80 South Jefferson Road
Whippany, NJ 07981

Richard A. Askoff
Executive Director – Regulatory

raskoff@neca.org
973 884-8350
fax 973 884-8008

August 27, 2018

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, N.W.
TW-A325
Washington, D.C. 20554

Re: NECA 2019 Modification of the Average Schedule Universal Service High Cost Loop Support Formula, WC Docket No. 05-337

Dear Ms. Dortch:

Attached is *NECA's 2019 Modification of the Average Schedule Universal Service High Cost Loop Support Formula*. This filing contains proposed modifications to the formula used to calculate interstate universal service fund high cost loop expense adjustments for average schedule companies. These average schedule modifications are scheduled to take effect on January 1, 2019 and remain in effect through December 31, 2019.

This *2019 Modification of the Average Schedule Universal Service High Cost Loop Support Formula* has been filed electronically in the above-referenced docket.

Sincerely,

Attachment:
2019 Modification of the Average Schedule Universal Service High Cost Loop Support Formula

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

2019

NECA MODIFICATION OF THE AVERAGE SCHEDULE UNIVERSAL SERVICE HIGH COST LOOP SUPPORT FORMULA

August 27, 2018

NECA
80 South Jefferson Road
Whippany, NJ 07981

NECA MODIFICATION OF THE AVERAGE SCHEDULE
UNIVERSAL SERVICE HIGH COST LOOP SUPPORT FORMULA
EFFECTIVE JANUARY 1, 2019

TABLE OF CONTENTS

Summary i

A. Background 1

B. Procedural Aspects 3

C. Data Used to Develop the Proposed Formula 5

D. HCL Cost per Loop Formula 7

1. Calculation of Categorization Factors from Subset 3 Cost Companies 8

2. Calculation of Loop Cost for Sample Average Schedule Companies 18

3. Cost per Loop Formula for 2019 21

4. Operating Expense Limit Factor for 2019 25

E. HCL Payments for the Population of Average Schedule Companies 27

F. Effects of Changes on Average Schedule Companies 28

G. Conclusion 29

NECA MODIFICATION OF THE AVERAGE SCHEDULE
UNIVERSAL SERVICE HIGH COST LOOP SUPPORT FORMULA
EFFECTIVE JANUARY 1, 2019

TABLE OF CONTENTS

APPENDICES

Appendix A Study Area Code / Study Area Name ..... A-1 to A-7

Appendix B Sample Average Schedule Study Areas – Data Underlying Cost per Loop Formula Development ..... B-1 to B-5

Appendix C Comparison of Current and Proposed Monthly HCL Payments ..... C-1 to C-4

Appendix C1 Model Companies Proposed 2019 USF Loops and Cost per Loop ..... C1-1 to C1-3

NECA MODIFICATION OF THE AVERAGE SCHEDULE
UNIVERSAL SERVICE HIGH COST LOOP SUPPORT FORMULA
EFFECTIVE JANUARY 1, 2019

TABLE OF CONTENTS

EXHIBIT NUMBER	EXHIBIT TITLE	PAGE NUMBER
1	Proposed High Cost Loop (HCL) Formula for 2019	4
2	Allocation of Average Schedule Accounts to Loop Cost Categories	11
3	Adjustment Ratios for Allocation of Total Accumulated Depreciation	16
4	Loop Cost Categorization Factors from Sample Cost Companies	17
5	Allocation of Unseparated Total Accounts to Loop	20
6	Cost per Loop Model	23
7	Proposed Monthly HCL Payment Changes by Loop Size	28
8	Proposed Monthly HCL Payment Changes by Percent Change Bands	29

Summary

In this filing, the National Exchange Carrier Association, Inc. (NECA) proposes modifications to the formula used to calculate Universal Service Fund (USF) high cost loop (HCL) expense adjustments for average schedule companies.[1] This formula and associated cost per loop values are intended to govern HCL payments to average schedule companies eligible for HCL support in the 2019 calendar year.[2]

This filing describes results of NECA's studies to update the HCL Cost per Loop (CPL) formula, which continues to use methods approved by the Commission for determining average schedule USF payments in 2018.[3] As required by the FCC's March 30, 2016 *Rate of Return Reform Order*,[4] NECA continues to incorporate a 25 basis point annual reduction in the rate-of-return (RoR) used to compute the formulas. The *Rate of Return Reform Order* also adopted limits on operating expenses to be recovered through support. Under the proposed formulas, an Operating Expense (Opex) Limit Factor is accordingly applied to average schedule companies' CPL and USF payments.

[1] NECA submits proposed modifications to the average schedule HCL formula on an annual basis. *See National Exchange Carrier Association, Inc. 2005 Modification of Average Schedule Universal Service Formulas*, CC Docket No. 96-45, Order, 19 FCC Rcd. 24998 (2004).

[2] Section 54.1307 of the Commission's rules require all rate-of-return carriers to provide High Cost Loop Support data. The proposed formula and the associated cost per loop values will be used to satisfy these reporting requirements for all carriers, including average schedule companies receiving A-CAM and Alaska Plan support and not eligible to receive HCL support.

[3] *National Exchange Carrier Association, Inc., 2018 Modification of the Average Schedule Universal Service High Cost Loop Support Formula, High-Cost Universal Service Support*, WC Docket No. 05-337, Order, 28 FCC Rcd. 16885 (2017).

[4] *Connect America Fund*, WC Docket No. 10-90, *ETC Annual Reports and Certifications*, WC Docket No. 14-58, *Developing a Unified Intercarrier Compensation Regime*, CC Docket No. 01-92, Report and Order, Order and Order on Reconsideration, and Further Notice of Proposed Rulemaking, 31 FCC Rcd. 3087 (2016) (*Rate of Return Reform Order*).

A. Background

The proposed average schedule HCL formula change is needed to assure payments to average schedule companies will simulate payments received by representative cost companies, as required by section 69.606(a) of the Commission's rules.

NECA proposes herein a formula relating cost per loop data of sample companies to their loops per exchange values (see Exhibit 1) as well as an Opex limit factor to be applied to average schedule companies subject to Opex limits. NECA includes cost per loop amounts based on this formula for every average schedule study area entitled to an expense adjustment pursuant to section 54.1301, in its Annual Universal Service Fund Submission of Study Results. These cost per loop amounts, when used with the payment algorithm prescribed in section 54.1310 of the Commission's rules, will produce HCL payments to individual companies consistent with the Commission's rules.

Annual payments to average schedule companies under the proposed formula will total approximately $7.01 million payable to 102 average schedule study areas in 2019.[5] These payments reflect the maintenance of the cap on the overall fund size. In comparison, payments in 2018 under the current formula are expected to amount to $6.24 million paid to 97 study areas. The proposed payments represent an increase of $0.77 million, about 12.3%, compared to current payments.

[5] This amount is prior to application, where applicable, of USAC adjustments for rate floor, the $3000 support limit and the overall budget control mechanism.

Most of this increase is attributed to the change in payment rules that took effect on July 1, 2015.[6] Under the new payment rules, the fund size is controlled with across-the-board payment cuts rather than by adjusting the NACPL to keep total payments under the cap. The new method of controlling the fund has a smaller impact on lower cost companies, including average schedule companies, than the prior method.

It should be noted the average schedule portion of high cost loop funding is small, in part because average schedule companies generally have costs between 115% and 150% of the frozen National Average Cost per Loop (NACPL), and thus receive support compensating for only a minor portion of their loop costs. HCL funding for all rural companies eligible for HCL Support in 2019 will amount to $572.7 million. If the Commission approves the Cost per Loop formula proposed herein, the $7.01 million in HCL funding made available in 2019 to average schedule companies will represent only 1.2% of the total rural rate-of-return HCL fund. In contrast, there are 158 average schedule study areas, representing 24.2% of the 653 total rural study areas eligible to receive HCL Support.[7]

[6] On December 18, 2014, the FCC issued Report and Order that alters the way the High Cost Loop Support expense adjustments are calculated beginning July 1, 2015. *See Connect America Fund*, WC Docket No. 10-90, *ETC Annual Reports and Certifications*, WC Docket No. 14-58, *Petition of USTelecom for Forbearance Pursuant to 47 U.S.C. § 160(c) from Obsolete ILEC Regulatory Obligations that Inhibit Deployment of Next-Generation Networks*, WC Docket No. 14-192, Report and Order, 29 FCC Rcd. 15644 (2014) ¶¶ 102-114.

[7] A total of 308 cost companies and 130 average schedule companies, receiving ACAM and Alaska Plan support, are not eligible to receive HCLS support in 2019.

B. Procedural Aspects

In preparing proposed formula revisions, NECA receives valuable assistance from the Average Schedule Task Group. This group consists of exchange carrier representatives including members sponsored by industry associations (*e.g.* NTCA – the Rural Broadband Association, USTelecom, and the WTA – Advocates for Rural Broadband). The Task Group meets several times a year, reviews the steps taken in developing proposed average schedule formulas, advises NECA regarding the development of procedures for administration of the formulas, and assists the NECA Board of Directors in evaluating final proposed formulas. Task Group participation assures average schedule companies are able to participate fully in the development of the average schedule formulas, and also have an opportunity to provide input to NECA regarding the ways in which changes in average schedule company networks can affect settlement formulas.

