00	\$ 1,079,973.50
3.1.24	WiFi Packet Data Gateway - ePDG (Small - 10K subs vs 50K subs, includes deployment)	\$ 550,000.00	\$ 650,000.00	\$ 600,000.00
3.1.25	WiFi Packet Data Gateway - ePDG (Medium - 50K subs vs 250K subs, includes deployment)	\$ 650,000.00	\$ 1,000,000.00	\$ 825,000.00
<b>3.2.0</b>	<b>Cloud Core</b>			
3.2.1	Cloud - Virtual EPC (SAE-GW, Firewall, Carrier Grade NAT, eCGF, MME, PCRF, Small Network), includes Design, Installation, Commissioning, Integration Services	\$ 320,000.00	\$ 1,200,000.00	\$ 760,000.00
3.2.2	Cloud - Virtual EPC (SAE-GW, Firewall, Carrier Grade NAT, eCGF, MME, PCRF, Medium Network), includes Design, Installation, Commissioning, Integration Services	\$ 1,500,000.00	\$ 8,320,688.00	\$ 4,910,344.00
3.2.3	Cloud - Virtual EPC (SAE-GW, Firewall, Carrier Grade NAT, eCGF, MME, PCRF, Large Network), includes Design, Installation, Commissioning, Integration Services	\$ 2,000,000.00	\$ 24,381,688.00	\$ 13,190,844.00

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3.2.4	Cloud - Virtual Stand Alone IMS (CTAS, IMS Core, MRF, AGW, A-SBC, HSS, ePDG, I-SBC, DRA, PCRF, 4G EPC, E-CSCF, LI interface, SMSC, MMSC, VM)	\$ 849,230.00	\$ 1,049,230.00	\$ 949,230.00
3.3.0	<b>RAN Core / EMS</b>			
3.3.1	IMS and RAN Element Management System, Compact EMS with Basic Licensing, includes hardware (10K to 50K subs), includes Design, Installation, Commissioning, Integration Services	\$ 450,000.00	\$ 1,103,425.00	\$ 776,712.50
3.3.2	IMS and RAN Element Management System, Medium EMS with Basic Licensing, includes hardware (50K to 100K subs), includes Design, Installation, Commissioning, Integration Services	\$ 1,500,000.00	\$ 8,320,688.00	\$ 4,910,344.00
3.3.3	IMS and RAN Element Management System, Large EMS with Premium Licensing, includes hardware (>250 subs), includes Design, Installation, Commissioning, Integration Services	\$ 14,988,658.00	\$ 15,888,492.00	\$ 15,438,575.00
3.3.4	Packet Core Element Management System, Packet Core EMS (50K subs vs 250K subs), includes hardware (50K to 100K subs), includes Design, Installation, Commissioning, Integration Services	\$ 250,000.00	\$ 470,000.00	\$ 360,000.00
3.3.5	Design, Installation, Commissioning, Integration Services, Packet Core EMS Add-ons	\$ 150,000.00	\$ 300,000.00	\$ 225,000.00
3.3.6	Design, Installation, Commissioning, Integration Services IMS/EMS Add-Ons	\$ 150,000.00	\$ 500,000.00	\$ 325,000.00
3.4.0	<b>WDM &amp; OTN – Core Equipment (Wavelength Division Multiplexing &amp; Optical Transport Network)</b>			
3.4.1	Core Equipment for WDM & OTN (per node)	\$ 136,000.00	\$ 2,100,000.00	\$ 1,118,000.00
	<b>Microwave - (see Distribution Layer)</b>			
3.5.0	<b>Core Server Hardware</b>			
3.5.1	RGS Server	\$ 17,500.00	\$ 18,000.00	\$ 17,750.00
3.5.2	RGS-E Server	\$ 19,500.00	\$ 20,000.00	\$ 19,750.00
3.5.3	NFV Server	\$ 13,000.00	\$ 15,000.00	\$ 14,000.00
3.5.4	Aggregation Router (range is Small 1G ports L2 Switch - Medium 10G/25G ports MPLS L3 Router)	\$ 10,000.00	\$ 250,000.00	\$ 130,000.00

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3.5.5	Core Routers, small networks	\$ 25,000.00	\$ 391,667.00	\$ 208,333.50
3.5.6	Core Routers, medium networks	\$ 391,667.00	\$ 783,333.00	\$ 587,500.00
3.5.7	Core Routers, large networks	\$ 783,333.00	\$ 1,200,000.00	\$ 991,666.50
3.5.8	Core Switches, small networks	\$ 25,000.00	\$ 325,000.00	\$ 175,000.00
3.5.9	Core Switches, medium networks	\$ 325,000.00	\$ 650,000.00	\$ 487,500.00
3.5.10	Core Switches, large networks	\$ 650,000.00	\$ 1,000,000.00	\$ 825,000.00
3.6.0	<b>Operation Support Systems (OSS)</b>			
3.6.1	OSS/BSS Design - Process Automation & Network Roll-out (based on 1 million subscribers)	\$ 500,000.00	\$ 550,000.00	\$ 525,000.00
3.6.2	OSS/BSS Design - Network & Service Assurance (based on 1 million subscribers)	\$ 700,000.00	\$ 750,000.00	\$ 725,000.00
3.6.3	OSS/BSS Design - Network Testing & Management (based on 1 million subscribers)	\$ 200,000.00	\$ 250,000.00	\$ 225,000.00
3.6.4	OSS/BSS Yearly License Costs & Fees (based on 1 million subscribers)	\$ 700,000.00	\$ 750,000.00	\$ 725,000.00
3.7.0	<b>Orchestration</b>			
3.7.1	Orchestration Design - Service Design & Creation (based on 1 million subscribers)	\$ 550,000.00	\$ 600,000.00	\$ 575,000.00
3.7.2	Orchestration Design - Universal Cloud Orchestration (based on 1 million subscribers)	\$ 1,200,000.00	\$ 1,300,000.00	\$ 1,250,000.00
3.7.3	Orchestration Yearly License Costs & Fees (based on 1 million subscribers)	\$ 900,000.00	\$ 950,000.00	\$ 925,000.00
3.8.0	<b>Cloud Computing</b>	\$ 55,000.00	\$ 330,000.00	\$ 192,500.00
3.9.0	<b>Optical Transmission</b>			
3.9.1	Small to Medium Network	\$ 60,000.00	\$ 170,000.00	\$ 115,000.00
3.9.2	Medium to Large Network	\$ 170,000.00	\$ 240,000.00	\$ 205,000.00



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3.10.0	<b>Data Transmission</b>			
3.10.1	Small to Medium Network	\$ 19,000.00	\$ 26,000.00	\$ 22,500.00
3.10.2	Medium to Large Network	\$ 26,000.00	\$ 38,000.00	\$ 32,000.00
4	<b>Software</b> <b>Instructions that tell a computer what to do. Software comprises the entire set of programs, procedures, and routines associated with the operation of a computer system. Applications include conceiving, specifying, designing, programming, testing, maintenance and developing equipment applications, components or systems that are continuously used.</b>			
4.1.1	Active Ethernet (AE) functionality for provisioning and alarming	\$ 4,500.00	\$ 7,300.00	\$ 5,900.00
4.1.2	Voice Core	\$ 500,000.00	\$ 1,000,000.00	\$ 750,000.00
4.1.3	Data (Ran CORE)	\$ 950,000.00	\$ 1,300,000.00	\$ 1,125,000.00
4.1.4	Network Management SW	\$ 100,000.00	\$ 115,000.00	\$ 107,500.00
4.1.5	SDN-enabled management and control software (per device, 1yr to 3yr sub)	\$ 2,000.00	\$ 105,000.00	\$ 53,500.00
4.1.6	RAN Element Management System (Small EMS with Basic Licensing - Medium EMS with Premium Licensing)	\$ 450,000.00	\$ 1,000,000.00	\$ 725,000.00
4.1.7	Core Element Management System (10K subscriber core - 250K subscribe core)	\$ 150,000.00	\$ 540,000.00	\$ 345,000.00
4.1.8	Per Call Measurement Data Server (PCMD)	\$ 100,000.00	\$ 500,000.00	\$ 300,000.00
4.1.9	Software Licenses (per radio) to include: M2M, Cat-M1, Narrowband IoT, and similar items	\$ 6,850.00	\$ 9,133.00	\$ 7,991.50
4.2.0	<b>Licenses</b>			
4.2.1	4G IOT License - Perpetual - per Subscriber	\$ 0.02	\$ 1.04	\$ 0.53
4.2.2	4G Connectivity License - Perpetual - per Subscriber	\$ 0.09	\$ 4.74	\$ 2.42
4.2.3	4G Communications License - Perpetual - per Subscriber	\$ 0.11	\$ 5.76	\$ 2.94
4.2.4	5G SA/NSA IOT License - Perpetual - per Subscriber	\$ 0.11	\$ 1.18	\$ 0.65
4.2.5	5G SA/NSA Connectivity License - Perpetual - per Subscriber	\$ 0.12	\$ 6.62	\$ 3.37
4.2.6	5G SA/NSA Communications License - Perpetual - per Subscriber	\$ 0.11	\$ 6.07	\$ 3.09
4.2.7	4G+5G NSA IOT License - Perpetual - per Subscriber	\$ 0.03	\$ 1.73	\$ 0.88
4.2.8	4G+5G NSA Connectivity License - Perpetual - per Subscriber	\$ 0.15	\$ 8.04	\$ 4.10
4.2.9	4G+5G NSA Communications License - Perpetual - per Subscriber	\$ 0.13	\$ 7.14	\$ 3.64
4.2.10	LTE Software License, perpetual license, technology LTE TDD/FDD, per cell/carrier	\$ 1,000.00	\$ 10,000.00	\$ 5,500.00

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Index	Description	Range of Estimated Costs		Costs
		Low	High	Average
4.2.11	5G NR (new radio) Software License, perpetual license, technology 5G NR TDD/FDD, per cell/carrier	\$ 1,000.00	\$ 10,000.00	\$ 5,500.00
4.2.12	5G NR (new radio) mMIMO (massive MIMO) Software License, perpetual license, technology 5G NR TDD/FDD, per cell/carrier	\$ 1,000.00	\$ 10,000.00	\$ 5,500.00
4.2.13	LTE Open RAN eNB SW Fee, cost of (1) perpetual license per cell site, technology LTE TDD/FDD	\$ 2,000.00	\$ 20,000.00	\$ 11,000.00
4.2.14	5G NR Open RAN eNB SW Fee, cost of (1) perpetual license per cell site, technology 5G NR TDD/FDD	\$ 2,000.00	\$ 20,000.00	\$ 11,000.00
4.2.15	Open RAN Management System, cost of one perpetual license for 1 cell/carrier, technology LTE/5G NR TDD/FDD	\$ 100.00	\$ 5,000.00	\$ 2,550.00
5	<b>Services</b> For design, implementation, installation, testing, or other costs and/or fees paid to deploy the replacement equipment and/or systems in the conterminous (contiguous) United States. An additional 30-50% needed for Services Specific to: Alaska, American Samoa, Hawaii, Puerto Rico and Virgin Islands.			
5.1.0	<b>Preplanning</b>			
5.1.1	NTP (Notice to Proceed) Package (per site)	\$ 850.00	\$ 1,000.00	\$ 925.00
5.1.2	A&E Walk (per site)	\$ 3,150.00	\$ 5,500.00	\$ 4,325.00
5.1.3	Utility Coordination	\$ 250.00	\$ 2,744.17	\$ 1,497.09
5.1.4	Participation in FCC Rulemaking - (8-15 hours per filing)	\$ 4,000.00	\$ 7,500.00	\$ 5,750.00
5.1.5	Consultation with Counsel on Finalized Rules & Regulations - (3-10 hours)	\$ 1,500.00	\$ 5,000.00	\$ 3,250.00
5.2.0	<b>Site Acquisition</b>			
5.2.1	Existing Colocation (per site, flat fee) – (Low) without A&E, permitting and Legal; (High) full scope	\$ 2,900.00	\$ 30,000.00	\$ 16,450.00
5.3.0	<b>Site Surveys</b>			
5.3.1	Drone - Visual Inspection (per site)	\$ 925.00	\$ 2,058.13	\$ 1,491.57
5.3.2	Drone - Infrared Inspection - expenses not included (per site)	\$ 5,000.00	\$ 10,000.00	\$ 7,500.00
5.3.3	Drone - Additional field work - day rate - expenses not included	\$ 1,500.00	\$ 2,000.00	\$ 1,750.00

Secure and Trusted Communications Networks Reimbursement Program: Final Catalog of Eligible Expenses and Estimated Costs