As it has done in the past for each proposed average schedule modification, NECA will provide a statement to each average schedule company advising it of the impacts of these proposed modifications. This detailed, individual notification includes a brief overview of the new formula as well as the factors contributing to changes in a company's support amount (e.g. changes in loop counts and exchange count data). These notifications assure average schedule companies are aware of proposed changes in the support formula and the impact on their settlements to enable them to plan accordingly. NECA also provides data based on this formula to USAC for USF administration.

Exhibit 1

Proposed High Cost Loop (HCL) Formula for 2019

Average Schedule HCL Formula = Cost per Loop Formula x Opex Limit Factor

Cost per Loop Formula

If Loops per Exchange is less than 750, then:

Cost per Loop = $1214.058772- $0.602865 x Loops per Exchange

If Loops per Exchange is greater than or equal to 750 but less than 1,700, then:

Cost per Loop = $877.975779 - $0.154755 x Loops per Exchange

If Loops per Exchange is greater than or equal to 1,700, then:

Cost per Loop = $614.89.

Opex Limit Factor

If exchanges are not subject to section 54.305 rules,[8] then:

Opex limit factor = 0.999933, otherwise:

Opex limit factor = 1.

[8] Per the *Rate of Return Reform Order*, the Opex limit does not apply to acquired exchanges subject to section 54.305 or to study areas entirely composed of acquired exchanges.

C. Data Used to Develop the Proposed Formula

This section describes the data underlying the proposed HCL formula. Data comes from three sources:

1. USF data submitted by the population of Subset 3 study areas settling on a cost basis.
2. Financial accounts and loop data from a sample of average schedule study areas.
3. Access line and exchange count data from the entire population of average schedule study areas.

Subset 3 cost study areas provided categorized account data used to compute cost categorization factors. These data were collected in connection with the 2017 annual USF Data Submission and are available on the compact discs included with that submission.[9]

Account data and loop information were collected from the average schedule study areas sampled in 2016 and 2017. The 2016 sample provided 2015 financial accounts and loop information for 2016. The 2017 sample provided 2016 financial accounts and loop information for 2017. These data were used to determine Universal Service Fund (USF) loop cost values for each company, as described in the next section.

Loop data and access line counts from the sample were used to calculate a loop count value for each sample average schedule company. In the annual collection of data from sample study areas, NECA collects the following loop information to supplement access line counts: company official lines, off-premise extensions and special access lines. NECA calculated the count of

[9] *See 2017 NECA Universal Service Fund Submission of 2016 Study Results,* National Exchange Carrier Association, Inc. (filed Sept. 29, 2017) (*NECA 2017 USF Data Submission*).

USF loops for each sample study area as the sum of access lines, company official lines and off-premises extensions bridged in the central office.

A loops-per-access line ratio was calculated by dividing sample total USF loops by sample total access lines. Totals used in this calculation were weighted using sample weights. Sample weights are used to expand the sample to a population estimate. A study area's sample weight is the reciprocal of the probability of it being included in the sample. The sample weight measures the count of units in the population a member of the sample represents. For example, a study area with a sample weight of three represents three study areas in the average schedule population. An unbiased estimate of the population is achieved by weighting access line data in this manner. This means an estimate developed by this method is expected to neither overestimate nor underestimate the loops-per-access line ratio.

2019 *Fund Loops per Access Line Ratio* = 1.022232

Account and loop data from the sample were projected to December 2017 levels using the methods and growth models developed in NECA's 2017 study and filed in the 2018 NECA Modification of Average Schedules.[10]

[10] The growth rates development method description is included in Section V.B and V.C of NECA's December 2017 settlements formula filing. *See National Exchange Carrier Association, Inc.'s 2018 Modification of Average Schedule Formulas,* WC Docket No. 16-400 (filed Dec. 21, 2017).

Access line[11] data and exchange counts for the population of average schedule study areas were taken from NECA's settlement system for the month of December 2017 based on the June 2018 view. For the purpose of evaluating the proposed formula on each member of the average schedule population, USF loop counts were calculated for each study area using the loops per access line ratio.

$$USF\ \ Loops = Access\ \ Lines \times Loops\ \ per\ \ Access\ \ Line\ \ Ratio$$

USF loops and exchange counts for each average schedule study area are displayed in Appendix C.

D. HCL Cost per Loop Formula

This section describes the derivation of the average schedule Cost per Loop formula and Opex limit factor by:

- Computing categorization factors from Subset 3 cost company data;
- Determining loop costs for sample average schedule study areas using these factors and projected accounts;
- Using sample companies' loop cost and loops per exchange data to derive a statistical regression model; and
- Comparing sample companies' CPL capped by the FCC's Opex limits and actual uncapped

[11] Average schedule companies, participating in the NECA pools, are required to report access line counts to NECA each month based on their billing of End User Common Line (EUCL) charges associated with basic local exchange service. Average schedule companies that do not participate in NECA pools are not required to report monthly access line counts to NECA. Year-end access line count data from these companies is obtained using an annual line count data collection. NECA uses the December line counts to calculate USF loops for all average schedule companies. The resulting loop counts are included in the annual USF data submission filed on October 1st of each year.

CPL to derive an overall Opex limit factor.

These steps are explained in the following four subsections.

1. Calculation of Categorization Factors from Subset 3 Cost Companies

Cost companies submit categorized data to NECA pursuant to section 54.1305 of the Commission's rules.[12] This data was used to compute average USF loop cost categorization factors. Loop cost categorization factors are the cost company fractions of accounts attributed to loop. They were developed from accounts related to Exchange Line Cable and Wire (C&WF) Facilities (Category 1) and Exchange Line Central Office Circuit equipment (Category 4.13).

For example, by computing the ratio of cost company Central Office Equipment (COE) 4.13 investment to total cost company COE investment, NECA developed average categorization factors for Category 4.13 investment. Loop cost categorization factors were developed for each of NECA's five geographical regions, to recognize categorization differences in circuit equipment and cable and wire facilities across regions.

Exhibit 2 summarizes how these categorization factors were computed from cost company data, and how they were used to allocate sample average schedule companies' projected accounts. The first column names the Algorithm line corresponding to instructions in Tab 3 of NECA's Universal Service Fund (USF) 2017 Submission of 2016 Study Results.[13] Algorithm lines AL3, AL4, AL5 and AL6 are categorization factors

[12] Data was taken from the USF Data submission filed with the Commission on Sept. 29, 2017. *See NECA 2017 USF Data Submission*.

[13] *Id*.

defined in the USF submission to apportion unseparated cost accounts to loop. Algorithm lines 13 through 24 are the various cost components of loop cost. Line 25 is the total unseparated loop cost. Line 26 is the cost per loop. Loop cost components are named in the second column in Exhibit 2. The third column is a description of each algorithm line and the last column presents cost categorization formulas used to calculate the value for each sample average schedule company.

Algorithm Lines 23 and 24 in Exhibit 2 use Adjustment Ratios to allocate Total Accumulated Depreciation to C&W Facilities and COE Transmission. This is done to ensure the amount of reserves assigned to loop is in proportion to the amount of investment assigned to loop. The adjustment ratio is calculated as follows:

$$\text{Adjustment Ratio} = \frac{\text{Proportion Of Reserves Allocated To Loop}}{\text{Proportion Of Investment Allocated To Loop}}$$

For example, an adjustment ratio of 0.98794 for Cable & Wire Facilities means the portion of reserves allocated to Loop is 98.79% of the portion of Cable & Wire Facilities investment allocated to Loop. Exhibit 3 describes the derivation of these ratios.

In the *Rate of Return Reform Order* the Commission re-prescribed the 11.25 percent rate of return to 9.75 percent with a 25 basis points reduction per year over a six year transition period. July 1, 2016 was the effective date for the initial transitional rate of 11%. That rule was first implemented in the average schedules CPL formula by an Interim

Modification filed by NECA on May 13, 2016,[14] effective July 1, 2016. The second step of the rate of return transition, to 10.75 percent, was effective July 1 2017. The third step of the rate of return transition, to 10.50 percent was effective July 1, 2018. The fourth step of the rate of return transition, to 10.25 percent will be effective July 1, 2019. Because the 2019 HCL support year encompasses two transitional rate of return reductions, NECA applied a blended rate of return of 10.375 percent when calculating algorithm lines 23 and 24 to estimate cost per loop. This represents a 10.5 percent rate of return in effect for the first six months of 2019 and 10.25 percent for the last six months of 2019.

[14] *NECA 2016 Further Modification of the Average Schedule Universal Service High Cost Loop Support Formula*, WC Docket No. 05-337.

Exhibit 2

Allocation of Average Schedule Accounts to Loop Cost Categories

Algorithm Line	Loop Cost Component	Factor Description	Cost Allocation Formula
AL3		Factor A: C&WF Cat. 1/Total C&WF	Average ratio by region based on cost company data
AL4		Factor B: COE Cat. 4.13/Total COE	Average ratio by region based on cost company data
AL5		Factor C (C&WF Gross Allocator): C&WF Cat. 1/Total Plant in Service	Average ratio by region based on cost company data
AL6		Factor D (COE Gross Allocator): COE Cat. 4.13/Total Plant in Service	Average ratio by region based on cost company data
AL13	C&WF Maintenance	C&WF Maintenance Expense assigned to Cat. 1 C&WF R&B Factor = C&WF R&B Exp. / C&WF Expense	Factor A x (1 - C&WF R&B Factor) x C&WF Expense[15]
AL14	COE Maintenance	COE Maintenance Expense assigned to Cat. 4.13 COE R&B Factor = COE R&B Exp. / COE Expense	Factor B x (1 - COE R&B Factor) x COE Expense
AL15	Network and General Support Expense	Network Support Expense plus General Support Expense assigned to C&WF Cat. 1 and to COE Cat. 4.13 Net. Spt. R&B Factor = Network Spt. R&B Exp. / Network Support Expense Gen. Spt. R&B Factor = General Spt. R&B Exp. / General Support Expense	(Factor C + Factor D) x [(1 - Network Support R&B Factor) x Network Support Expense + (1 - General Support R&B Factor) x General Support Expense]

[15] Amounts underlined are data or calculated values of sample average schedule study areas. Other values are cost company factors.

Exhibit 2

Allocation of Average Schedule Accounts to Loop Cost Categories

Algorithm Line	Loop Cost Component	Factor Description	Cost Allocation Formula
AL16	Network Operations Expense	Network Operations Expense assigned to C&WF Cat. 1 and to COE Category 4.13 Ntwk. Oper. R&B Factor = Ntwk. Oper. R&B Exp. / Ntwk. Oper. Expense	(Factor C + Factor D) x (1 - Network Operations R&B Factor) x Network Operations Expense
AL17	C&WF Depreciation & Amortization Expense	Depreciation & Amortization Expense assigned to C&WF Category 1 Dep. Exp. C&WF Factor = Dep. & Amort. Exp. CWF / C&WF Tangibles -- C&WF = Amort. Tangible Assets -- C&WF / Amort. Tangible Assets Depreciation--Tang. Factor = (Deprec.—Tangibles) / Tangibles	Factor A x [(Depreciation Expense Factor--C&WF x C&WF) + (Depreciation Expense Factor—Tangibles x Tangibles) + (Tangibles Factor -- C&WF x Amort. Tangible Assets)]

Exhibit 2

Allocation of Average Schedule Accounts to Loop Cost Categories

Algorithm Line	Loop Cost Component	Factor Description	Cost Allocation Formula
AL18	COE Depreciation & Amortization Expense	Depreciation & Amortization Expense assigned to COE Category 4.13 Dep. Exp. COE Factor = Dep. & Amort. Exp. COE / COE Tangibles -- COE = Amort. Tangible Assets -- COE / Amort. Tangible Assets Depreciation--Tang. Factor = Deprec.--Tangibles / Tangibles	Factor B x [(Depreciation Expense Factor--COE x COE) + (Depreciation Expense Factor--Tangibles x Tangibles) + (Tangibles Factor -- COE x Amort. Tangible Assets)]
AL19	Corporate Operations Expense	Corporate Operations Expense assigned to C&WF Cat. 1 and to COE Cat. 4.13, limited as per § 54.1308(a)(4)[16]	(Factor C + Factor D) x Corporate Operations Expense

[16] For purposes of the USF Data Submission, Corporate Operations Expenses were subject to the cap imposed by the Commission in its Report and Order and Further Notice of Proposed Rulemaking released November 18, 2011. *Connect America Fund*, WC Docket No. 10-90, *A National Broadband Plan for Our Future*, GN Docket No. 09-51, *et al.*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd. 17663 (2011) ¶¶ 232-233, further modified by the Commission in the March 23, 2018 Order to include consumer broadband-only lines in the calculation of the Corporate Operations Expenses limit formula. See *Connect America Fund*, WC Docket No. 10-90, *ETC Annual Reports and Certifications*, WC Docket No. 14-58, *Establishing Just and Reasonable Rates for Local Exchange Carriers*, WC Docket No. 07-135, *Developing a Unified Intercarrier Compensation Regime*, CC Docket No. 01-92, Report and Order, Third Order on Reconsideration, and NPRM, FCC 18-29 (rel. Mar. 23, 2018) (*March 23, 2018 Order*).

Exhibit 2

Allocation of Average Schedule Accounts to Loop Cost Categories

Algorithm Line	Loop Cost Component	Factor Description	Cost Allocation Formula
AL20	Operating Taxes	Operating Taxes assigned to C&WF Cat. 1 and to COE Cat. 4.13 Operating Taxes Factor = Operating Taxes / Total Plant in Service	(Factor C + Factor D) x Operating Taxes Factor x Total Plant in Service
AL21 + AL22	Benefits & Rents	Benefits & Rents other than Corporate Operations Expense assigned to C&WF Cat. 1 and COE Cat. 4.13 C&WF R&B Factor = C&WF R&B Expense / C&WF Expense COE R&B Factor = COE R&B Expense / COE Expense Net. Sup. R&B Factor = Network Sup. R&B Exp. / Network Support Expense Gen. Sup. R&B Factor = General Sup. R&B Exp. / General Support Expense	(Factor C + Factor D) x [(C&WF R&B Factor x C&WF Expenses) + (COE R&B Factor x COE Expenses) + (Net. Sup. R&B Factor x Net. Sup. Expenses) + (General Sup. R&B Factor x General Sup. Expenses) + (Net. Op. R&B Factor x Net. Op. Expenses)]

Exhibit 2

Allocation of Average Schedule Accounts to Loop Cost Categories

Algorithm Line	Loop Cost Component	Factor Description	Cost Allocation Formula
AL23	C&WF Return	Return Component for C&WF Cat. 1 C&WF Cat. 1 Factor = C&WF Cat. 1 / C&WF Tangibles -- C&WF Factor = Tangibles --C&WF / Tangibles Accum. Dep. Adj. Ratio -- C&WF (See Exhibit 3)	{(C&WF Cat. 1 Factor x C&WF) + (Tangibles Factor--C&WF x Tangibles) + (Factor C x Materials & Supplies) - Factor A x [(Accum. Dep. Adj. Ratio – C&WF x Acc. Dep. x %C&WF of TPIS) + (Net N.C. D. OIT Factor--C&WF x TPIS) + (Tangibles Factor--C&WF x Acc. Amo.-Tangibles)]} x 0.10375
AL24	COE Return	Return Component for COE Cat. 4.13 COE Cat. 4.13 Factor = COE Cat. 4.13 / COE Tangibles -- COE Factor = Tangibles --COE / Tangibles Accum. Dep. Adj Ratio -- COE. (See Exhibit 3)	{(COE Cat. 4.13 Factor x COE) + (Tangibles Factor--COE x Tangibles) + (Factor D x Materials & Supplies) - Factor B x [(Accum. Dep. Adj Ratio -- COE x Acc. Dep x %COE of TPIS) + (Net N.C. Def. OIT Factor --COE x TPIS) + (Tangibles Factor--COE x Acc. Amo.-Tangibles)]} x 0.10375
AL25	Loop Costs	Total Unseparated Loop Cost	Sum of AL13 -- AL24
AL26	Cost Per Loop	Study Area Cost per Loop	AL25 Divided by Total Loops

Exhibit 3

Adjustment Ratios for Allocation of Total Accumulated Depreciation

Description	Calculation	Factor name
COE Transmission fraction of TPIS	Sum DL240 / Sum DL160	TPIS % 2230
C&W Facilities fraction of TPIS	Sum DL255 / Sum DL160	TPIS % 2410
COE Transmission fraction of Tot. Acc. Dep.	Sum DL270 / Sum DL190	ACCT 3100 % 2230
C&W Facilities fraction of Tot. Acc. Dep.	Sum DL280 / Sum DL190	ACCT 3100 % 2410
Adjustment Ratio for COE Transmission.	ACCT 3100 % 2230 / TPIS % 2230	Accum. Dep. Adj. Ratio - COE
Adjustment Ratio for C&W Facilities.	ACCT 3100 % 2410 / TPIS % 2410	Accum. Dep. Adj. Ratio - C&WF

DL240 = COE Transmission (Acct 2230)
DL255 = C&WF Total (Acct 2410)
DL160 = Total Plant in Service (TPIS)
DL270 = Accumulated Depreciation - COE Transmission Equipment
DL280 = Accumulated Depreciation - Cable & Wire Facilities
DL190 = Accumulated Depreciation

Exhibit 4 displays the computed values of the loop cost categorization factors from sample cost companies, in each of NECA's five geographical regions.[17]

[17] Regions are defined by groups of states or territories as follows:
REGION 1 (Eastern): CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, PR, RI, VA, VI, VT, WV
REGION 2 (Southern): AL, FL, GA, KY, LA, MS, NC, SC, TN
REGION 3 (Southwestern): AR, HI, IL, IN, KS, MI, MO, MP, OH, OK, TX, WI
REGION 4 (Western): AK, AS, AZ, CA, CO, GU, ID, MT, NM, NV, OR, UT, WA, WY
REGION 5 (North Central): IA, MN, ND, NE, SD