Index	Description	Range of Estimated Costs		Costs
		Low	High	Average
5.3.4	Site survey - (from ground) distance to site/complexity of site (including ground measurement) (per site)	\$ 945.00	\$ 25,000.00	\$ 12,972.50
5.4.0	<b>RF Engineering</b>			
5.4.1	Construction Drawings (per site)	\$ 2,031.00	\$ 5,333.33	\$ 3,682.17
5.4.2	MPE Survey RF Emissions (per site)	\$ 1,219.24	\$ 1,700.00	\$ 1,459.62
5.4.3	Modeling, Site Design, Performance Troubleshooting, Internal Team Optimization (per site)	\$ 3,585.20	\$ 5,053.00	\$ 4,319.10
5.4.4	RF Model Tuning - Propagation Model per morphology (Sub Urban,Urban,Dense Urban or Rural)	\$ 79,923.00	\$ 140,000.00	\$ 109,961.50
5.4.5	Drone - Performance Mapping (RF Measurements) (per site)	\$ 15,000.00	\$ 30,000.00	\$ 22,500.00
5.5.0	<b>Interim Facility Requirement</b>			
5.5.1	Cost of temporary site (COW) during tower replacement or modification	\$ 37,710.53	\$ 60,000.00	\$ 48,855.27
5.6.0	<b>Leasing</b>			
5.6.1	Negotiation of co-location contracts/leases (2-4 hours per contract)	\$ 1,000.00	\$ 2,000.00	\$ 1,500.00
5.6.2	Lease review (per site)	\$ 450.00	\$ 823.25	\$ 636.63
5.6.3	Attend Scoping Meeting/Coordinate with RF (per site)	\$ 236.00	\$ 450.00	\$ 343.00
5.6.4	Landlord consent and notice to Landlord (per site)	\$ 400.00	\$ 1,125.00	\$ 762.50
5.6.5	Site Plan - (lease exhibit) (per site)	\$ 1,250.00	\$ 2,150.00	\$ 1,700.00
5.6.6	Co-location application (per site)	\$ 479.27	\$ 800.00	\$ 639.64
5.7.0	<b>Project Management</b>			
5.7.1	Project Management - carrier internal (per person per month)	\$ 7,785.00	\$ 12,975.00	\$ 10,380.00
5.7.2	Review work orders and related purchase orders - (1-4 hour per work order)	\$ 500.00	\$ 2,000.00	\$ 1,250.00
5.7.3	Project Management (per person per month)	\$ 25,950.00	\$ 51,900.00	\$ 38,925.00
5.7.4	Construction Management (per person per month)	\$ 21,666.00	\$ 25,950.00	\$ 23,808.00
5.7.5	NOC Staff Augments - (per person per month)	\$ 14,705.00	\$ 17,300.00	\$ 16,002.50
5.7.6	Transition Planning for Cutover - complexity of equipment changes (per site)	\$ 5,000.00	\$ 15,000.00	\$ 10,000.00
5.7.7	Transition Planning for Cutover: Optical Network Subscriber and network migration services up to 16 nodes additional for add-on's	\$ 3,500.00	\$ 11,000.00	\$ 7,250.00

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		Low	High	Average
5.7.8	Legal review of customer communications related liability, indemnification and risk management in associated contracts and SOW - (6-8 hours)	\$ 3,000.00	\$ 4,000.00	\$ 3,500.00
5.8.0	<b>Spectrum Planning and Management</b>			
5.8.1	Leasing or purchase of additional spectrum and related negotiations - (8-10 hours per agreement)	\$ 4,000.00	\$ 5,000.00	\$ 4,500.00
5.8.2	Preparation of purchase or lease agreement (3-5 hours per agreement)	\$ 1,500.00	\$ 2,500.00	\$ 2,000.00
5.8.3	Preparation and submission of any required FCC filings for permission (2-4 hours)	\$ 1,000.00	\$ 2,000.00	\$ 1,500.00
5.9.0	<b>Training</b>			
5.9.1	Product, Engineering and Operations Training Courses (classroom or web per student/day)	\$ 750.00	\$ 1,625.00	\$ 1,187.50
5.9.2	Onsite-Knowledge Transfer (per week)	\$ 7,000.00	\$ 12,000.00	\$ 9,500.00
5.9.3	Subscription (per person 5-11 plus flat fee)	\$ 17,300.00	\$ 32,900.00	\$ 25,100.00
5.9.4	Optical Training Service - 3 to 4 day instruction	\$ 13,030.00	\$ 15,704.00	\$ 14,367.00
5.9.5	Open vRAN Training - 3 to 4 day	\$ 10,000.00	\$ 15,000.00	\$ 12,500.00
5.10.0	<b>Resident Engineer/Staff</b>			
5.10.1	RAN/CORE Engineer - to provide on-site support during and after turn-over for 1 year (per person/per quarter)	\$ 50,000.00	\$ 100,000.00	\$ 75,000.00
5.10.2	Network Operations - to provide on-site support during and after turn-over – internal labor (per person/per year)	\$ 93,600.00	\$ 156,000.00	\$ 124,800.00
5.11.0	<b>VoLTE Voice Coordination with Providers</b>			
5.11.1	VOLTE Optimization (per site)	\$ 3,675.00	\$ 4,928.00	\$ 4,301.50
5.12.0	<b>Structural Engineering / Tower Studies</b>			
5.12.1	Structural Analysis - complexity of design (per site)	\$ 2,261.14	\$ 4,550.00	\$ 3,405.57
5.12.2	Mount Analysis - size of tower, complexity of loading scenarios (per site)	\$ 1,250.00	\$ 8,000.00	\$ 4,625.00
5.12.3	Tower/Mount Mapping (per tower)	\$ 11,084.03	\$ 13,720.86	\$ 12,402.45
5.12.4	Review Contracts and Statements of Work - (2-3 hours per contract)	\$ 1,000.00	\$ 1,500.00	\$ 1,250.00

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		Low	High	Average
<b>5.13.0</b>	<b>Negotiating with Tower Owners</b>			
5.13.1	Executed Agreement (per site)	\$ 3,688.76	\$ 5,200.00	\$ 4,444.38
5.13.2	Fully Executed Amendment (per site)	\$ 3,250.00	\$ 4,390.68	\$ 3,820.34
5.13.3	Fully Executed Amendment - Non-MLA (per site)	\$ 3,000.00	\$ 4,939.51	\$ 3,969.76
5.13.4	Legal review of tower leases and support of negotiations - (8-10 hours per lease)	\$ 4,000.00	\$ 5,000.00	\$ 4,500.00
<b>5.14.0</b>	<b>Network Engineering Services</b>			
5.14.1	CIQ creation/review (per site)	\$ 384.62	\$ 840.00	\$ 612.31
5.14.2	SCF Creation / WO for new sites up to 12 carriers (per site)	\$ 600.00	\$ 3,200.00	\$ 1,900.00
5.14.3	Engineering Services (RAN) (per site)	\$ 250.00	\$ 500.00	\$ 375.00
5.14.4	Engineering Services (Core) (per core)	\$ 5,000.00	\$ 50,000.00	\$ 27,500.00
5.14.5	Engineering Services (IP Network) (per site)	\$ 250.00	\$ 1,000.00	\$ 625.00
5.14.6	Engineering Services (Microwave Backhaul) (per link)	\$ 250.00	\$ 650.00	\$ 450.00
5.14.7	Engineering Services (Microwave Backhaul) FCC PCN Coordination) (per link)	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00
5.14.8	Negotiation & Review of RF engineering, AM Detuning, Interference or Intermodulation analysis, RF Emissions Study, and RF Exposure Measurements contracts - (2-3 hours per contract)	\$ 1,000.00	\$ 1,500.00	\$ 1,250.00
5.14.9	Open RAN deployment services, CU/DU deployment instantiation support, per man/hour	\$ 100.00	\$ 500.00	\$ 300.00
5.14.10	Tier 2 & Tier 3 Operational Support, per man/hour	\$ 100.00	\$ 500.00	\$ 300.00
<b>5.15.0</b>	<b>Tower/Water Tower/Barn/Rooftop Preparation</b>			
5.15.1	Remove RRH/RRU, Antenna and cabling	\$ 1,850.00	\$ 3,000.00	\$ 2,425.00
5.15.2	Remove 3 RRH/RRU, 3 Antenna and 3 cabling	\$ 3,250.00	\$ 3,700.00	\$ 3,475.00
5.15.3	Remove BBU	\$ 500.00	\$ 700.00	\$ 600.00
5.15.4	Remove BBU and replace with new BBU	\$ 2,500.00	\$ 3,200.00	\$ 2,850.00
5.15.5	Antenna Install (with material)	\$ 5,650.00	\$ 6,850.00	\$ 6,250.00
5.15.6	Radio Install - each radio - height of radios on tower; # RF jumper cables per radio/antenna	\$ 1,000.00	\$ 3,500.00	\$ 2,250.00
5.15.7	Install new Power Trunk	\$ 3,850.00	\$ 4,650.00	\$ 4,250.00
5.15.8	Install new Fiber Trunk	\$ 4,200.00	\$ 5,100.00	\$ 4,650.00
5.15.9	Install Hybrid Cable (without Material)	\$ 1,199.35	\$ 7,625.00	\$ 4,412.18

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		Low	High	Average
5.15.10	Fiber Inspection, Cleaning and Light Source & Power Meter Testing * Post Installation (per 24 fibers)	\$ 2,000.00	\$ 4,423.65	\$ 3,211.83
5.15.11	Raycap Install/Upgrade	\$ 650.00	\$ 916.67	\$ 783.34
5.15.12	Install Sector Frame	\$ 4,850.00	\$ 8,572.26	\$ 6,711.13
5.15.13	Installation of outdoor cabinet with one battery string	\$ 4,112.64	\$ 5,898.45	\$ 5,005.55
5.15.14	Installation of outdoor battery cabinet with two strings of batteries	\$ 5,746.67	\$ 8,572.00	\$ 7,159.34
5.15.15	Installation of indoor cabinet with one battery string	\$ 390.63	\$ 875.00	\$ 632.82
5.15.16	Installation of indoor battery cabinet with two strings of batteries	\$ 781.25	\$ 5,157.00	\$ 2,969.13
5.15.17	PDU Installation (tower top, providing PDU)	\$ 1,252.33	\$ 1,586.95	\$ 1,419.64
5.15.18	DC power plant Install	\$ 1,250.00	\$ 2,975.00	\$ 2,112.50
5.16.0	<b>Antenna/Radio R&amp;R - Tower up to 200', Not Water Tank</b>			
5.16.1	Rip & Replace - Up to (3) Antenna Replacement (Install/Swap up to (3) new antennas, with associated jumpers, plumbing/re-plumbing etc.)	\$ 7,650.00	\$ 13,240.39	\$ 10,445.20
5.16.2	Rip & Replace - Up to (6) Antenna Replacement (Install/Swap up to (6) new antennas, with associated jumpers, plumbing/re-plumbing etc.)	\$ 11,677.45	\$ 23,293.97	\$ 17,485.71
5.16.3	Rip & Replace - Up to (3) Radios (RRH/RRU) Replacement (Install/Swap up to (3) new radios, with associated jumpers, plumbing/re-plumbing accordingly etc. No new antennas or hybrid)	\$ 7,000.00	\$ 19,301.12	\$ 13,150.56
5.16.4	Rip & Replace - Up to (6) Radios (RRH/RRU) Replacement (Install/Swap up to (6) new radios, with associated jumpers, plumbing/re-plumbing accordingly etc. No new antennas or hybrid)	\$ 11,100.00	\$ 21,888.39	\$ 16,494.20
5.16.5	Rip & Replace - Up to (6) New Radios, (3) New Antennas (Install/Swap up to (6) new radios, (3) new antennas with associated jumpers, plumbing/re-plumbing etc. No new hybrid)	\$ 1,7687.17	\$ 28,776.09	\$ 23,231.63
5.16.6	Rip & Replace - Up to (9) New Radios, (3) New Antennas (Install/Swap up to (9) new radios, (3) new antennas with associated jumpers, plumbing/re-plumbing etc. No new hybrid)	\$ 19,500.00	\$ 32,250.00	\$ 25,875.00
5.16.7	Rip & Replace - Up to (12) New Radios, (6) New Antennas (Install/Swap up to (12) new radios, (6) new antennas with associated jumpers, plumbing/re-plumbing etc. No new hybrid)	\$ 29,212.94	\$ 49,602.02	\$ 39,407.48