Exhibit 4

Loop Cost Categorization Factors from Sample Cost Companies

FACTOR	REGION1	REGION2	REGION3	REGION4	REGION5
FACTOR A	0.90027	0.91878	0.86826	0.87569	0.89718
FACTOR B	0.35632	0.48226	0.50181	0.47599	0.47183
FACTOR C	0.50980	0.60206	0.58099	0.54685	0.56554
FACTOR D	0.10402	0.11226	0.10927	0.11387	0.11500
C&WF RENTS & BENEFITS	0.34582	0.32791	0.29063	0.28173	0.27749
COE RENTS & BENEFITS	0.10618	0.14509	0.16933	0.17336	0.18569
TANGIBLES - C&WF	0.00000	0.19178	0.51539	0.03268	0.47075
TANGIBLES - COE TRANSMISSION	0.00000	0.07162	0.00000	0.06063	0.40167
TANGIBLES - COE CATEGORY 4.13	0.00000	0.03873	0.00000	0.03690	0.09047
ACCUMULATED DEPRECIATION - C&WF	0.56298	0.61905	0.61503	0.58506	0.53553
ACCUMULATED DEPRECIATION - COE TRANS.	0.19649	0.23162	0.21945	0.22814	0.27783
NET NON-CURR DEF FIT-C&WF- Commercial Comp.	0.02290	0.02111	0.03065	0.02179	0.02993
NET NON-CURR DEF FIT-C&WF- Coops	0.00000	0.00000	0.00000	0.00000	0.00000
NET NON-CURR DEF FIT-COE TRANS.- Comm Comp.	0.00750	0.00724	0.00702	0.00700	0.00990
NET NON-CURR DEF FIT-COE TRANS.- Coops	0.00000	0.00000	0.00000	0.00000	0.00000
NETWORK SUPPORT RENTS & BENEFITS	0.04090	0.17928	0.15903	0.20535	0.28852
GENERAL SUPPORT RENTS & BENEFITS	0.15160	0.17226	0.22671	0.35443	0.19207
NETWORK OPERATIONS BENEFITS	0.17192	0.19511	0.23696	0.26748	0.24401
DEPRECIATION EXPENSE - C&WF	0.03901	0.03934	0.03739	0.03848	0.04092
DEPRECIATION EXPENSE -COE TRANSMISSION	0.06174	0.07118	0.07303	0.07279	0.07743
DEPRECIATION - TANGIBLES	0.00000	0.18514	0.02577	0.02646	0.00000
ACCUM. DEP. ADJ. RATIO - COE	1.01462	1.16429	1.21452	1.13800	1.31624
ACCUM. DEP. ADJ. RATIO - C&WF	0.98794	0.93625	0.91097	0.91843	0.82881
OPERATING INCOME TAX - Cooperatives	0.00489	0.00432	0.00456	0.00546	0.00346
OPERATING INCOME TAX-Commercial Companies	0.00487	0.01469	0.01214	0.01124	0.00792

2. Calculation of Loop Cost for Sample Average Schedule Companies

NECA calculated loop costs for sample average schedule companies consistent with the Part 54 rules that apply to cost companies. Accordingly, for each average schedule study area in the sample, the loop cost is the accumulation of components of accounts assigned to loop. Costs assigned to the loop include Cable & Wire Facilities investment in Category 1, COE investment in Category 4.13 and other accounts assigned proportionately based on these accounts. The portion of costs in accounts assigned to loop were determined using the allocation ratios derived from cost companies.

NECA applied the cost categorization factors shown in Exhibit 4 to uncategorized projected accounts from sample average schedule study areas to produce unseparated average schedule category-level loop costs. Section 54.1308 of the Commission's rules describes various unseparated accounts making up a study area's total unseparated loop costs. Following this method, the unseparated loop cost for each sample average schedule study area was determined by summing the following categories related to COE Category 4.13 and C&WF Category 1 plant, as follows.

Loop Cost = Maintenance Expense + Network & General Support Expenses
+ Network Operations Expense + Depreciation & Amortization Expense
+ Corporate Operations Expense + Operating Taxes + Benefits Expense
+ Rent Expense + Return on Investment

Exhibit 5 presents the results of loop cost calculations for the average schedule sample.

These calculated cost per loop amounts, when used with the payment algorithm

prescribed in section 54.1310 of the Commission's rules, produce $25.6 million in capped USF expense adjustments for sample companies if they were to conduct cost studies.

NECA estimated the amount of capped expense adjustment that would be calculated for the entire population of average schedule companies based on individual cost studies, by using the sample weights described in Section C. Based on this calculation, the total capped expense adjustment amount for the entire population of average schedule companies based on cost studies would be $29.6 million in 2019.

Exhibit 5

Allocation of Unseparated Total Accounts to Loop
Weighted Total Data from the Average Schedule Sample

HCL Algorithm Line	Cost Category	Calculation Method	Total Account Per Loop	Avg Loop %	Loop Cost Per Loop
1	C&WF Category 1	Cost Company Factor	4,229.64	0.9009	3,810.38
2	COE Category 4.13	Cost Company Factor	2,251.95	0.4668	1,051.27
3	Factor A	% C&WF Cat 1 of Total C&WF	4,230.96	0.9006	3,810.38
4	Factor B	% COE Cat 4.13 of Total COE	2,251.95	0.4668	1,051.27
5	Factor C	% C&WF Cat 1 of TPIS	7,523.49	0.5065	3,810.38
6	Factor D	% COE Cat 4.13 of TPIS	7,523.49	0.1397	1,051.27
7	Materials & Supplies for CWF Cat 1	Factor C x M&S	66.98	0.5163	34.59
8	Materials & Supplies for COE Cat 4.13	Factor D x M&S	66.98	0.1291	8.65
9	Reserves for CWF Cat 1	Factor A x Reserves	5,650.51	0.4573	2,583.93
10	Reserves for COE Cat 4.13	Factor B x Reserves	5,650.51	0.1735	980.61
11	Factor E	% Net C&WF Cat 1 of Net TPIS	1,945.02	0.6483	1,261.04
12	Factor F	% Net COE Cat 4.13 of Net TPIS	1,945.02	0.0408	79.31
13	Maintenance of C&WF Cat 1	Factor A x (Maintenance - R & B)	105.94	0.6233	66.03
14	Maintenance of COE Cat 4.13	Factor B x (Maintenance - R & B)	92.91	0.3671	34.11
15a	Network Support Assigned to Loop	(Fact C + Fact D) x (Net Sup Exp - R&B)	8.01	0.5106	4.09
15b	General Support Assigned to Loop	(Fact C + Fact D) x (Gen Sup Exp - R&B)	53.96	0.5122	27.64
16	Network Operations Assigned to Loop	(Fact C + Fact D) x (Net Ops Exp - R&B)	85.76	0.5090	43.65
17	Depreciation of C&WF Cat 1	C&WF Cat 1 x C&WF Deprec Rate	3,810.38	0.0395	150.47
18	Depreciation of COE Cat 4.13	COE Cat 4.13 x COE Deprec Rate	1,051.27	0.0656	68.97
19	Corporate Oper. Exp. Assigned to Loop	(Fact C + Fact D) * Corp. Oper. Exp.	220.51	0.6037	133.12
20	Operating Taxes Assigned to Loop	(Factor C + Factor D) x Oper Taxes	64.68	0.6361	41.15
21	Benefits in Oper. Exp. Assigned to Loop	(Fact C + Fact D) x (Benefits - Corp Ops)	260.81	0.2238	58.36
22	Rents in Oper Exp Assigned to Loop	(Fact C + Fact D) x (Rents - Corp Ops)	260.81	0.0403	10.52
23	Return on C&WF Cat 1	.10375 x Net CWF Cat 1	1,261.04	0.1038	130.83
24	Return on COE Cat 4.13	.10375 x Net COE Cat 4.13	79.31	0.1038	8.23
25	Total Loop Cost	Sum 13 Thru 24	7,355.37	0.1057	777.16

3. Cost per Loop Formula for 2019

This study develops a formula simulating the cost per loop data of sample companies, which is used to compute loop costs as the basis of expense adjustments for all average schedule companies. The underlying basis of the formula is the comparison of cost per loop data obtained from average schedule sample companies to their ratios of loops per exchange. Based on the relationship of these variables, a statistical model is developed and is used to compute HCL cost per loop for each member of the total population of average schedule companies.

NECA used cost per loop data of sample average schedule study areas to derive a statistical regression model. This model form was first presented in the 2002 NECA Modification of Average Schedule Universal Service Formulas, filed on October 1, 2001, and approved by the Commission in its July 30, 2002 Order.[18] The model relating cost per loop to loops per exchange in this year's study produces statistically significant coefficients. NECA proposes use of this model in 2019.

In Appendix B of this filing NECA presents HCL cost per loop data for sample average schedule study areas. This section explains the use of that data to develop a statistical model for calculating CPL values for each study area in the average schedule population.

[18] *See Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, *National Exchange Carrier Association, Inc. Proposed 2002 Modification of Average Schedule Formulas*, Order, 17 FCC Rcd. 14236 (2002).

This model uses the outlier accommodation method for regression, first introduced in NECA's December 31, 1998 average schedule filing[19] and approved by the Commission.[20] The threshold used in this calculation was equal to three standard deviations of the residuals. The outlier accommodation method uses weighted linear regression, with regression weights defined in two steps. First residuals and DFFITS values for each observation are determined by an unweighted linear regression. Then regression weights are calculated using these values.

If Abs(residual) <= threshold, then regression $weight_i = 1$

Else regression $weight_i = \left(\frac{C/2}{DFFITS_i} \right)^2$, where $C = 2\sqrt{\frac{P+1}{N-P-1}}$

P = number of model coefficients, N = number of observations

The model relates the CPL variable (the dependent variable) to the loops per exchange variable using constrained linear regression. The model reflects the CPL trend of sample companies, which show relatively higher costs associated with lower values of loops per exchange. This trend decreases at one rate for the smallest study areas, then decreases at slower rates for the group of midsize average schedule study areas, and finally levels off for the larger study areas.

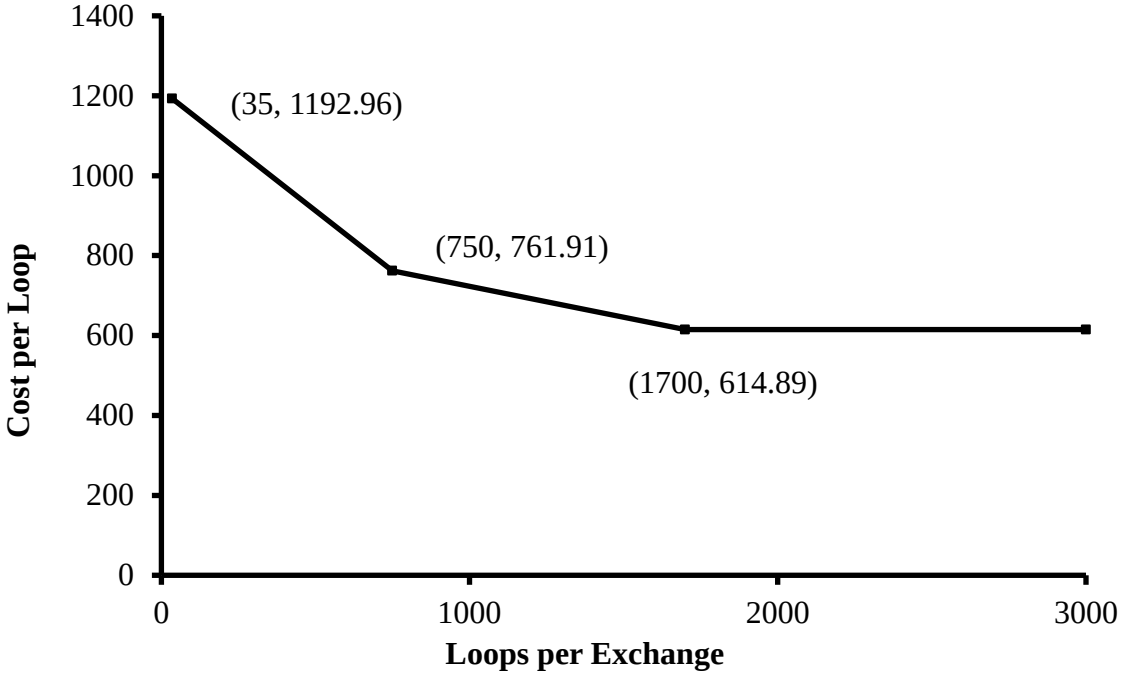
[19] *See 1999 NECA Modifications of Average Schedules*, National Exchange Carrier Association, Inc. (filed Dec. 31, 1998).

[20] *See National Exchange Carrier Association, Inc., Proposed Modifications to the 1999-2000 Interstate Average Schedule Formulas*, ASD 99-18, Order, 14 FCC Rcd. 9803 (1999).

The model consists of a set of connected lines, each corresponding to a designated range of loops per exchange. In this year's study, as in last year's study, the best fitting model supported three distinct ranges of loops per exchange values delimited by two breakpoints. NECA selected the formula breakpoints to assure support amounts would be accurately distributed across study areas in all size ranges. NECA tested sets of breakpoints and regression coefficients iteratively to determine the combination with the best fit to the data, resulting in breakpoints of 750 and 1,700 loops per exchange.

Exhibit 6

Cost per Loop Model



To fit the Cost per Loop formula to sample company data, NECA first calculated the overall average CPL of study areas with loops per exchange exceeding 1,700, using the standard weighted ratio estimation method. This method produced a formula Cost per Loop for this group of study areas of $614.89. This CPL is a good statistical representation of the data for these study areas, which show a consistently flat trend as relates to loops per exchange.

$$Cost\ per\ Loop\ (a3) = \frac{\sum_{ECs > (1700\ LPE)} Sample\ Weight_i * Outlier\ Weight_i * Cost\ per\ Loop_i * Loops_i}{\sum_{ECs > (1700\ LPE)} Sample\ Weight_i * Outlier\ Weight_i * Loops_i}$$

Next, NECA used linear regression to solve for other parameters of the model. The regression model is a sequence of three connected straight lines specified as follows (CPL denotes the study area's cost per loop; LPE denotes each study area's loops per exchange, and BP denotes breakpoint).

$$CPL_i = [a_1 + b_1\ LPE_i]\delta_{1i} + [a_2 + b_2\ LPE_i]\delta_{2i} + a_3\ \delta_{3i}$$

where: $\delta_{1i} = 1$, *if* $(LPE_i <= BP_1)$, *and* $\delta_{1i} = 0$ *otherwise.*

$\delta_{2i} = 1$, *if* $(BP_1 < LPE_i <= BP_2)$, *and* $\delta_{2i} = 0$ *otherwise.*

$\delta_{3i} = 1$, *if* $(LPE_i, > BP_2)$ *and* $\delta_{3i} = 0$ *otherwise.*

The model is constrained at the breakpoints, BP_1 and BP_2, to insure connectivity of the line segments, as follows:

$$a_1 + b_1 \cdot BP_1 = a_2 + b_2 \cdot BP_1$$

$$a_2 + b_2 \cdot BP_2 = a_3 = \$614.89.$$

The resulting coefficients are calculated using standard linear regression methods, including outlier weighting as described earlier in this section. This model fits the CPL data most accurately, and reflects relationships between loop cost and loops per exchange.

4. Operating Expense Limit Factor for 2019

In the *Rate of Return Reform Order*,[21] the Commission adopted limits on operating expenses (Opex) [22] to be recovered through HCL support with January 1, 2017 as effective date. Consistent with the rules, NECA developed an Opex limit factor for average schedule companies to be applied to companies' formula-estimated CPLs.

NECA calculated the Opex limit factor using accounting data of sample average schedule companies. For each sample company, the sum of company's total accounts used to determine the operating expenses eligible for support was compared to the Opex limit generated by the Commission's regression model. If the sum of actual eligible operating costs exceeded the FCC's Opex limit, operating cost was capped at the limit level, and the limit was applied proportionately to all accounts used to determine eligible operating expenses.

[21] *Rate of Return Reform Order* ¶¶ 95-104.

[22] The *March 23, 2018 Order* modified the Opex Limits allowing an adjustment for inflation.

In 2017, the first year in which the Opex cap is to be implemented Opex amounts were limited by one-half of the required reduction.[23] Since 2018 the full required limit is applied to Opex amounts. In this year's study, there is one out of 193 sample average schedule companies affected by the Opex limitation.

Using the limited Opex, NECA calculated each sample company CPL and USF revenue requirement (RRQ), calculated as CPL x loops. By comparing the sample weighted USF RRQ based on limited operating expenses to the sample weighted USF RRQ based on unlimited operating expenses for companies subject to Opex limits, NECA determined the proportionate share that the effect of the Opex limits would have on the sample average schedule companies. The Opex limit factor calculation is shown below.

Opex limit factor = *Total Weighted Opex Limit Adjusted USF RRQ /*
Total Weighted Actual USF RRQ

Opex limit factor[24] = 0.999933

The proposed Cost per Loop formula and Opex limit factor are shown in Exhibit 1. Using the proposed formula, loops per exchange data, as described in Section C of this filing, and Opex limit factor, NECA determined proposed CPL values for each average schedule study area. The proposed CPL values are higher than the current formula CPL values for study areas with loops per exchange less than 633 and those with more than 795 loops per exchange.

[23] *See Rate of Return Reform Order* ¶ 103.

[24] For companies subject to part 54.305 rules Opex limit factor = 1.

E. HCL Payments for the Population of Average Schedule Companies

In 2019, actual HCL payments will be determined using each company's proposed CPL value, the expense adjustment algorithm, the frozen NACPL value, and a pro-rata adjustment factor calculated according to the Commission's rules to meet the fund cap. Following is a discussion of the effects of these calculations.

According to the Commission's rule 54.1310 NECA calculates expense adjustments in two steps. First, each company's CPL is compared to the frozen NACPL of $647.87 to calculate its expense adjustment by applying the USF payment algorithm as specified in 54.1310(a)(1) and (2). Second, if the expense adjustments for all study areas (cost and average schedules) exceed the HCL cap, each study area's expense adjustment from the first step is reduced by the ratio of the HCL support cap to the aggregate expense adjustment for all study areas. This ratio, referred to here as the pro–rata adjustment factor, is estimated to be 0.77056.[25]

Although average schedule companies would receive $9.1[26] million based on the proposed formula and the frozen NACPL payment calculation, the capping of the fund is expected to limit this payment to $7.01 million through the application of the pro-rata adjustment factor.[27] Because this

[25] This is NECA's initial estimate of the pro-rata adjustment factor for 2019, based on data reported to date. This factor is subject to change based on quarterly updates and other data changes.