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		Low	High	Average
5.16.8	Install/Swap up to (18) new radios, (9) new antennas with associated jumpers, plumbing/re-plumbing accordingly etc. No new hybrid)	\$ 38,201.86	\$ 48,747.17	\$ 43,474.52
5.17.0	<b>Antenna/Radio R&amp;R - Non-penetrating Roof Mounted</b>			
5.17.1	Rip & Replace - Up to (3) Antenna Replacement (Install/Swap up to (3) new antennas, with associated jumpers, plumbing/re-plumbing etc.)	\$ 6,805.30	\$ 9,073.73	\$ 7,939.52
5.17.2	Rip & Replace - Up to (6) Antenna Replacement (Install/Swap up to (6) new antennas, with associated jumpers, plumbing/re-plumbing etc.)	\$ 12,470.48	\$ 16,627.31	\$ 14,548.90
5.17.3	Rip & Replace - Up to (3) Radios (RRH/RRU) Replacement (Install/Swap up to (3) new radios, with associated jumpers, plumbing/re-plumbing accordingly etc. No new antennas or hybrid)	\$ 9,475.84	\$ 12,634.46	\$ 11,055.15
5.17.4	Rip & Replace - Up to (6) Radios (RRH/RRU) Replacement (Install/Swap up to (6) new radios, with associated jumpers, plumbing/re-plumbing accordingly etc. No new antennas or hybrid)	\$ 13,291.30	\$ 17,721.73	\$ 15,506.52
5.17.5	Rip & Replace - Up to (6) New Radios, (3) New Antennas (Install/Swap up to (6) new radios, (3) new antennas with associated jumpers, plumbing/re-plumbing etc. No new hybrid)	\$ 16,582.07	\$ 22,109.42	\$ 19,345.75
5.17.6	Rip & Replace - Up to (9) New Radios, (3) New Antennas (Install/Swap up to (9) new radios, (3) new antennas with associated jumpers, plumbing/re-plumbing etc. No new hybrid)	\$ 18,063.61	\$ 24,084.82	\$ 21,074.22
5.17.7	Rip & Replace - Up to (12) New Radios, (6) New Antennas (Install/Swap up to (12) new radios, (6) new antennas with associated jumpers, plumbing/re-plumbing etc. No new hybrid)	\$ 32,201.51	\$ 42,935.35	\$ 37,568.43
5.18.0	<b>Shelter Cable Entry Port Additions</b>			
5.18.1	Up to six (6) entry ports (provide and install)	\$ 406.25	\$ 2,032.56	\$ 1,219.41
5.19.0	<b>Ground Buss Bars</b>			
5.19.1	Tower or Shelter Buss bar addition	\$ 231.25	\$ 520.72	\$ 375.99
5.20.0	<b>Tower Modifications</b>			



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		Low	High	Average
5.20.1	Modification Design (per site)	\$ 1,100.00	\$ 5,159.04	\$ 3,129.52
5.20.2	Foundation Drawings/Inspection (per site)	\$ 6,858.19	\$ 9,514.28	\$ 8,186.24
5.20.3	Foundation Install <200' (Monopole/SS)	\$ 39,726.54	\$ 130,999.37	\$ 85,362.96
5.20.4	Foundation Install <200' (Monopole/SS) - Batch Plant	\$ 85,794.41	\$ 282,909.46	\$ 184,351.94
5.20.5	Demo Existing Tower	\$ 13,109.00	\$ 25,000.00	\$ 19,054.50
5.20.6	Minor Tower reinforcement/modifications - size of tower, extent of reinforcing	\$ 1,000.00	\$ 10,000.00	\$ 5,500.00
5.20.7	Build new <200' monopole (Erection only including crane)	\$ 14,154.00	\$ 29,000.00	\$ 21,577.00
5.20.8	Build new <200' monopole - Materials	\$ 36,063.00	\$ 117,651.05	\$ 76,857.03
5.20.9	Build new <300' SST (Erection only including crane)	\$ 16,332.00	\$ 42,500.00	\$ 29,416.00
5.20.10	Build new <300' SST - Materials	\$ 33,000.00	\$ 93,514.98	\$ 63,257.49
5.20.11	Major Tower reinforcement/modifications - size of tower; tower design; tower foundations; guy wires	\$ 10,000.00	\$ 100,000.00	\$ 55,000.00
5.20.12	Serous Tower reinforcement/modifications - tower foundation mods; tower "wrap"	\$ 100,000.00	\$ 250,000.00	\$ 175,000.00
5.20.13	Carrier Relocation BOM (per site)	\$ 650.00	\$ 14,789.99	\$ 7,720.00
5.20.14	Carrier Relocation Civil Work (per site)	\$ 1,785.71	\$ 32,357.15	\$ 17,071.43
5.20.15	Carrier Relocation L&A Work (per site)	\$ 23,332.30	\$ 65,391.43	\$ 44,361.87
5.21.0	<b>Site Work</b>	\$ 3,000.00	\$ 10,000.00	\$ 6,500.00
5.21.1	Pre-Construction Site Walk - distance to site, size of tower	\$ 971.19	\$ 2,150.00	\$ 1,560.60
5.21.2	Parallel/New 200A Service	\$ 8,792.00	\$ 27,721.79	\$ 18,256.90
5.21.3	Upgrade to 200A Service	\$ 6,000.00	\$ 7,000.00	\$ 6,500.00
5.21.4	Conduit and Fiber from Cabinet to H Frame	\$ 1,750.00	\$ 2,150.00	\$ 1,950.00
5.21.5	Hand Trenching from Backhaul Cabinet to New Cabinet (25')	\$ 1,724.46	\$ 2,750.00	\$ 2,237.23
5.21.6	Trenching and Cabling from New Cabinet to Power Panel (100' – includes materials)	\$ 15,150.00	\$ 18,350.00	\$ 16,750.00
5.21.7	Re-cable MW Dish to New Cabinet (100' – includes materials)	\$ 1,450.00	\$ 1,750.00	\$ 1,600.00
5.21.8	Install Ice Bridge (~30')	\$ 4,680.00	\$ 6,450.00	\$ 5,565.00
5.21.9	Cement Pad Install	\$ 3,683.94	\$ 8,252.03	\$ 5,967.99
5.21.10	Install BBU (rack or cabinet)	\$ 1,900.00	\$ 3,893.46	\$ 2,896.73
5.21.11	Installation of new 19" rack in existing shelter	\$ 2,796.00	\$ 3,322.00	\$ 3,059.00
5.21.12	GPS install	\$ 370.00	\$ 2,075.47	\$ 1,222.74
5.21.13	Install collar mounts (Tri & Quad) V-Booms, (with materials) – (Per Mount)	\$ 3,628.00	\$ 8,042.00	\$ 5,835.00



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		Low	High	Average
5.21.14	Install MOVE platform (with Materials) (Per Mount)	\$ 28,600.00	\$ 33,600.00	\$ 31,100.00
5.21.15	DC Cable Pull Through Conduit Sizes #16AWG to #2AWG	\$ 550.00	\$ 700.00	\$ 625.00
5.21.16	Re-use/Re-working existing hybrid (Cabling to new equipment and baseband along with required testing) – up to 12 fibers	\$ 3,437.00	\$ 4,084.00	\$ 3,760.50
5.21.17	Install Hybrid Cable (with Material)	\$ 17,100.00	\$ 20,700.00	\$ 18,900.00
5.21.18	Upgrade Generator (modification reports, labor and modification)	\$ 23,500.00	\$ 75,000.00	\$ 49,250.00
5.21.19	Site Inspection - distance to site/complexity of site	\$ 800.00	\$ 25,000.00	\$ 12,900.00
5.21.20	Environmental Work (per site)	\$ 6,000.00	\$ 7,000.00	\$ 6,500.00
5.21.21	Solar Design (per site)	\$ 15,000.00	\$ 20,000.00	\$ 17,500.00
5.21.22	25-50 Amp Solar Upgrade (Install and Material) (per site)	\$ 62,500.00	\$ 162,500.00	\$ 112,500.00
5.21.23	75-100 Amp Solar Upgrade (Install and Material) (per site)	\$ 187,500.00	\$ 325,000.00	\$ 256,250.00
5.21.24	Commissioning and Integration of single technology – per site	\$ 1,785.00	\$ 2,630.51	\$ 2,207.76
5.21.25	Closeout Package – Microwave (per link)	\$ 1,500.00	\$ 2,500.00	\$ 2,000.00
5.21.26	Closeout Package – (per site)	\$ 1,000.00	\$ 2,000.00	\$ 1,500.00
5.22.0	<b>Cable Sweep &amp; PIM Testing</b>			
5.22.1	PIM Test and Remediate* 0 to 12 Paths	\$ 1,050.00	\$ 9,014.25	\$ 5,032.13
5.22.2	PIM Test and Remediate* 13 to 24 Paths	\$ 2,950.00	\$ 5,450.00	\$ 4,200.00
5.22.3	PIM Test and Remediate* 25 to 36 Paths	\$ 4,500.00	\$ 6,250.00	\$ 5,375.00
5.22.4	Sweep Test (per line)	\$ 171.00	\$ 900.00	\$ 535.50
5.23.0	<b>Connectivity Upgrades or Extensions</b>			
5.23.1	Review of interconnection and colocation agreements - (2-5 hours per contract)	\$ 1,000.00	\$ 2,500.00	\$ 1,750.00
5.24.0	<b>Tower/Installation Crews</b>			
5.24.1	Mobilization Less than or Equal to 250 Miles (2-4 Member Crew)	\$ 1,800.00	\$ 6,000.00	\$ 3,900.00
5.24.2	Mobilization 251-500 Miles (2-4 Member Crew)	\$ 1,620.00	\$ 4,050.00	\$ 2,835.00
5.24.3	Mobilization Greater than 500 Miles (2-4 Member Crew)	\$ 2,187.00	\$ 7,967.50	\$ 5,077.25
5.24.4	Mobilization Ground Crew - (2-4 Member Crew) - day rate	\$ 4,363.61	\$ 8,571.00	\$ 6,467.31
5.24.5	Mobilization Tower (2-4 Member Crew) - day rate	\$ 11,429.00	\$ 17,142.00	\$ 14,285.50

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		Low	High	Average
5.24.6	Troubleshooting – RRU Replacement during the maintenance window on site per hour (Up to four-man crew)	\$ 872.72	\$ 1,105.91	\$ 989.32
5.24.7	Troubleshooting – RRU Replacement during the non-maintenance window on site per hour (Up to four-man crew)	\$ 872.72	\$ 1,105.91	\$ 989.32
5.24.8	General Troubleshooting – Up to 4 hours of onsite troubleshooting (Up to four men crew)	\$ 3,490.89	\$ 4,423.65	\$ 3,957.27
5.24.9	General Troubleshooting – Up to 8 hours of onsite troubleshooting (Up to four men crew)	\$ 6,981.77	\$ 8,847.30	\$ 7,914.54
5.24.10	Troubleshooting – Single Antenna replacement during the maintenance window	\$ 1,570.90	\$ 4,887.24	\$ 3,229.07
5.24.11	Troubleshooting – Antenna replacement during the non-maintenance window	\$ 1,570.90	\$ 4,887.24	\$ 3,229.07
5.24.12	Maintenance window work per night/per 3-man crew (per night)	\$ 5,890.87	\$ 8,063.95	\$ 6,977.41
5.24.13	Microwave Pathing - During Construction (per link)	\$ 2,250.00	\$ 3,000.00	\$ 2,625.00
5.24.14	Microwave Pathing - Post Construction (per link)	\$ 3,500.00	\$ 4,666.67	\$ 4,083.34
5.24.15	Microwave Commissioning and Integration (per link)	\$ 2,093.00	\$ 3,000.00	\$ 2,546.50
5.24.16	Microwave relocation during construction (per site)	\$ 16,692.00	\$ 26,742.85	\$ 21,717.43
5.25.0	<b>Helicopter Lift</b> (e.g., for a rooftop tower, complex tower, tall structure, or terrain constrained location requiring helicopter lift)			
5.25.1	Max 1000 lbs - 6 hr day rate + hourly	\$ 14,000.00	\$ 30,000.00	\$ 22,000.00
5.25.2	Max lift 3,200 lbs - 6 hr day rate + hourly	\$ 36,000.00	\$ 76,000.00	\$ 56,000.00
5.25.3	Mobilization/demobilization is priced by the hourly rate for each helicopter - 6 hours/each	\$ 15,000.00	\$ 54,000.00	\$ 34,500.00
5.26.0	<b>Equipment Rental</b>			
5.26.1	Crane - Ave 8 hour hook time based on tower height, miles, size, hourly rate	\$ 1,450.00	\$ 30,450.00	\$ 15,950.00
5.26.2	Bucket Truck (day rate) - dependent on location	\$ 937.50	\$ 1,250.00	\$ 1,093.75
5.26.3	Manlift or Boomlift 45-135' (day rate) - dependent on location	\$ 395.00	\$ 2,359.47	\$ 1,377.24
5.26.4	Manlift or Boomlift 45-135' (week rate) - dependent on location	\$ 869.00	\$ 7,524.54	\$ 4,196.77
5.26.5	Manlift or Boomlift 45-135' (monthly rate) - dependent on location	\$ 1,777.00	\$ 10,833.00	\$ 6,305.00
5.26.6	Gin Pole Cost (per job)	\$ 7,725.49	\$ 32,447.07	\$ 20,086.28
5.26.7	Matting for Temporary Roads - Grid Mats Cost per 100ft	\$ 2,500.00	\$ 7,500.00	\$ 5,000.00
5.26.8	Snow Removal Equipment – per vehicle	\$ 500.00	\$ 1,500.00	\$ 1,000.00
5.26.9	Prime Mover or Similar for Towing - per vehicle	\$ 2,500.00	\$ 10,000.00	\$ 6,250.00

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5.26.10	Straight Truck or Similar for Counterweight - per vehicle	\$ 500.00	\$ 2,000.00	\$ 1,250.00
5.26.11	Forklift of Similar for Component Transport - per vehicle	\$ 500.00	\$ 2,000.00	\$ 1,250.00
5.28.0	<b>Virtual/Cloud Core Deployment</b>			
5.28.1	Cloud - Virtual EPC (SAE-GW, Firewall, Carrier Grade NAT, eCGF, MME, PCRF, up to 10k subscribers)	\$ 150,000.00	\$ 1,324,893.00	\$ 737,446.50
5.28.2	Cloud - Virtual EPC (SAE-GW, Firewall, Carrier Grade NAT, eCGF, MME, PCRF, up to 50k subscribers)	\$ 1,324,893.00	\$ 1,852,250.00	\$ 1,588,571.50
5.28.3	Cloud - Virtual EPC (SAE-GW, Firewall, Carrier Grade NAT, eCGF, MME, PCRF, >200k subscribers)	\$ 1,852,250.00	\$ 2,401,168.00	\$ 2,126,709.00
5.28.4	Cloud - Virtual IMS (CTAS, IMS Core, MRF, AGW, A-SBC, HSS, ePDG, I-SBC, DRA, PCRF, 4G EPC, E-CSCF, LI interface, SMSC, MMSC, VM), up to 10k subscribers	\$ 500,000.00	\$ 1,497,230.00	\$ 998,615.00
5.28.5	Cloud - Virtual IMS (CTAS, IMS Core, MRF, AGW, A-SBC, HSS, ePDG, I-SBC, DRA, PCRF, 4G EPC, E-CSCF, LI interface, SMSC, MMSC, VM), up to 100k subscribers	\$ 1,325,000.00	\$ 2,354,630.00	\$ 1,839,815.00
5.28.6	Cloud - Virtual IMS (CTAS, IMS Core, MRF, AGW, A-SBC, HSS, ePDG, I-SBC, DRA, PCRF, 4G EPC, E-CSCF, LI interface, SMSC, MMSC, VM), >200k subscribers	\$ 2,150,000.00	\$ 3,000,000.00	\$ 2,575,000.00
5.29.0	<b>GPON/XGS (FTTH) Deployments</b>			
5.29.1	Backbone WDM/optical transport networking equipment – (per network)	\$ 75,000.00	\$ 300,000.00	\$ 187,500.00
5.29.2	Deployment - Cloud Computing – (per network)	\$ 50,000.00	\$ 20,000,000.00	\$ 10,025,000.00
5.29.3	Deployment - Optical Transmission – (per network)	\$ 50,000.00	\$ 20,000,000.00	\$ 10,025,000.00
5.29.4	Deployment - Data Transmission – (per network)	\$ 15,000.00	\$ 10,000,000.00	\$ 5,007,500.00
5.29.5	Deployment - GPON/XGS EMS – FTTH – (per network)	\$ 10,000.00	\$ 100,000.00	\$ 55,000.00
5.29.6	RAN EMS Deployment – (per network)	\$ 200,000.00	\$ 750,000.00	\$ 475,000.00
5.30.0	<b>Location (Facility) Upgrades for New Equipment</b>			
5.30.1	Research to ensure compliance with tower standards (ANSI/TIA-222-H) due to modifications triggering non-compliant towers to comply - (3-5 hours per site)	\$ 1,500.00	\$ 2,500.00	\$ 2,000.00
5.30.2	Due diligence review of modifications/upgrades for compliance with FCC NEPA rules, including Section 106 Review, and FAA and ASR rules (3-5 hours per site)	\$ 1,500.00	\$ 2,500.00	\$ 2,000.00

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5.30.3	Depending on spectrum licenses, preparation and submission of any required FCC applications for modifications for facility upgrades, equipment changes, and preparation of any FAA applications and ASR applications for structure modifications or lighting changes - (2-4 hours)	\$ 1,000.00	\$ 2,000.00	\$ 1,500.00
5.30.4	Preparation and submission of any required post-construction filings including notifications to FAA and FCC of completion of construction, and any required application filings for spectrum applications or licenses - (2-4 hours)	\$ 1,000.00	\$ 2,000.00	\$ 1,500.00
5.31.0	<b>Field Engineering</b>			
5.31.1	Optical Fiber Optic Characterization - 8 Strands	\$ 6,634.00	\$ 6,634.00	\$ 6,634.00
5.31.2	Onsite Sr. Optical Engineer Support (40 hours)	\$ 19,049.00	\$ 19,049.00	\$ 19,049.00
5.31.3	Remote Sr Optical Engineer Support (40 hours)	\$ 12,536.00	\$ 12,536.00	\$ 12,536.00
5.32.0	<b>Off-site Integration &amp; Staging</b>			
5.32.1	NAIC Integration Add-on for UPS, Router, Switch, Server, Appliance, Storage 10RU+ per Device (from 5 to 15 devices)	\$ 3,135.00	\$ 6,051.00	\$ 4,593.00
5.32.2	NAIC Integration Add-on for UPS, Router, Switch, Server, Appliance, Storage Up to 9RU per Device (10 - 20 devices)	\$ 3,664.00	\$ 4,683.00	\$ 4,173.50
5.32.3	Optical 2-Slot to 16 Slot Level 1 Staging	\$ 5,267.00	\$ 5,283.00	\$ 5,275.00
5.33.0	<b>Lab Testing - Interoperability Testing and Compliance for New Equipment</b>			
5.33.1	Engineering consulting for network planning & scenario analysis (remote per week)	\$ 15,241.00	\$ 22,862.00	\$ 19,051.50
5.33.2	IoT (Interoperability testing) for RAN & Core compatibility (per network)	\$ 80,000.00	\$ 336,000.00	\$ 208,000.00
5.33.3	IoT (Interoperability testing) for RAN compatibility (per network)	\$ 80,000.00	\$ 336,000.00	\$ 208,000.00
5.33.4	Contract review - (2-4 hours)	\$ 1,000.00	\$ 2,000.00	\$ 1,500.00
5.34.0	<b>National Environmental Policy Act (NEPA) &amp; National Historic Preservation Act (NHPA)</b>	\$ 1,300.00	\$ 1,550.00	\$ 1,425.00
5.34.1	Due Diligence Review for compliance with FCC NEPA and Section 106 rules for colocation - (3-5 hours per site)	\$ 1,500.00	\$ 2,500.00	\$ 2,000.00

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5.34.2	Legal Review for Environmental Consultant SOWs for NEPA and Section 106. and all work related - (2-3 hours per site)	\$ 1,000.00	\$ 1,500.00	\$ 1,250.00
5.34.3	Regulatory Management (per site)	\$ 1,000.00	\$ 1,200.00	\$ 1,100.00
5.35.0	<b>Attorney</b>			
5.35.1	Negotiate and review vendor contracts - (6-12 hours per contract)	\$ 3,000.00	\$ 6,000.00	\$ 4,500.00
5.35.2	Legal review of Environmental Consultant Contracts and SOWs for Phase I Environmental Review - (1-3 hours per contract)	\$ 500.00	\$ 1,500.00	\$ 1,000.00
5.35.3	Preparation of any required FAA and ASR filings - (5-8 hours per application)	\$ 2,500.00	\$ 4,000.00	\$ 3,250.00
5.35.4	Legal fees for research and preparation and filing for any zoning or local permitting requirements - (3-4 hours per site)	\$ 1,500.00	\$ 2,000.00	\$ 1,750.00
5.35.5	Review insurance requirements and OSHA standards for tower climbers - (3-6 hours)	\$ 1,500.00	\$ 3,000.00	\$ 2,250.00
5.35.6	Spectrum acquisition agreement - (4-8 hours per contract)	\$ 2,000.00	\$ 4,000.00	\$ 3,000.00
5.35.7	Review contracts for proper insurance, indemnification, liability and risk management - (2-4 hours)	\$ 1,000.00	\$ 2,000.00	\$ 1,500.00
5.35.8	Review contracts for disposal to ensure compliance with law and liability related issues - (2-4 hours per contract)	\$ 1,000.00	\$ 2,000.00	\$ 1,500.00
5.35.9	Review of applicable tax code (2-4 hours per inquiry)	\$ 1,000.00	\$ 2,000.00	\$ 1,500.00
5.36.0	<b>Legal Fees Zoning/Permitting issues</b>			
5.36.1	Zoning and Permitting determination (per site)	\$ 500.00	\$ 823.25	\$ 661.63
5.36.2	Zoning drawing (per site)	\$ 2,000.00	\$ 2,606.96	\$ 2,303.48
5.36.3	Zoning Approval (per site)	\$ 1,800.00	\$ 2,881.38	\$ 2,340.69
5.36.4	Attendance at additional zoning hearings	\$ 1,150.00	\$ 1,400.00	\$ 1,275.00
5.36.5	Complex zoning (including attendance at 2 hearings)	\$ 4,433.61	\$ 5,750.00	\$ 5,091.81
5.36.6	Completion and submittal of permit (building or electrical) (per site)	\$ 1,330.08	\$ 1,650.00	\$ 1,490.04
5.36.7	Permit Pickup (per site)	\$ 665.04	\$ 900.00	\$ 782.52
5.36.8	Legal fees for research and preparation and filing for any zoning or local permitting requirements (per site)	\$ 1,500.00	\$ 2,000.00	\$ 1,750.00
5.36.9	Jurisdictional Fees (per site)	\$ 3,500.00	\$ 4,250.00	\$ 3,875.00
5.36.10	Phase 1 ESA (per site)	\$ 1,800.00	\$ 4,665.09	\$ 3,232.55

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5.36.11	NEPA/SHPO Checklist only (per site)	\$ 416.76	\$ 515.90	\$ 466.33
5.36.12	Photo Simulation (per site)	\$ 1,350.00	\$ 1,650.00	\$ 1,500.00
5.36.13	Negotiation & Review of RF engineering contracts – (2-4 hours per contract)	\$ 1,000.00	\$ 2,000.00	\$ 1,500.00
<b>5.37.0</b>	<b>Legal Fees Zoning/Permitting Issues - Microwave</b>			
5.37.1	FCC Licensing - Microwave - (1-2 hours)	\$ 500.00	\$ 1,000.00	\$ 750.00
5.37.2	New facilities - (1-2 hours)	\$ 500.00	\$ 1,000.00	\$ 750.00
5.37.3	Modify facilities - (4-6 hours)	\$ 2,000.00	\$ 3,000.00	\$ 2,500.00
5.37.4	Requests for Special Temporary Authority - (6-8 hours)	\$ 3,000.00	\$ 4,000.00	\$ 3,500.00
5.37.5	Rule Waivers - (4-6 hours)	\$ 2,000.00	\$ 3,000.00	\$ 2,500.00
5.37.6	Spectrum Leasing (De Facto) - (2-4 hours)	\$ 1,000.00	\$ 2,000.00	\$ 1,500.00
5.37.7	FCC legal review and application filings - Fixed Wireless Link Replacement (2-4 hours)	\$ 1,000.00	\$ 2,000.00	\$ 1,500.00
<b>5.38.0</b>	<b>Disposal Costs/Logistics</b>			
5.38.1	Staging, transportation, warehousing and disposal (per site)	\$ 1,992.00	\$ 5,000.00	\$ 3,496.00
5.38.2	Decommission - Up to (3) antennas (6) runs of coax, mounts and miscellaneous hardware from tower top to inside the shelter to QWS	\$ 3,125.00	\$ 9,169.72	\$ 6,147.36
5.38.3	Decommission - Up to (9) antennas (12) runs of coax, mounts and miscellaneous hardware from tower top to inside the shelter to QWS	\$ 5,625.00	\$ 21,249.53	\$ 13,437.27
5.38.4	Decommission - Each additional antenna (including) , associated mount, line and miscellaneous hardware.	\$ 438.45	\$ 625.00	\$ 531.73
5.38.5	Decommission - Microwave antenna (including), associated mount, elliptical line and miscellaneous hardware.	\$ 1,687.50	\$ 6,058.12	\$ 3,872.81
5.38.6	Decommission In Shelter - 2nd eNodeB Rack, duplexers w/mount, RF coax jumpers:	\$ 1,437.50	\$ 4,293.98	\$ 2,865.74
5.38.7	Decommission - existing hybrid cable	\$ 898.39	\$ 5,174.72	\$ 3,036.56
5.38.8	Decommission - remove waveguide, fiber, CAT5/6, coaxial cable up to 1 5/8" (per foot)	\$ 1.04	\$ 6.75	\$ 3.90
5.38.9	Decommission - one outdoor cabinet	\$ 1,891.00	\$ 3,619.97	\$ 2,755.49
5.38.10	Decommission - Indoor 19" Rack with existing legacy BBU	\$ 4,071.65	\$ 6,333.68	\$ 5,202.67
5.38.11	Decommission - Indoor 19" Rack with up two battery strings	\$ 4,316.48	\$ 6,714.53	\$ 5,515.51
5.38.12	Decommission - Single antenna	\$ 317.18	\$ 401.93	\$ 359.56