[26] Opex limitation impact on average schedule companies' total 2019 HCL support payments is reduction of 0.04% (or -$3,691).

[27] *See also* note 5 regarding additional USAC adjustments not reflected in this calculation.

view does not reflect quarterly updates to HCL data submissions to be filed with the FCC after October 1 of this year, as permitted by section 54.1306 of the Commission's rules, decreases in the pro-rata adjustment factor can be expected which will produce lower payments for all rate of return companies, including average schedule companies.

Average schedule companies that are expected to receive payments in 2019 are those with loops per exchange less than 857. While the cost per loop for most average schedule companies currently receiving payments will increase as a result of the proposed formula, twelve study area will realize total payment reductions due to lower proposed formula, or a significant change in loop counts, or lower estimated 2019 pro-rata adjustment factor.

F. Effects of Changes on Average Schedule Companies

This section provides a summary comparison of proposed payments of $7.01 million and current payments of $6.24 million, categorized by line size group and by percent change group. Exhibit 7 summarizes changes in monthly payments by study area size.

Exhibit 7

Proposed Monthly HCL Payment Changes by Loop Size

Access Line Size Group	Count of Study Areas	2018 USF Payments (current)	2019 Proposed Payment (Fund Cap Applied)	Monthly Change per Loop	Percent Difference
0 to 500	41	$118,879	$135,039	$1.43	13.59
500 to 1000	44	$131,773	$146,289	$0.45	11.02
1000 to 2500	39	$128,807	$144,173	$0.28	11.93
2500 to 5000	19	$140,741	$158,784	$0.27	12.82
5000 to 10000	4	$0	$0	$0.00	0.00
10000 to 20000	9	$0	$0	$0.00	0.00
Over 20000	2	$0	$0	$0.00	0.00

Exhibit 8 summarizes the monthly changes in expense adjustments by percent change bands.

Exhibit 8

Proposed Monthly HCL Payment Changes by Percent Change Bands

Percent Change Group	Count of Study Areas	2018 USF Payments (current)	2019 Proposed Payment (Fund Cap Applied)	Monthly Change per Loop
-70% to -60%	1	$1,173	$428	-$0.96
-30% to -20%	2	$16,532	$12,610	-$1.84
-20% to -10%	1	$1,926	$1,675	-$0.37
-10% to -5%	3	$8,439	$7,841	-$0.23
-5% to -2%	3	$5,710	$5,524	-$0.15
-2% to 0%	2	$9,524	$9,435	-$0.02
0% to 2%	58	$4,752	$4,829	$0.00
2% to 5%	5	$38,207	$39,920	$0.24
5% to 10%	14	$50,573	$55,082	$0.62
10% to 20%	55	$368,922	$420,496	$1.15
20% to 30%	3	$4,146	$5,027	$0.65
30% to 40%	1	$893	$1,213	$0.45
50% to 60%	1	$1,664	$2,589	$5.93
70% to 80%	1	$3,809	$6,624	$0.80
80% to 90%	1	$137	$254	$0.14
100%	5	$0	$1,853	$0.17
100% to 200%	1	$3,607	$7,672	$5.46
Over 300%	1	$186	$1,213	$1.45

G. Conclusion

The proposed HCL formula shown in Exhibit 1 herein conforms to FCC USF reporting rules, produces payments consistent with those experienced by similarly situated cost companies as required by the Commission's Part 69 rules, and yields reasonable changes in payments to average schedule companies. The Commission should approve this formula to go into effect on January 1, 2019.

Appendix A
2018 Average Schedule USF Study
Study Area Code / Study Area Name

Obs	Study Area Code	Study Area Name	Eligible for HCLS (yes=1)
1	100019	OXFORD COUNTY TEL. & TELE. CO.	1
2	100020	PINE TREE TELEPHONE LLC	
3	100022	SACO RIVER TELEPHONE LLC	
4	120042	DIXVILLE TEL. CO.	1
5	120043	DUNBARTON TEL. CO.	1
6	140053	FRANKLIN TEL. CO.-VT	1
7	140064	SHOREHAM TELEPHONE LLC	1
8	150076	CASSADAGA TEL. CORP.	1
9	150125	STATE TEL. CO.	1
10	170156	THE CITIZENS TELEPHONE COMPANY OF KECKSBURG	1
11	170171	HICKORY TEL. CO.	1
12	170175	IRONTON TEL. CO.	1
13	170191	THE NORTH-EASTERN PENNSYLVANIA TELEPHONE CO.	
14	170195	ARMSTRONG TEL. CO. NORTH	1
15	170196	PALMERTON TELEPHONE COMPANY	1
16	170197	PENNSYLVANIA TEL. CO.	1
17	170200	PYMATUNING IND. TEL. CO.	
18	170205	SOUTH CANAAN TEL. CO.	1
19	170210	VENUS TEL. CORP.	1
20	170277	WEST SIDE TEL. CO.-PA	
21	190220	BURKE'S GARDEN TEL. CO., INC.	1
22	190225	CITIZENS TEL. COOP.-VA	
23	190226	LUMOS TELEPHONE INC.	
24	190237	HIGHLAND TEL. COOP.-VA	
25	190238	MGW TELEPHONE COMPANY, INC.	
26	190239	NEW HOPE TELEPHONE COOPERATIVE	1
27	190243	PEMBROKE TEL. COOP.	1
28	190250	SHENANDOAH TEL. CO.	1
29	197251	SHENANDOAH TELEPHONE COMPANY - NR	1
30	200258	WAR TELEPHONE LLC	
31	220324	VALLEY TELEPHONE CO., LLC	1
32	220380	PROGRESSIVE RURAL TEL. COOP., INC.	1
33	220389	TRENTON TEL. CO.	1
34	230478	ELLERBE TEL. CO.	1
35	230491	NORTH STATE TEL. CO.-NC dba NORTH STATE COMM.	1
36	230494	PINEVILLE TEL. CO.	1
37	230496	RANDOLPH TEL. MEMB. CORP. DBA RANDOLPH COMM.	1
38	230497	SURRY TELEPHONE MEMBERSHIP CORPORATION	1
39	230501	SKYLINE TEL. MEMB. CORP.	1
40	230503	SURRY TELEPHONE MEMBERSHIP CORPORATION	1
41	230505	TRI-COUNTY TEL. MEMB. CORP.-NC	1
42	230511	YADKIN VALLEY TEL. MEMB. CORP.	1
43	240515	CHESNEE TEL. CO.	1
44	240516	CHESTER TEL. CO.-SC	1

Appendix A
2018 Average Schedule USF Study
Study Area Code / Study Area Name

Obs	Study Area Code	Study Area Name	Eligible for HCLS (yes=1)
45	240532	LOCKHART TEL. CO., INC.	1
46	240535	NORWAY TEL. CO., INC.	
47	240541	RIDGEWAY TEL. CO., INC.	1
48	240546	SANDHILL TEL. COOP., INC.	1
49	250283	BRINDLEE MOUNTAIN TELEPHONE LLC	
50	250285	CASTLEBERRY TEL. CO., INC.	1
51	250311	OAKMAN TEL. CO., INC.	
52	250312	OTELCO TELEPHONE LLC	
53	260398	BRANDENBURG TEL. CO., INC.	1
54	260408	GEARHEART COMM. DBA COALFIELDS TEL. CO.	1
55	270428	DELCAMBRE TEL. CO.	1
56	280451	DECATUR TEL. CO., INC.-MS	1
57	280467	SMITHVILLE TEL. CO.	
58	290554	BLEDSOE TEL. COOP.	1
59	290565	HIGHLAND TEL. COOP., INC.-TN	1
60	290570	LORETTO TEL. CO., INC.	1
61	290598	WEST KENTUCKY RURAL TELEPHONE COOP. CORP.-TN	1
62	300588	AYERSVILLE TEL. CO.	1
63	300589	BASCOM MUTUAL TEL. CO.	1
64	300591	BUCKLAND TELEPHONE COMPANY	1
65	300609	DOYLESTOWN TEL. CO.	1
66	300614	FORT JENNINGS TEL. CO.	1
67	300619	GLANDORF TEL. CO., INC.	1
68	300625	KALIDA TEL. CO., INC.	1
69	300633	MIDDLE POINT HOME TEL. CO.	
70	300639	THE NEW KNOXVILLE TEL. CO.	1
71	300650	THE OTTOVILLE MUTUAL TEL. CO.	1
72	300651	PATTERSONVILLE TEL. CO.-OH	
73	300654	RIDGEVILLE TEL. CO.	
74	300656	SHERWOOD MUTUAL TEL. ASSOC.	1
75	300659	TELEPHONE SERVICE CO.	
76	300662	VANLUE TEL. CO.	
77	300663	VAUGHNSVILLE TEL. CO., INC.	1
78	300664	WABASH MUTUAL TEL. CO.	1
79	310675	BARAGA TELEPHONE COMPANY	1
80	310676	BARRY COUNTY TEL. CO.	1
81	310678	BLANCHARD TELEPHONE CO.	1
82	310688	CLIMAX TEL. CO.	1
83	310694	FARMERS MUT. OF CHAPIN DBA CHAPIN TEL. CO.	1
84	310703	KALEVA TEL. CO.	1
85	310725	SAND CREEK TEL. CO.	
86	310735	WESTPHALIA TEL. CO.	
87	320751	CITIZENS TEL. CORP.-WARREN	1
88	320756	CRAIGVILLE TEL. CO., INC.	1

Appendix A
2018 Average Schedule USF Study
Study Area Code / Study Area Name

Obs	Study Area Code	Study Area Name	Eligible for HCLS (yes=1)
89	320771	GEETINGSVILLE TEL. CO., INC.	1
90	320792	MULBERRY COOP. TEL. CO., INC.	1
91	320816	S & W TEL. CO., INC.	
92	320826	SWAYZEE TEL. CO., INC.	1
93	320827	SWEETSER RURAL TEL. CO., INC.	1
94	320837	WEST POINT TEL. CO., INC.	
95	320839	YEOMAN TEL. CO., INC.	1
96	330842	AMERY TELCOM, INC.	
97	330843	AMHERST TEL. CO.	1
98	330846	BALDWIN TELCOM., INC.	1
99	330847	BELMONT TEL. CO.	1
100	330848	BERGEN TEL. CO.	1
101	330865	CLEAR LAKE TEL. CO., INC.-WI	
102	330868	COON VALLEY FARMERS TEL. CO., INC.	
103	330872	CUBA CITY TEL. EXCH. CO.	1
104	330879	FARMERS IND. TEL. CO.-WI	
105	330889	HAGER TELECOM, INC.	1
106	330896	LAKEFIELD TELEPHONE COMPANY	1
107	330905	MANAWA TEL. CO.	
108	330925	BAYLAND TELEPHONE, LLC	1
109	330938	NORTHEAST TEL. CO.	1
110	330946	SHARON TEL. CO.	1
111	330951	SOMERSET TEL. CO., INC.	
112	340983	CAMBRIDGE TEL. CO.-IL	1
113	340990	CLARKSVILLE MUTUAL TEL. CO.	1
114	340993	CROSSVILLE TEL. CO.	
115	341016	GENESEO TEL. CO.	
116	341017	GLASFORD TEL. CO.	
117	341021	THE GRANDVIEW MUTUAL TEL. CO.	1
118	341024	HAMILTON COUNTY TELEPHONE CO-OP	
119	341029	HENRY COUNTY TEL. CO.	
120	341041	KINSMAN MUTUAL TEL. CO.	1
121	341046	LEONORE MUTUAL TEL. CO.	1
122	341050	MARSEILLES TEL. CO. OF MARS.	1
123	341053	METAMORA TEL. CO.	1
124	341062	NEW WINDSOR TEL. CO.	1
125	341075	REYNOLDS TEL. CO.	
126	341086	TONICA TEL. CO.	
127	341087	VIOLA HOME TEL. CO.	1
128	341092	STELLE TEL. CO.	
129	351097	ANDREW TEL. CO., INC.	
130	351098	ARCADIA TEL. COOP.	1
131	351101	ATKINS TEL. CO.	1
132	351107	BALDWIN-NASHVILLE TEL. CO., INC.	1

Appendix A
2018 Average Schedule USF Study
Study Area Code / Study Area Name

Obs	Study Area Code	Study Area Name	Eligible for HCLS (yes=1)
133	351108	BARNES CITY COOP. TEL. CO.	
134	351112	BREDA TEL. CORPORATION	
135	351113	BROOKLYN MUTUAL TEL. CO.	1
136	351114	TITONKA TEL. CO. DBA TITONKA-BURT COMM (BURT)	
137	351115	BUTLER-BREMER MUT. TEL. CO.	
138	351119	CASEY MUTUAL TEL. CO.	
139	351121	CENTER JUNCTION TEL. CO., INC.	
140	351125	CENTRAL SCOTT TEL.	
141	351133	C-M-L TEL. COOP. ASSN.	1
142	351136	COON CREEK TEL. CO.	
143	351137	COON VALLEY COOP. TEL. ASSN., INC.	
144	351139	COOP. TEL. CO.	
145	351141	CORN BELT TEL. CO.	1
146	351146	CUMBERLAND TEL. CO.	
147	351147	DANVILLE MUT. TEL. CO.	
148	351149	FARMERS MUTUAL COOPERATIVE TEL CO (DEFIANCE)	
149	351150	DIXON ACQUISITION, LLC	
150	351153	DUNKERTON TEL. COOP., INC.	1
151	351157	ELLSWORTH COOP. TEL. ASSN.	1
152	351162	FARMERS COOP. TEL. CO.-DYSART	1
153	351166	FARMERS & MERCHANTS MUTUAL TEL. CO.	1
154	351168	FARMERS MUTUAL COOP TEL CO- HARLAN	
155	351171	FARMERS MUTUAL TEL. CO.-JESUP	
156	351175	FARMERS TEL. CO.-BATAVIA	1
157	351176	FARMERS TEL. CO.-ESSEX	
158	351179	FENTON COOP. TEL. CO.	
159	351188	GOLDFIELD TEL. CO.	1
160	351189	RIVER VALLEY TELECOMMUNICATIONS COOP.	1
161	351191	GRAND MOUND COOP. TEL. ASSN.	1
162	351199	HAWKEYE TEL. CO.	1
163	351202	HOSPERS TEL. EXCHANGE, INC.	1
164	351205	HUXLEY COMMUNICATIONS COOPERATIVE	1
165	351212	JEFFERSON TEL. CO.-IA	
166	351213	JORDAN SOLDIER VALLEY TELEPHONE COMPANY	
167	351222	LA MOTTE TEL. CO.	
168	351228	LONE ROCK COOP. TEL. CO.	
169	351232	LYNNVILLE TELEPHONE COMPANY	1
170	351235	FARMERS MUTUAL COOPERATIVE TEL CO (MANILLA)	
171	351238	MARTELLE COOP. TEL. ASSN.	
172	351239	MASSENA TEL. CO.	
173	351241	MECHANICSVILLE TEL. CO.	
174	351242	MILES COOP. TEL. ASSN.	1
175	351246	MINERVA VALLEY TEL. CO., INC.	1
176	351247	MODERN COOP. TEL. CO.	

Appendix A
2018 Average Schedule USF Study
Study Area Code / Study Area Name

Obs	Study Area Code	Study Area Name	Eligible for HCLS (yes=1)
177	351250	MUTUAL TEL. CO. OF MORNING SUN	
178	351257	NORTH ENGLISH COOP. TEL. CO.	
179	351260	NORTHWEST IOWA TELEPHONE, LLC	
180	351261	NORTHWEST TEL. COOP.	
181	351264	OLIN TEL. CO., INC.	
182	351265	ONSLOW COOP. TEL. ASSN.	
183	351266	ORAN MUTUAL TEL. CO.	
184	351269	PALO COOPERATIVE TELEPHONE ASSOCIATION	1
185	351270	PALMER MUTUAL TEL. CO.	1
186	351273	PEOPLES TEL. CO.-IA	
187	351275	PRAIRIEBURG TEL. CO., INC.	1
188	351278	READLYN TEL. CO.	1
189	351282	ROCKWELL COOP. TEL. ASSN.	
190	351283	ROYAL TEL. CO.	1
191	351285	SAC COUNTY MUTUAL TEL. CO.	
192	351291	SCHALLER TEL. CO.	
193	351292	SEARSBORO TEL. CO.	1
194	351293	SHARON TEL. CO.	1
195	351301	FMTC-I35, INC. (SWT)	1
196	351302	SPRINGVILLE COOP. TEL. ASSN.	1
197	351306	SULLY TEL. ASSOC.	1
198	351307	SUPERIOR TEL. COOP.	
199	351308	TEMPLETON TEL. CO.	
200	351309	TERRIL TELEPHONE COOPERATIVE	
201	351310	TITONKA TEL. CO. DBA TITONKA-BURT COMM	
202	351319	VAN BUREN TEL. CO., INC.	
203	351320	VAN HORNE COOP. TEL. CO.	1
204	351322	VENTURA TEL. CO., INC.	1
205	351331	WEST IOWA TEL. CO.	1
206	351334	WESTERN IOWA TEL. ASSN.	
207	351335	WESTSIDE INDP. TEL. CO.	
208	351336	WILTON TEL. CO.	1
209	351342	WOOLSTOCK MUT. TEL. ASSN.	
210	351344	PRAIRIE TEL. CO., INC.	
211	351424	MABEL COOP. TEL. CO.-IA	
212	361348	WILDERNESS VALLEY TELEPHONE COMPANY, INC.	
213	361353	CITY OF BARNESVILLE TEL. CO.	1
214	361356	BENTON COOP. TEL. CO.	1
215	361365	CALLAWAY TEL. CO.	
216	361372	CLEMENTS TEL. CO.	
217	361390	FEDERATED TEL. COOP.	1
218	361396	GARDONVILLE COOP. TEL. ASSN.	1
219	361401	HALSTAD TEL. CO.	1
220	361403	FEDERATED TELEPHONE COOPERATIVE	1