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5.39.0	<b>Compliant Disposal</b>			
5.39.1	Inventory, processing, destruction, disposal, recycling reporting and certification of Recycling - Citing ITAR (per site) - Transport not included	\$ 900.00	\$ 3,000.00	\$ 1,950.00
5.40.0	<b>FCC Filing Fees</b>			
5.40.1	New, Modification (Microwave) - per call sign (with\$250 regulatory fee)	\$ 555.00	\$ 555.00	\$ 555.00
5.40.2	Modify facilities - per call sign	\$ 140.00	\$ 305.00	\$ 222.50
5.40.3	Extension of Construction Authority (Microwave) - per call sign	\$ 110.00	\$ 110.00	\$ 110.00
5.40.4	Duplicate License (Microwave) - per call sign	\$ 70.00	\$ 70.00	\$ 70.00
5.40.5	Requests for Special Temporary Authority (Microwave) - Fee Exempt (per link)	\$ 140.00	\$ 140.00	\$ 140.00
5.40.6	Rule Waivers/Spectrum Leasing for new or sublease, Transfer of Control of a Lessee or a Sublessee or Extend Term of a Lease or Sublease (Microwave/Broadband 2.5GHz) - per call sign -\$70 each additional	\$ 110.00	\$ 110.00	\$ 110.00
5.40.7	Major modification for spectrum leasing (Microwave/Broadband 2.5GHz) - per lease ID	\$ 305.00	\$ 305.00	\$ 305.00
5.40.8	New, Modification or Major Modification (Broadband 2.5GHz) - per call sign	\$ 305.00	\$ 305.00	\$ 305.00
5.40.9	Certification of Completion of Construction (Broadband 2.5GHz) - per call sign	\$ 895.00	\$ 895.00	\$ 895.00
5.40.10	Extension of Construction Authority (Broadband 2.5 GHz) - per call sign	\$ 305.00	\$ 305.00	\$ 305.00
5.40.11	Special Temporary Authority (Broadband 2.5 GHz) - per call sign or Market/Channel Block	\$ 140.00	\$ 140.00	\$ 140.00
5.40.12	New, Additional Facility, Major Modification (Cellular Radiotelephone) - per call sign	\$ 450.00	\$ 450.00	\$ 450.00
5.40.13	Minor Modification (Cellular Radiotelephone) - per call sign	\$ 120.00	\$ 120.00	\$ 120.00
5.40.14	Special Temporary Authority (Cellular Radiotelephone) - per request	\$ 395.00	\$ 395.00	\$ 395.00
5.40.15	Spectrum Leasing for new or sublease / Assignment of authorization or Transfer of Control (Full or Partial) / Transfer of Control of a Lessee or a Sublessee, Extend Term of a Lease or Sublease or Major Modification for Spectrum Leasing (Cellular Radio Telephone) - per call sign/lease	\$ 450.00	\$ 450.00	\$ 450.00
5.40.16	Minor modification for spectrum leasing (Cellular Radiotelephone) - per lease ID	\$ 120.00	\$ 120.00	\$ 120.00
5.40.17	Domestic 214 Application -\$1,155.00	\$ 1,155.00	\$ 1,155.00	\$ 1,155.00



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5.41.0	<b>Tariff Filings</b>			
5.41.1	Tariff Filing Fee (per transmittal or cover letter)	\$ 925.00	\$ 925.00	\$ 925.00
5.41.2	Application for Special Permission Filing (request for waiver of any rule in Part 61)	\$ 925.00	\$ 925.00	\$ 925.00
5.41.3	Waiver of Part 69 Tariff Rules (per request)	\$ 925.00	\$ 925.00	\$ 925.00
5.42.0	<b>Accounting</b>			
5.42.1	Review of Depreciation Update Study (single state)	\$ 35,000.00	\$ 40,000.00	\$ 37,500.00
5.42.2	Each Additional State	\$ 1,285.00	\$ 1,285.00	\$ 1,285.00
5.42.3	Petition for Waiver (per petition)	\$ 8,000.00	\$ 9,000.00	\$ 8,500.00
5.42.4	Part 36 Separation Rules (per request)	\$ 8,000.00	\$ 9,000.00	\$ 8,500.00
5.43.0	<b>Security - Onsite</b>			
5.43.1	Fence/Compound Work (per site)	\$ 6,000.00	\$ 19,003.20	\$ 12,501.60
5.43.2	Security Guard - Hourly Rate	\$ 25.00	\$ 45.00	\$ 35.00
5.44.0	<b>Snow Cat Usage (8-12 hours day, plus operator expense)</b>	\$ 1,590.00	\$ 2,310.00	\$ 1,950.00
5.45.0	<b>Storage, Warehousing, Material Handling</b>			
5.45.1	Contract review & negotiations (2-4 hours)	\$ 1,000.00	\$ 2,000.00	\$ 1,500.00
5.45.2	Logistics and Material Management & Warehousing (per site)	\$ 500.00	\$ 21,429.00	\$ 10,964.50
5.45.3	Kitting (per site) (receive products from multiple OEMs and suppliers and integrate the related items into a single package, pallet or other format as desired)	\$ 125.00	\$ 1,200.00	\$ 662.50
5.45.4	Storage (monthly)	\$ 4,000.00	\$ 6,000.00	\$ 5,000.00
5.46.0	<b>KPIs Pre &amp; Post Installation Support</b>			
5.46.1	Pre and post swap cluster KPI monitoring (per site)	\$ 1,652.00	\$ 3,000.00	\$ 2,326.00
5.47.0	<b>Drive Testing - Signal Strength Verification</b>			
5.47.1	Pre and post swap cluster drive testing (per site)	\$ 2,677.00	\$ 5,264.00	\$ 3,970.50
5.47.2	Single site verification drive testing (per site)	\$ 1,570.00	\$ 2,856.00	\$ 2,213.00
5.47.3	Troubleshooting (per hour/per man)	\$ 100.00	\$ 392.00	\$ 246.00



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5.47.4	Pre-Launch Cluster Optimization - Pre and Post Drive Test (Up to 12 Carrier) (per site)	\$ 2,600.00	\$ 5,712.00	\$ 4,156.00
5.47.5	Mobility or FWA (non M-MIMO) Ground services base integration, cut over support, call / data test package for site with shelter (per site)	\$ 7,500.00	\$ 10,500.00	\$ 9,000.00
5.47.6	Cluster Optimization (Drive based) for FWA or Mobility (Per Technology (LTE or UMTS)), 10-Site Cluster)	\$ 71,900.00	\$ 77,900.00	\$ 74,900.00
5.47.7	Single site verification stationary testing for FWA (per site)	\$ 4,000.00	\$ 8,000.00	\$ 6,000.00
5.48.0	<b>911 &amp; E911 Services and Drive Test Services (47 CFR § 9.10(i)(2)(i)(B)(4)) (50m x/y)</b>			
5.48.1	Rehome E911 Drive Cost (per Cell Site) - ensuring call connects to right 911	\$ 375.00	\$ 568.00	\$ 471.50
5.48.2	Accuracy Testing (50 meter x/y) (Cost per Test Point, Average about 10 test points per County)	\$ 275.00	\$ 300.00	\$ 287.50
5.48.3	PSAP or County level KPI Accuracy Results Reports (Per Report)	\$ 300.00	\$ 350.00	\$ 325.00
5.48.4	TXT2911 Rehome/Reset (Per Radio Technology, One Time Fee)	\$ 2,000.00	\$ 3,000.00	\$ 2,500.00
5.48.5	VoWiFi Rehome/Reset (Per Radio Technology, One Time Fee)	\$ 4,500.00	\$ 5,500.00	\$ 5,000.00
5.48.6	Mobilization fee (Charge each time tester is moved to a new state or carrier market area)	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00
5.48.7	Stand-by Fee (Per day)	\$ 1,000.00	\$ 1,400.00	\$ 1,200.00
5.48.8	Hosted SMLC Location Server License and Set-up- One Time Fee (“OTF”) (per project)	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00
5.48.9	Hosted SMLC Location Server Monthly Recurring Fee per Cell Site (“MRF”)	\$ 20.00	\$ 30.00	\$ 25.00
5.48.10	Project Management Set-up - One Time Fee (“OTF”) (per site dependent on complexity)	\$ 5,000.00	\$ 10,000.00	\$ 7,500.00
5.48.11	LPM Reporting Tool reset up One Time Fee (“OTF”) Per Radio Technology	\$ 4,500.00	\$ 5,500.00	\$ 5,000.00
5.49.0	<b>End-User Location - Truck roll or self-install (per end-user)</b>	\$ 2,500.00	\$ 12,500.00	\$ 7,500.00
5.49.1	Legal review of customer notices & communications; public relations (2-4 hours)	\$ 1,000.00	\$ 2,000.00	\$ 1,500.00

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5.51.0	<b>Services Specific to: Alaska, American Samoa, Hawaii, Puerto Rico and Virgin Islands Plus 30-50% additional costs for the service items listed in the conterminous (contiguous) United States. Additional taxes, duties and/or custom fees will be required. Freight: requires special transportation charges such as Ferry/Barge</b>			
5.51.1	Mobilization Costs - Virgin Islands (per site)	\$ 14,350.00	\$ 17,250.00	\$ 15,800.00
	<b>Other - (considered eligible, but cannot determine range due to highly variable costs and therefore cannot rely on Catalog for cost estimate)</b>			
2.17.7	Ancillary Tower/Site Material (hangers, grips, hoists, adapters, jumpers, grounding kit, bolts, nuts, washers, ties, lugs, wire, heat shrink, single fiber and power runs, etc.)	\$ 5,000.00		
2.37.3	3G/UMTS MSC, Mobile Switching Center, 3G/UMTS MGC, MGW (up to 50K subs)	\$ 2,000,000.00		
3.5.11	Network Security Equipment			
4.1.10	Network Automation			
5.14.11	Network Integrator Services			
5.27.0	<b>Special Access Sites - Varies by Site/Region</b>			
5.50.0	<b>Taxes - Dependent on location and or exemption</b>			
5.51.2	Hawaii: 40' Flat - 100' Monopoles in Sections   2 Pieces per Platform, Non-Stackable   Max 48' Length, 3.5' Diameter (5 Sites @ 8 Pallets - container(s) needed)	\$ 59,621.00		
5.51.3	Hawaii: 20' Container High Cube - Palletized Outdoor Cabinets with BBU, RRHs, Antenna, EPCs (5 Sites @ 1 Container)	\$ 5,622.00		
5.51.4	Hawaii: Fuel Surcharge - subject to the rate in effect at the time of shipment.	\$ 14,533.00		
5.51.5	Seattle to Dutch Harbor: 1-20' Container Concrete	\$ 6,731.47		
5.51.6	Seattle to Dutch Harbor: 20' Flat - 15K pounds minimum (Rated at \$41.02 per 100 pounds, subject to a minimum of \$34.88 per square foot plus transfer fee)	\$ 6,502.00		
5.51.7	Dutch Harbor: Fuel Surcharge - subject to the rate in effect at the time of shipment	\$ 2,023.28		
5.51.8	Dutch Harbor to Adak: 2-20' Container Concrete and 1-20' Flat	\$ 13,427.40		

Secure and Trusted Communications Networks Reimbursement Program: Final Catalog of Eligible Expenses and Estimated Costs

**Description of Changes in Final Version as Compared to Preliminary Version  
Catalog of Eligible Expenses and Estimated Costs Dated March 25, 2021**

<b>Index</b>	<b>Cost Category/Subcategory Description</b>	<b>Description of Change</b>
1	<b>Access Layer Equipment</b>	
NA	Optical distribution network devices (ODN) - See Metro WDM & OTN	Consolidated cost subcategory with Index 2.7.0 – Distribution WDM & OTN.
1.2.1	Access WDM & OTN equipment, Small network, includes subscription	Decreased the low end of the range of estimated costs from \$83,000.00 to \$3,454.00.
1.3.0	<b>End-User Termination Point - FTTH</b>	Description changed from "CPE - FTTH"
1.3.3	Small Business/SOHO - Distribution Node to Multiple End-User (per node)	Description changed from "Small Business/SOHO CPE"
1.3.4	Large Business/Enterprise - Distribution Node to Multiple End-User (per node)	Description changed from "Large Business/Enterprise CPE"
1.4.0	<b>Multi-Service Access Node and Digital Subscriber Line Access Multiplexing Equipment (MSAN &amp; DLSAM)</b>	
NA	VDSL (Very high-speed Digital Subscriber Line) CPE	Deleted cost category and range of cost estimates.
1.7.0	<b>Home Network and Customer Premises Equipment (CPE)</b>	
1.7.1	CBRS/B48 Category 15 15-19 dBi Gain Outdoor Unit	Description changed from "CPE - CBRS/B48 Category 15 15-19 dBi Gain Outdoor Unit"
1.7.2	CBRS/B48 Category 15 High Gain Indoor Unit	Description changed from CPE - CBRS/B48 Category 15 High Gain Indoor Unit
1.7.3	SAS Integration Costs (per Radio)	Added cost subcategory and range of estimated costs from \$62.00 (low) to \$124.00 (high).
1.8.0	<b>Customer Outreach to End-User - Public Relations/Notification</b>	Description changed from "CPE Swap Messaging/PR"
1.8.2	Smart Home - Reimbursable portions of Smart Homes are in the CPE (other portions: IP cameras, Wi-Fi doorbells, WiFi Routers, Wi-Fi light switches, etc. would not be reimbursable)	Description changed to add "WiFi Routers."

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Index	Cost Category/Subcategory Description	Description of Change
1.9.1	CMTS (per node)	Added cost subcategory and range of estimated costs from \$8,500 (low) to \$16,000 (high).
2.1.1	Small Cell Site Router capable of L2/Ethernet and IP/MPLS with a mix of 1GE (8 or fewer) and 10GE interfaces (2 or fewer)	Added new cost subcategory and range of estimated costs from \$795.00 (low) to \$10,750.00 (high).
2.1.2	Medium Cell Site Router capable of L2/Ethernet and IP/MPLS with a mix of 1GE (20 or fewer) and 10GE interfaces (8 or fewer)	Added new cost subcategory and range of estimated costs from \$1,616.00 (low) to \$19,500.00 (high).
2.1.3	Large Cell Site Router capable of L2/Ethernet and IP/MPLS with a mix of 1GE (24 or fewer), 10GE (24 or fewer), and 100GE interfaces (4 or fewer)	Added new cost subcategory and range of estimated costs from \$2,998.00 (low) to \$13,068.00 (high).
2.1.4	Cell Site Router (1 Gig Port config L2 switch - 10 Gig Port config MPLS (Multiprotocol Label Switching) L3 router)	Increased the low end of the range of estimated costs from \$795.00 to \$1,182.00.
2.7.0	<b>Distribution WDM &amp; OTN</b>	Renamed from "Metro WDM & OTN."
2.7.1	WDM & OTN equipment, Small network, includes subscription (per node)	Added new cost subcategory and range of estimated costs from \$83,000.00 (low) to \$102,000.00 (high).
2.7.2	WDM & OTN equipment, Medium to Large network, includes subscription (per node)	Added new cost subcategory and range of estimated costs from \$165,000.00 (low) to \$330,000.00 (high).
2.11.0	<b>Microwave Antennas - Dual Polarization</b>	Revised cost category description from "Microwave Antennas - Dule Pole."
2.12.0	<b>Microwave Antennas - Dual Polarization – Ultra High Performance</b>	Added new cost category.
2.12.1	0.3 - 1.2 meter (1 - 4 foot)	Added new cost subcategory and range of estimated costs from \$3,490.00 (low) to \$5,250.00 (high).
2.12.2	1.8 - 3.0 meter (6 - 10 foot)	Added new cost subcategory and range of estimated costs from \$7,250.00 (low) to \$30,000.00 (high).
2.14.0	<b>Antenna - LTE (Long Term Evolution) Multi-band, &gt;16dBi</b>	
2.14.2	10 port - 10T10R through 20 port - 20T20R	Revised cost subcategory description.

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Index	Cost Category/Subcategory Description	Description of Change
2.17.0	<b>Hybrid Cable &amp; Radio/Antenna Jumpers, Tower Ancillary Components</b>	Renamed cost category from "Cable Breakout Interconnection - Hybrid Cable."
2.17.1	Cable breakout interconnect 100', maximum of 12 power conductors & 24 fiber	Revised cost subcategory description.
2.17.2	Cable breakout interconnect 200', maximum of 12 power conductors & 24 fiber	Revised cost subcategory description.
2.17.3	Cable breakout interconnect 300', maximum of 12 power conductors & 24 fiber	Revised cost subcategory description.
2.17.4	Cable breakout interconnect 400', maximum of 12 power conductors & 24 fiber	Revised cost subcategory description.
2.17.5	"Raycap" Over-voltage Protection / Fiber Management – each	Added new cost subcategory and range of estimated costs from \$1,500.00 (low) to \$4,000.00 (high).
2.17.6	OVP to radio power/fiber jumpers, coax jumpers (each)	Added new cost subcategory and range of estimated costs from \$190.00 (low) to \$950.00 (high).
2.23.0	<b>LTE BBU (Baseband Units)</b>	
2.23.1	Rack Mounted or Outdoor Mounted baseband unit (BBU)	Revised cost subcategory description.
2.27.0	<b>Rapid Deployed, Self-contained 5G cell site with attached Core</b>	Added new cost category.
2.27.1	HIGH - 5G Fully Integrated, EMP Hardened Cellsite with Mobile Edge compute and embedded 5G Core - 600mhz - 6ghz; 30ghz and up + Counter UAS Radar & Video Surveillance	Added new cost subcategory and range of estimated costs.
2.27.2	MEDIUM - 5G Fully Integrated, EMP Hardened Cellsite with Mobile Edge compute and embedded 5G Core - 600mhz - 6ghz; 30ghz and up + Diverse Backhaul (Free space Optic and/or MM wave)	Added new cost subcategory and range of estimated costs.
2.27.3	LOW - 5G Fully Integrated, EMP Hardened Cellsite with Mobile Edge compute and embedded 5G Core - 600mhz - 6ghz with Fiber Media Gateway	Added new cost subcategory and range of estimated costs.

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Index	Cost Category/Subcategory Description	Description of Change
2.27.4	Solar Cell Site Power Solution (<24 hour solution) - Green Power Solution	Added new cost subcategory and range of estimated costs.
2.27.5	Solar Cell Site Power Solution (24 to 48 hour solution) - Green Power Solution	Added new cost subcategory and range of estimated costs.
2.27.6	Generator -based power Cell Site Power Solution - Green Power Solution	Added new cost subcategory and range of estimated costs.
2.27.7	5G RAN & Core Consulting – per hour	Added new cost subcategory and range of estimated costs.
2.28.0	<b>Bundled BBU/RRH (Base Band Unit/Remote Radio Head)</b>	
NA	<b>Fixed Wireless</b>	
2.28.1	2T2R-8T8R eNodeB with 3 sectors, single spectrum band of up to 20 MHz/sector. Fixed Wireless features. Range due to Low Power radio (20W) vs High Power radio (up to 320W). Price includes Remote Radio Units (RRU), Base Band Unit (BBU), Ancillaries, Software Features, and Capacity Licensing. Price excludes antennas, tower cabling, tower ancillaries and over voltage protection (OVP)	Revised cost subcategory description.
2.28.2	mMIMO eNodeB with 3 sectors, single spectrum band of up to 20 MHz/sector. Fixed Wireless features. Range due to Low Power radio (120W) vs High Power radio (up to 240W). Price includes Radio+Antenna, BBU, Ancillaries, Software Features, and Capacity Licensing. Price excludes tower cabling, tower ancillaries and over voltage protection (OVP)	Revised cost subcategory description.
NA	<b>Mobility Wireless - nonMIMO</b>	
2.28.3	2T2R-8T8R eNodeB with 3 sectors, single spectrum band of up to 20 MHz/sector. Mobility features. Range due to Low Power radio (20W) vs High Power radio (up to 320W). Price includes RRHs, BBU, Ancillaries, Software Features, and Capacity Licensing. Price excludes antennas, tower cabling, tower ancillaries and over voltage protection (OVP)	Revised cost subcategory description.

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Index	Cost Category/Subcategory Description	Description of Change
NA	<b>Mobility Wireless - mMIMO</b>	
2.28.4	mMIMO eNodeB 3 Sector Per Band (64T64R 20 MHz 1 Band - 64T64R 60 MHz 1 Band with Advanced Mobility Features)	Revised cost subcategory description.
2.30.0	<b>SAS Integration Costs (per Radio)</b>	Added new cost category and range of estimated costs.
2.31.0	<b>Open vRAN eNodeB Model is based on single band 50 site cluster. It includes RRU (Remote Radio Unit)/CU (Control Unit)/DU (Distributed Unit)/SW (Software)/NFVi (Network Functions Virtualization infrastructure). SW include all features, power licenses, optional features.</b>	
2.31.1	B71 (3 sector site) or B5 (3 sector) One RRU Type	Reduced the low-end of the range of estimated costs from \$43,225.60 to \$27,016.00.
2.31.2	B41 (3 sector site) One RRU Type	Reduced the low-end of the range of estimated costs from \$45,225.60 to \$28,196.00.
2.31.3	B66 or B4(3 sector) One RRU Type	Reduced the low-end of the range of estimated costs from \$48,233.60 to \$30,146.00.
2.31.4	B2 or B25 (3 sector) One RRU type	Reduced the low-end of the range of estimated costs from \$48,233.60 to \$30,146.00.
2.31.5	B48 One RRU Type	Reduced the low-end of the range of estimated costs from \$44,753.60 to \$27,971.00.
2.31.6	B71/B25 (3 Sector for each RRU) Two RRU Type (dual band per sector)	Reduced the low-end of the range of estimated costs from \$69,049.60 to \$43,156.00.
2.31.7	B71/B12/B41 (3 Sector for each RRU) Three RRU Type (tri-band per sector)	Reduced the low-end of the range of estimated costs from \$101,166.40 to \$63,229.00.
2.32.0	<b>RAN (Open RAN/ vRAN) Components</b>	
2.32.1	RRU - band 71 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	Reduced the low-end of the range of estimated costs from \$8,688.00 to \$5,430.00.
2.32.2	RRU - band 41 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	Reduced the low-end of the range of estimated costs from \$9,104.00 to \$5,690.00.

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Index	Cost Category/Subcategory Description	Description of Change
2.32.3	RRU - band 12 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	Reduced the low-end of the range of estimated costs from \$10,144.00 to \$6,340.00
2.32.4	RRU - band 66 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	Reduced the low-end of the range of estimated costs from \$10,144.00 to \$6,340.00
2.32.5	RRU - band 25 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	Reduced the low-end of the range of estimated costs from \$10,144.00 to \$6,340.00
2.32.6	RRU - band 2 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	Reduced the low-end of the range of estimated costs from \$10,144.00 to \$6,340.00
2.32.7	RRU - band 5 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	Reduced the low-end of the range of estimated costs from \$10,144.00 to \$6,340.00
2.32.8	RRU - band 4 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc.	Reduced the low-end of the range of estimated costs from \$10,144.00 to \$6,340.00
2.32.9	RRU - band 48 - Perpetual license, w/ SW; all-inclusive power, features, carriers etc. SW price is per RRU for B48	Reduced the low-end of the range of estimated costs from \$10,144.00 to \$6,340.00
2.33.0	<b>DU (Distributed Unit)</b>	
2.33.1	Multi-Access Edge Server (indoor)	Revised cost subcategory description.
2.33.2	Multi-Access Edge Server (outdoor)	Revised cost subcategory description.
2.34.0	<b>CU (Control Unit)</b>	
2.34.1	Edge Computing vCompute NODE	Revised cost subcategory description.
2.37.0	<b>GSM&amp;UMTS (Universal Mobile Telecommunications System)</b>	
NA	3G/UMTS MSC, Mobile Switching Center, 3G/UMTS MGC, MGW (up to 50K subs)	Deleted cost subcategory and range of estimated costs.
2.41.0	<b>Indoor Cabinets</b>	
2.41.2	Indoor Power Plants / Rectifiers / Batteries	Added new cost subcategory and range of estimated costs.
3	<b>Core Layer Equipment</b> The Core Layer of the network is the central element that provides services to those elements connected at the access layer of the network. One	



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Index	Cost Category/Subcategory Description	Description of Change
	of the main functions of the core layer is that it is an aggregation point that provides proper routing of all voice and data traffic. All access and distribution layers of the network will be connected to the core via fiber or microwave backhaul connections.	
3.1.0	<b>EPC</b>	
3.1.8	Mobile Position System (MPS) - Medium (60K subs) - Large (500Ksubs)	Added new cost subcategory and range of estimated costs.
3.1.9	PCRF Server - Small, PCRF (up to 50K subs)	Added new cost subcategory and range of estimated costs.
3.1.10	PCRF Server - Small Design, Installation, Commissioning, Integration, Migration Services	Added new cost subcategory and range of estimated costs.
3.2.0	<b>Cloud Core</b>	
3.2.1	Cloud - Virtual EPC (SAE-GW, Firewall, Carrier Grade NAT, eCGF, MME, PCRF, Small Network), includes Design, Installation, Commissioning, Integration Services	Revised cost subcategory description.
3.2.2	Cloud - Virtual EPC (SAE-GW, Firewall, Carrier Grade NAT, eCGF, MME, PCRF, Medium Network), includes Design, Installation, Commissioning, Integration Services	Revised cost subcategory description.
3.2.3	Cloud - Virtual EPC (SAE-GW, Firewall, Carrier Grade NAT, eCGF, MME, PCRF, Large Network), includes Design, Installation, Commissioning, Integration Services	Revised cost subcategory description.
3.3.0	<b>RAN Core / EMS</b>	
3.3.1	IMS and RAN Element Management System, Compact EMS with Basic Licensing, includes hardware (10K to 50K subs), includes Design, Installation, Commissioning, Integration Services	Revised cost subcategory description and revised the range of estimated costs, increasing the low-end cost estimate from \$300,000.00 to \$450,000.00 and increasing the high-end cost estimate from \$525,000.00 to \$1,103,425.00.
3.3.2	IMS and RAN Element Management System, Medium EMS with Basic Licensing, includes hardware (50K to 100K subs), includes Design, Installation, Commissioning, Integration Services	Revised cost subcategory description and revised the range of estimated costs, increasing the low-end cost estimate from \$1,000,000.00 to \$1,500,000.00.

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Index	Cost Category/Subcategory Description	Description of Change
3.3.3	IMS and RAN Element Management System, Large EMS with Premium Licensing, includes hardware (>250 subs), includes Design, Installation, Commissioning, Integration Services	Added new cost subcategory and range of estimated costs.
3.3.4	Packet Core Element Management System, Packet Core EMS (50K subs vs 250K subs), includes hardware (50K to 100K subs), includes Design, Installation, Commissioning, Integration Services	Revised cost subcategory description and revised the range of estimated costs, increasing the low-end from \$150,000.00 to \$250,000.00.
3.3.5	Design, Installation, Commissioning, Integration Services, Packet Core EMS Add-ons	Revised cost subcategory description.
3.3.6	Design, Installation, Commissioning, Integration Services IMS/EMS Add-Ons	Revised cost subcategory description.
3.4.0	<b>WDM &amp; OTN – Core Equipment (Wavelength Division Multiplexing &amp; Optical Transport Network)</b>	
3.4.1	Core Equipment for WDM & OTN (per node)	Consolidated two cost subcategories for "Metro WDM & OTN equipment," "Small" and "Medium to Large" subcategories, into one cost subcategory, revising description, and adding new range of cost estimates.
3.5.0	<b>Core Server Hardware</b>	
3.5.3	NFV Server	Added new cost subcategory and range of estimated costs.
4	<b>Software</b> Instructions that tell a computer what to do. Software comprises the entire set of programs, procedures, and routines associated with the operation of a computer system. Applications include conceiving, specifying, designing, programming, testing, maintenance and developing equipment applications, components or systems that are continuously used.	
NA	Network Automation (Highly Variable)	Moved cost category to new category "Other," but did not include range of estimated costs due to highly variable costs. See Index 4.1.10.
4.1.6	RAN Element Management System (Small EMS with Basic Licensing - Medium EMS with Premium Licensing)	Added new cost subcategory and range of estimated costs.
4.1.8	Per Call Measurement Data Server (PCMD)	Added new cost subcategory and range of estimated costs.

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<b>Index</b>	<b>Cost Category/Subcategory Description</b>	<b>Description of Change</b>
4.1.9	Software Licenses (per radio) to include: M2M, Cat-M1, Narrowband IoT, and similar items	Added new cost subcategory and range of estimated costs.
<b>5</b>	<b>Services</b>	
<b>5.1.0</b>	<b>Preplanning</b>	
5.1.1	NTP (Notice to Proceed) Package (per site)	Revised cost category description to add per-unit of measurement.
<b>5.2.0</b>	<b>Site Acquisition</b>	
5.2.1	Existing Colocation (per site, flat fee) – (Low) without A&E, permitting and Legal; (High) full scope	Revised cost category description and added per-unit of measurement.
<b>5.3.0</b>	<b>Site Surveys</b>	
5.3.1	Drone - Visual Inspection (per site)	Revised cost category description to add per-unit of measurement.
5.3.2	Drone - Infrared Inspection - expenses not included (per site)	Revised cost category description to add per-unit of measurement.
5.3.4	Site survey - (from ground) distance to site/complexity of site (including ground measurement) (per site)	Revised cost category description to add per-unit of measurement.
<b>5.4.0</b>	<b>RF Engineering</b>	
5.4.1	Construction Drawings (per site)	Revised cost category description to add per-unit of measurement.
5.4.2	MPE Survey RF Emissions (per site)	Revised cost category description to add per-unit of measurement.
5.4.3	Modeling, Site Design, Performance Troubleshooting, Internal Team Optimization (per site)	Revised cost category description to add per-unit of measurement.
5.4.4	RF Model Tuning - Propagation Model per morphology (Sub Urban, Urban, Dense Urban or Rural)	Added new cost subcategory and range of estimated costs.
5.4.5	Drone - Performance Mapping (RF Measurements) (per site)	Revised cost category description to add per-unit of measurement.
<b>5.6.0</b>	<b>Leasing</b>	
5.6.2	Lease review (per site)	Revised cost category description to add per-unit of measurement.
5.6.3	Attend Scoping Meeting/Coordinate with RF (per site)	Added new cost subcategory and range of estimated costs.
5.6.4	Landlord consent and notice to Landlord (per site)	Added new cost subcategory and range of estimated costs.

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<b>Index</b>	<b>Cost Category/Subcategory Description</b>	<b>Description of Change</b>
5.6.5	Site Plan - (lease exhibit) (per site)	Revised cost category description to add per-unit of measurement.
5.6.6	Co-location application (per site)	Revised cost category description to add per-unit of measurement.
5.7.0	<b>Project Management</b>	
5.7.1	Project Management - carrier internal (per person per month)	Revised cost subcategory description to delete "internal labor."
5.7.5	NOC Staff Augments - (per person per month)	Revised cost category description to add per-unit of measurement.
5.7.6	Transition Planning for Cutover - complexity of equipment changes (per site)	Added new cost subcategory and range of estimated costs.
5.7.7	Transition Planning for Cutover: Optical Network Subscriber and network migration services up to 16 nodes additional for add-on's	Revised cost subcategory description from "Hot/Cold/Warm swap Planning."
5.10.0	<b>Resident Engineer/Staff</b>	
5.10.2	Network Operations - to provide on-site support during and after turn-over – internal labor (per person/per year)	Revised cost subcategory description to delete "internal labor."
5.12.0	<b>Structural Engineering / Tower Studies</b>	
5.12.1	Structural Analysis - complexity of design (per site)	Revised cost category description to add per-unit of measurement.
5.12.2	Mount Analysis - size of tower, complexity of loading scenarios (per site)	Revised cost category description to add per-unit of measurement.
5.12.3	Tower/Mount Mapping (per tower)	Revised cost category description to add per-unit of measurement.
5.13.0	<b>Negotiating with Tower Owners</b>	
5.13.1	Executed Agreement (per site)	Revised cost category description to add per-unit of measurement.
5.13.2	Fully Executed Amendment (per site)	Revised cost category description to add per-unit of measurement.
5.13.3	Fully Executed Amendment - Non-MLA (per site)	Revised cost category description to add per-unit of measurement.
5.14.0	<b>Network Engineering Services</b>	
5.14.2	SCF Creation / WO for new sites up to 12 carriers (per site)	Revised cost category description to add per-unit of measurement.
NA	Network Integrator Services (Highly Variable)	Moved cost category to new category "Other," but did not include range of estimated costs due to highly variable costs. See Index 5.14.11.
5.15.0	<b>Tower/Water Tower/Barn/Rooftop Preparation</b>	

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Index	Cost Category/Subcategory Description	Description of Change
NA	Rip & Replace - Up to (12) New Radios, (6) New Antennas (Install/Swap up to (12) new radios, (6) new antennas with associated jumpers, plumbing/re-plumbing etc. No new hybrid)	Deleted cost subcategory and range of estimated costs.
5.15.11	Raycap Install/Upgrade	Added new cost subcategory and range of estimated costs.
5.15.12	Install Sector Frame	Added new cost subcategory and range of estimated costs.
5.15.13	Installation of outdoor cabinet with one battery string	Added new cost subcategory and range of estimated costs.
5.15.14	Installation of outdoor battery cabinet with two strings of batteries	Added new cost subcategory and range of estimated costs.
5.15.15	Installation of indoor cabinet with one battery string	Added new cost subcategory and range of estimated costs.
5.15.16	Installation of indoor battery cabinet with two strings of batteries	Added new cost subcategory and range of estimated costs.
5.15.17	PDU Installation (tower top, providing PDU)	Added new cost subcategory and range of estimated costs.
5.15.18	DC power plant Install	Added new cost subcategory and range of estimated costs.
5.16.0	<b>Antenna/Radio R&amp;R - Tower up to 200', not water tank</b>	Added new cost category.
5.16.1	Rip & Replace - Up to (3) Antenna Replacement (Install/Swap up to (3) new antennas, with associated jumpers, plumbing/re-plumbing etc.)	Added new cost subcategory and range of estimated costs.
5.16.2	Rip & Replace - Up to (6) Antenna Replacement (Install/Swap up to (6) new antennas, with associated jumpers, plumbing/re-plumbing etc.)	Added new cost subcategory and range of estimated costs.
5.16.3	Rip & Replace - Up to (3) Radios (RRH/RRU) Replacement (Install/Swap up to (3) new radios, with associated jumpers, plumbing/re-plumbing accordingly etc. No new antennas or hybrid)	Added new cost subcategory and range of estimated costs.
5.16.4	Rip & Replace - Up to (6) Radios (RRH/RRU) Replacement (Install/Swap up to (6) new radios, with associated jumpers, plumbing/re-plumbing accordingly etc. No new antennas or hybrid)	Added new cost subcategory and range of estimated costs.
5.16.5	Rip & Replace - Up to (6) New Radios, (3) New Antennas (Install/Swap up to (6) new radios, (3) new antennas with associated jumpers, plumbing/re-plumbing etc. No new hybrid)	Added new cost subcategory and range of estimated costs.

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Index	Cost Category/Subcategory Description	Description of Change
5.16.6	Rip & Replace - Up to (9) New Radios, (3) New Antennas (Install/Swap up to (9) new radios, (3) new antennas with associated jumpers, plumbing/re-plumbing etc. No new hybrid)	Added new cost subcategory and range of estimated costs.
5.16.7	Rip & Replace - Up to (12) New Radios, (6) New Antennas (Install/Swap up to (12) new radios, (6) new antennas with associated jumpers, plumbing/re-plumbing etc. No new hybrid)	Added new cost subcategory and range of estimated costs.
5.16.8	Install/Swap up to (18) new radios, (9) new antennas with associated jumpers, plumbing/re-plumbing accordingly etc. No new hybrid)	Added new cost subcategory and range of estimated costs.
5.20.0	<b>Tower Modifications</b>	
5.20.1	Modification Design (per site)	Revised cost category description to add per-unit of measurement.
5.20.2	Foundation Drawings/Inspection (per site)	Revised cost category description to add per-unit of measurement.
5.20.13	Carrier Relocation BOM (per site)	Revised cost category description to add per-unit of measurement.
5.20.14	Carrier Relocation Civil Work (per site)	Revised cost category description to add per-unit of measurement.
5.20.15	Carrier Relocation L&A Work (per site)	Revised cost category description to add per-unit of measurement.
5.21.0	<b>Site Work</b>	
5.21.11	Installation of new 19" rack in existing shelter	Added new cost subcategory and range of estimated costs.
5.21.13	Install collar mounts (Tri & Quad) V-Booms, (with materials) – (Per Mount)	Added new cost subcategory and range of estimated costs.
5.21.14	Install MOVE platform (with Materials) (Per Mount)	Added new cost subcategory and range of estimated costs.
5.21.16	Re-use/Re-working existing hybrid (Cabling to new equipment and baseband along with required testing) – up to 12 fibers	Added new cost subcategory and range of estimated costs.
5.21.20	Environmental Work (per site)	Revised cost category description to add per-unit of measurement.
5.21.21	Solar Design (per site)	Revised cost category description to add per-unit of measurement.
5.21.22	25-50 Amp Solar Upgrade (Install and Material) (per site)	Revised cost category description to add per-unit of measurement.
5.21.23	75-100 Amp Solar Upgrade (Install and Material) (per site)	Revised cost category description to add per-unit of measurement.
5.21.24	Commissioning and Integration of single technology – per site	Added new cost subcategory and range of estimated costs.

Secure and Trusted Communications Networks Reimbursement Program: Final Catalog of Eligible Expenses and Estimated Costs

<b>Index</b>	<b>Cost Category/Subcategory Description</b>	<b>Description of Change</b>
5.21.25	Closeout Package – Microwave (per link)	Added new cost subcategory and range of estimated costs.
5.21.26	Closeout Package – (per site)	Added new cost subcategory and range of estimated costs.
5.24.0	<b>Tower/Installation Crews</b>	
5.24.1	Mobilization Less than or Equal to 250 Miles (2-4 Member Crew)	Revised the range of cost estimates to increase the high-end cost estimate from \$3,000.00 to \$6,000.00.
5.24.12	Maintenance window work per night/per 3-man crew (per night)	Revised cost subcategory description to add per-unit of measurement.
5.24.13	Microwave Pathing - During Construction (per link)	Revised cost subcategory description to add per-unit of measurement.
5.24.14	Microwave Pathing - Post Construction (per link)	Revised cost subcategory description to add per-unit of measurement.
5.24.15	Microwave Commissioning and Integration (per link)	Revised cost subcategory description to add per-unit of measurement.
5.24.16	Microwave relocation during construction (per site)	Revised cost subcategory description to add per-unit of measurement.
5.26.0	<b>Equipment Rental</b>	
5.26.8	Snow Removal Equipment – per vehicle	Revised cost subcategory description to add per-unit of measurement.
5.26.9	Prime Mover or Similar for Towing - per vehicle	Revised cost subcategory description to add per-unit of measurement.
5.26.10	Straight Truck or Similar for Counterweight - per vehicle	Revised cost subcategory description to add per-unit of measurement.
5.26.11	Forklift of Similar for Component Transport - per vehicle	Revised cost subcategory description to add per-unit of measurement.
5.28.0	<b>Virtual/Cloud Core Deployment</b>	
5.28.5	Cloud - Virtual IMS (CTAS, IMS Core, MRF, AGW, A-SBC, HSS, ePDG, I-SBC, DRA, PCRF, 4G EPC, E-CSCF, LI interface, SMSC, MMSC, VM), up to 100k subscribers	Revised cost subcategory description to add "up to 100k subscribers."
5.29.0	<b>GPON/XGS (FTTH) Deployments</b>	
5.29.1	Backbone WDM/optical transport networking equipment – (per network)	Revised cost subcategory description to add per-unit of measurement.
5.29.2	Deployment - Cloud Computing – (per network)	Revised cost subcategory description to add per-unit of measurement.
5.29.3	Deployment - Optical Transmission – (per network)	Revised cost subcategory description to add per-unit of measurement.
5.29.4	Deployment - Data Transmission – (per network)	Revised cost subcategory description to add per-unit of measurement.
5.29.5	Deployment - GPON/XGS EMS – FTTH – (per network)	Revised cost subcategory description to add per-unit of measurement.

Secure and Trusted Communications Networks Reimbursement Program: Final Catalog of Eligible Expenses and Estimated Costs

<b>Index</b>	<b>Cost Category/Subcategory Description</b>	<b>Description of Change</b>
5.29.6	RAN EMS Deployment – (per network)	Revised cost subcategory description to add per-unit of measurement.
5.33.0	<b>Lab Testing - Interoperability Testing and Compliance for New Equipment</b>	
NA	FOA Testing, E2E Network Interoperability Testing, VoLTE testing, E911 testing, Troubleshooting, Security Validation	Deleted cost subcategory and range of estimated costs by consolidating cost subcategory and cost estimates into line item Index 5.33.1.
5.33.1	Engineering consulting for network planning & scenario analysis (remote per week)	Added new cost subcategory and range of estimated costs.
5.38.0	<b>Disposal Costs/Logistics</b>	
5.38.8	Decommission - remove waveguide, fiber, CAT5/6, coaxial cable up to 1 5/8" (per foot)	Revised the range of cost estimates to decrease the low-end cost estimate from \$104.00 to \$1.04 and decrease the high-end cost estimate from \$675.00 to \$6.75.
5.41.0	<b>Tariff Filings</b>	
5.41.1	Tariff Filing Fee (per transmittal or cover letter)	Revised the range of cost estimates to include a high-end cost estimate of \$925.00.
5.41.2	Application for Special Permission Filing (request for waiver of any rule in Part 61)	Revised the range of cost estimates to include a high-end cost estimate of \$925.00.
5.41.3	Waiver of Part 69 Tariff Rules (per request)	Revised the range of cost estimates to include a high-end cost estimate of \$925.00.
5.42.0	<b>Accounting</b>	
5.42.2	Each Additional State	Revised the range of cost estimates to include a high-end cost estimate of \$1,285.00.
5.43.0	<b>Security - onsite</b>	
5.43.1	Fence/Compound Work (per site)	Revised cost subcategory description to add per-unit of measurement.
5.47.0	<b>Drive Testing - Signal Strength Verification</b>	
5.47.2	Single site verification drive testing (per site)	Revised the range of cost estimates by decreasing the low-end cost estimate from \$1,800.00 to \$1,570.00.



Secure and Trusted Communications Networks Reimbursement Program: Final Catalog of Eligible Expenses and Estimated Costs

Index	Cost Category/Subcategory Description	Description of Change
5.47.5	Mobility or FWA (non M-MIMO) Ground services base integration, cut over support, call / data test package for site with shelter (per site)	Added new cost subcategory and range of estimated costs.
5.47.6	Cluster Optimization (Drive based) for FWA or Mobility (Per Technology (LTE or UMTS)), 10-Site Cluster)	Added new cost subcategory and range of estimated costs.
5.47.7	Single site verification stationary testing for FWA (per site)	Added new cost subcategory and range of estimated costs.
5.48.0	<b>911 &amp; E911 Services and Drive Test Services (47 CFR § 9.10(i)(2)(i)(B)(4)) (50m x/y)</b>	
5.48.6	Mobilization fee (Charge each time tester is moved to a new state or carrier market area)	Revised the range of cost estimates by adding a high-end cost estimate of \$1,000.00.
5.48.8	Hosted SMLC Location Server License and Set-up- One Time Fee ("OTF") (per project)	Revised the range of cost estimates by adding a high-end cost estimate of \$40,000.00 and revised the cost category description of the per-unit of measurement as "per project."
5.48.10	Project Management Set-up - One Time Fee ("OTF") (per site dependent on complexity)	Revised cost subcategory description to add per-unit of measurement as "per site dependent on complexity."
5.49.0	<b>End-User Location - Truck roll or self-install (per end-user)</b>	Description changed from "Customer Premise Equipment (CPE) - Truck roll or self-install"
5.51.0	<b>Services Specific to: Alaska, American Samoa, Hawaii, Puerto Rico and Virgin Islands</b>	
5.51.1	Mobilization Costs - Virgin Islands (per site)	Revised cost subcategory description to add per-unit of measurement as "per site."
NA	<b>Other - Highly Variable Costs</b>	Added new cost category for highly variable costs that could not be quantified for a range of cost estimates.
2.17.7	Ancillary Tower/Site Material (hangers, grips, hoists, adapters, jumpers, grounding kit, bolts, nuts, washers, ties, lugs, wire, heat shrink, single fiber and power runs, etc.)	Cost category moved to this section to consolidate highly variable costs that could not be quantified for a range of costs estimates.
2.37.3	3G/UMTS MSC, Mobile Switching Center, 3G/UMTS MGC, MGW (up to 50K subs)	Cost category moved to this section to consolidate highly variable costs that could not be quantified for a range of costs estimates.

Secure and Trusted Communications Networks Reimbursement Program: Final Catalog of Eligible Expenses and Estimated Costs

Index	Cost Category/Subcategory Description	Description of Change
3.5.11	Network Security Equipment	Cost category moved to this section to consolidate highly variable costs that could not be quantified for a range of costs estimates.
4.1.10	Network Automation	Cost category moved to this section to consolidate highly variable costs that could not be quantified for a range of costs estimates.
5.14.11	Network Integrator Services	Cost category moved to this section to consolidate highly variable costs that could not be quantified for a range of costs estimates.
5.27.0	<b>Special Access Sites - Varies by Site/Region</b>	Cost category moved to this section to consolidate highly variable costs that could not be quantified for a range of costs estimates.
5.50.0	<b>Taxes - Dependent on location and or exemption</b>	Cost category moved to this section to consolidate highly variable costs that could not be quantified for a range of costs estimates.
5.51.2	Hawaii: 40' Flat - 100' Monopoles in Sections   2 Pieces per Platform, Non-Stackable   Max 48' Length, 3.5' Diameter (5 Sites @ 8 Pallets - container(s) needed)	Cost category moved to this section to consolidate highly variable costs that could not be quantified for a range of costs estimates.
5.51.3	Hawaii: 20' Container High Cube - Palletized Outdoor Cabinets with BBU, RRHs, Antenna, EPCs (5 Sites @ 1 Container)	Cost category moved to this section to consolidate highly variable costs that could not be quantified for a range of costs estimates.
5.51.4	Hawaii: Fuel Surcharge - subject to the rate in effect at the time of shipment.	Cost category moved to this section to consolidate highly variable costs that could not be quantified for a range of costs estimates.
5.51.5	Seattle to Dutch Harbor: 1-20' Container Concrete	Cost category moved to this section to consolidate highly variable costs that could not be quantified for a range of costs estimates.
5.51.6	Seattle to Dutch Harbor: 20' Flat - 15K pounds minimum (Rated at \$41.02 per 100 pounds, subject to a minimum of \$34.88 per square foot plus transfer fee)	Cost category moved to this section to consolidate highly variable costs that could not be quantified for a range of costs estimates.
5.51.7	Dutch Harbor: Fuel Surcharge - subject to the rate in effect at the time of shipment	Cost category moved to this section to consolidate highly variable costs that could not be quantified for a range of costs estimates.
5.51.8	Dutch Harbor to Adak: 2-20' Container Concrete and 1-20' Flat	Cost category moved to this section to consolidate highly variable costs that could not be quantified for a range of costs estimates.

**Secure and Trusted Communications Networks  
Reimbursement Program:  
Final List of Categories of Suggested Replacement  
Equipment and Services (Replacement List)**

Federal Communications Commission



August 3, 2021

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## **1. Introduction**

As required by the Secure and Trusted Communications Networks Act of 2019, the following “is a list of . . . categories of replacements of both physical and virtual communications equipment, application and management software and services.” 47 U.S.C. § 1603(d)(1). In preparing this list, communications equipment and services produced or provided by Huawei Technologies Company (Huawei) and ZTE Corporation (ZTE) were identified that would potentially require replacement, removal, and disposal. The Network Categories used for analysis are listed in the five basic areas: Core Layer, Distribution Layer, Access Layer Software and Services.

This is list intended to assist providers of advanced communications services with identifying categories of communications equipment and service potentially requiring replacement in their networks and is not a definitive list of what is considered eligible for reimbursement for costs reasonably incurred for the removal, replacement, and disposal of Huawei and ZTE communications equipment and services under the Secure and Trusted Communications Networks Reimbursement Program. 47 U.S.C. § 1603; 47 CFR §§ 1.50004; 1.50006.

## **2. Access Layer Equipment**

The access layer is responsible for connecting users to their immediate service providers. First, the communications start by enabling users to communicate with the communication system to allow the start of information exchange/transmission. These communications can either be wired or wireless.

### **2.1 Optical line terminal equipment (OLT)**

### **2.2 Optical distribution network devices (ODN)**

### **2.3 Multi-service access node and digital subscriber line access multiplexing equipment (MSAN & DSLAM)**

### **2.4 LAN (Local area network) MDUs (Multi dwelling unit)**

### **2.5 Site Cabinets - Optical Networks Unit (ONU)**

### **2.6 Smart Home - Reimbursable portions of Smart Homes (not including other portions: IP cameras, wi-fi doorbells, wi-fi, light switches, etc.)**

### **2.7 Cable coaxial media converters**

### **2.8 WLAN**

## **2.9 Access WDM & OTN**

### **3. Distribution Layer Equipment**

Middle-mile, backhaul, or RAN (radio access network) equipment layered between the access and core layers of the network in which network traffic management policies are defined and enforced.<sup>1</sup>

#### **3.1 Routers**

#### **3.2 Switches**

#### **3.3 Network security equipment**

#### **3.4 Metro WDM & OTN – (can be deployed in the access, distribution, or core of a network)**

#### **3.5 Microwave**

#### **3.6 Antennas**

#### **3.7 Wireless Networks**

#### **3.8 LAN MDUs**

#### **3.9 Bearer**

#### **3.10 5G**

#### **3.11 LTE FDD & LTE TDD**

#### **3.12 GSM & UMTS**

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<sup>1</sup> See 47 CFR §§ 32.2230, 32.2231, 32.2232.

### **3.13 Small Cell**

### **3.14 Tower Shelter**

### **3.15 Outdoor/Indoor Cabinets**

## **4. Core Layer Equipment**

The Core Layer of the network is the central element that provides services to those elements connected at the access layer of the network. One of the main functions of the core layer is that it is an aggregation point that provides proper routing of all voice and data traffic. All access and distribution layers of the network will be connected to the core via fiber or microwave backhaul connections. Additional services that may exist within the core layer are authentication, call control/switching, and inter-network gateways.

### **4.1 Backbone wave-division multiplexing / optical transport networking equipment**

### **4.2 Metro WDM & OTN – (can be deployed in the access, distribution, or core of a network)**

### **4.3 Microwave**

### **4.4 Antenna**

### **4.5 RAN Core**

### **4.6 Cloud Core & Cloud Computing**

### **4.7 Fiber Infrastructure Network**

### **4.8 Optical Transmission**

### **4.9 Data Transmission**



## **5. Software**

Instructions that tell a computer what to do. Software comprises the entire set of programs, procedures, and routines associated with the operation of a computer system. Applications include conceiving, specifying, designing, programming, testing, maintenance and developing equipment applications, components or systems that are continuously used.

## **6. Services**

For design, implementation, installation, testing, or other costs and/or fees paid to deploy the replacement equipment and/or systems.

## APPENDIX E

### List of Commenters

#### ***Catalog Public Notice Commenters***

	<b>Abbreviation</b>
ADTRAN, Inc.	ADTRAN
Airspan Networks Inc.	Airspan
Competitive Carriers Association	CCA
Ericsson	Ericsson
Mavenir Systems, Inc.	Mavenir
Nokia	Nokia
NTCA—The Rural Broadband Association	NTCA
Rural Wireless Association	RWA
Rural Wireless Broadband Association	RWBA
Santel Communications Cooperative, Inc.	Santel
Telsasoft	Telsasoft
USTelecom—The Broadband Association	USTelecom
Vantage Point Solutions, Inc,	Vantage Point

#### ***Reimbursement Process Public Notice Commenters***

	<b>Abbreviation</b>
ADTRAN, Inc.	ADTRAN
Competitive Carriers Association	CCA
Copper Valley Wireless, Inc.	Cooper Valley Wireless
Mavenir Systems, Inc.	Mavenir
Nokia	Nokia
Rural Wireless Association	RWA
Rural Wireless Broadband Coalition	RWBC