Appendix A
2018 Average Schedule USF Study
Study Area Code / Study Area Name

Obs	Study Area Code	Study Area Name	Eligible for HCLS (yes=1)
221	361404	HARMONY TEL. CO.	1
222	361408	HOME TEL. CO.-MN	
223	361409	HUTCHINSON TELEPHONE COMPANY	
224	361413	MID STATE TEL. CO. DBA KMP TEL. CO.	
225	361423	RUNESTONE TELEPHONE ASSOCIATION	1
226	361424	MABEL COOPERATIVE TELEPHONE CO.- MN	
227	361430	MELROSE TELEPHONE COMPANY	
228	361431	MIDWEST TEL. CO.	
229	361439	MINNESOTA VALLEY TEL. CO. INC.	
230	361440	CANNON VALLEY TELECOM, INC.	
231	361443	LORETEL SYSTEMS, INC.	
232	361450	PARK REGION MUTUAL TEL. CO.	
233	361472	REDWOOD COUNTY TEL. CO.	
234	361474	ROTHSAY TELEPHONE COMPANY INC.	
235	361475	RUNESTONE TEL. ASSN.	1
236	361476	SACRED HEART TEL. CO.	
237	361479	SCOTT RICE TEL. CO. dba INTEGRA TELECOM	1
238	361487	STARBUCK TEL. CO.	
239	361495	VALLEY TEL. CO.-MN	
240	361499	TRI-CO TECHNOLOGIES, LLC DBA CROSSLAKE COMM.	1
241	361500	NORTHERN TELEPHONE COMPANY OF MN	
242	361502	WESTERN TELEPHONE COMPANY	
243	361505	WIKSTROM TELEPHONE COMPANY INC.	
244	361508	WINTHROP TEL. CO.	
245	361512	WOLVERTON TELEPHONE COMPANY	1
246	361515	ZUMBROTA TELEPHONE COMPANY	
247	361654	INTERSTATE TELECOMMUNICATIONS COOP., INC.-MN	
248	371530	CONSOLIDATED TELCO, INC.	
249	371555	HAMILTON TELEPHONE COMPANY	1
250	371563	HOOPER TELEPHONE COMPANY	
251	371581	PIERCE TELEPHONE COMPANY	
252	371590	SODTOWN TEL. CO.	1
253	381509	WOLVERTON TEL. CO.	1
254	381601	ABSARAKA COOP TELEPHONE CO.	
255	381614	POLAR COMMUNICATIONS MUTUAL AID CORP (A)	1
256	381615	GRIGGS COUNTY TELEPHONE COMPANY	1
257	381622	GRIGGS COUNTY TEL. CO. (MOORE&LIBERTY)	1
258	381638	MIDSTATE COMMUNICATIONS INC.	1
259	391640	GOLDEN WEST TELECOM COOP (ARMOUR)	1
260	391649	BERESFORD MUNICIPAL TEL. CO.	1
261	391650	CITY OF BROOKINGS MUNICIPAL TEL. DEPT.	1
262	391653	CITY OF FAITH MUNICIPAL TEL CO	1
263	391660	FORT RANDALL TEL. CO. DBA MT. RUSHMORE TEL CO	
264	391664	JAMES VALLEY COOPERATIVE TELEPHONE COMPANY	

Appendix A
2018 Average Schedule USF Study
Study Area Code / Study Area Name

Obs	Study Area Code	Study Area Name	Eligible for HCLS (yes=1)
265	391682	TRIOTEL COMMUNICATIONS, INC. (TRI-COUNTY)	1
266	401710	MAGAZINE TELEPHONE COMPANY	1
267	401712	MOUNTAIN VIEW TELEPHONE COMPANY	
268	401722	E. RITTER TELEPHONE COMPANY	
269	421893	CHOCTAW TELEPHONE COMPANY	1
270	421900	KLM TEL. CO.	
271	421932	LATHROP TELEPHONE COMPANY	
272	421936	PEACE VALLEY TELEPHONE CO.	
273	421942	ROCK PORT TEL. CO.	1
274	431968	BEGGS TELEPHONE COMPANY	1
275	442043	NORTH TEXAS TELEPHONE COMPANY	
276	442107	LIVINGSTON TELEPHONE COMPANY	1
277	462198	PINE DRIVE TEL. CO.	
278	462206	STONEHAM COOPERATIVE TEL. CO.	1
279	462210	WILLARD TEL. CO.	1
280	472227	MUD LAKE TELEPHONE COOPERATIVE ASSN. INC.	
281	482252	RONAN TEL. CO.	
282	502279	GUNNISON TEL. CO.	
283	502282	MANTI TELEPHONE COMPANY	1
284	502283	SKYLINE TELECOM	
285	532386	CANBY TELEPHONE ASSOCIATION (MT. ANGEL)	1
286	532396	ST. PAUL COOP. TEL. ASSN.	1
287	613005	CIRCLE TELEPHONE & ELECTRIC, LLC	
288	613026	NORTH COUNTRY TELEPHONE COMPANY	

Appendix B
2018 Average Schedule USF Study
Sample Average Schedule Study Areas
Data Underlying Cost per Loop Formula Development

	Study Area Code	Actual USF Loop Count	Exchange Count	Sample Weight	Actual Cost per Loop
1	100015	3889	7	1.0000	582.47
2	100020	2181	3	1.0000	521.72
3	140053	791	1	1.0000	506.88
4	150076	783	1	1.0000	344.44
5	150125	4490	2	1.0000	575.11
6	170145	1289	1	1.0000	622.37
7	170156	2873	1	1.0000	525.00
8	170191	7242	8	1.0000	546.40
9	170196	3955	4	1.0000	561.08
10	170200	736	1	1.0000	1060.55
11	170205	1595	2	1.0000	571.91
12	170210	1006	1	1.0000	1156.09
13	190225	6784	5	2.0000	568.78
14	190238	1360	5	1.0000	944.32
15	190239	639	1	2.5000	518.40
16	190243	2160	2	1.0000	458.07
17	190250	17571	9	1.0000	525.11
18	220380	3718	6	1.0000	943.33
19	220389	3128	3	1.0000	1076.45
20	230491	38132	3	1.0000	995.87
21	230496	10616	8	1.0000	837.46
22	230497	1914	2	2.0000	748.33
23	230503	10104	6	1.0000	777.09
24	240516	10454	3	2.0000	610.80
25	240541	1635	1	2.0000	593.81
26	240546	12279	7	1.0000	578.70
27	250283	5677	3	1.0000	608.96
28	250285	616	1	2.5000	1034.57
29	250311	1272	4	1.0000	853.97
30	250312	4449	1	1.0000	445.01
31	260398	15235	8	1.0000	459.04
32	260419	5520	6	1.0000	875.18
33	270428	945	1	1.0000	877.85
34	290553	25472	17	1.0000	722.06
35	290554	9309	5	1.0000	778.87
36	290565	16514	10	1.0000	923.43
37	290598	998	4	1.0000	1313.60
38	300585	409	1	2.0000	956.19
39	300589	430	1	2.0000	2585.46
40	300604	720	1	1.0000	713.58
41	300609	1242	1	1.0000	852.41
42	300614	607	1	2.9616	692.57
43	300619	912	1	2.8410	584.03
44	300625	1300	1	1.0000	670.26
45	300656	710	1	1.0000	1220.03
46	300659	5111	2	1.0000	601.95

Appendix B
2018 Average Schedule USF Study
Sample Average Schedule Study Areas
Data Underlying Cost per Loop Formula Development

	Study Area Code	Actual USF Loop Count	Exchange Count	Sample Weight	Actual Cost per Loop
47	300662	429	1	3.2051	771.62
48	300663	199	1	1.5000	578.07
49	310675	3545	4	1.0000	594.96
50	310676	5432	4	1.0000	436.37
51	310688	853	1	1.0000	495.51
52	310725	713	1	2.0000	1116.29
53	310735	603	1	2.7948	971.01
54	320751	1479	2	1.0000	1230.79
55	320756	575	1	2.5000	1196.82
56	320771	305	1	1.5000	1748.83
57	320778	1453	1	1.0000	555.74
58	320792	1556	1	1.0000	1311.18
59	320837	632	1	2.5000	623.73
60	320839	531	1	3.0102	1200.44
61	330843	4048	3	1.0000	853.91
62	330846	2980	2	1.0000	1175.82
63	330848	96	2	1.0000	3226.04
64	330865	1232	1	1.0000	396.75
65	330875	962	1	1.0000	640.89
66	330879	2367	3	1.0000	533.36
67	330880	4569	4	1.0000	660.91
68	330905	1581	2	2.5000	1067.35
69	330925	1277	1	1.0000	1041.28
70	330938	3631	4	1.0000	741.12
71	340990	224	1	1.5000	391.83
72	340993	297	1	1.5000	892.72
73	341024	1535	7	1.0000	1200.24
74	341029	906	2	2.0000	716.99
75	341041	63	1	1.0000	719.03
76	341050	1605	1	1.0000	661.11
77	341053	2294	2	1.0000	814.81
78	341062	443	1	1.5000	718.64
79	341075	376	1	1.5000	1179.57
80	341086	278	1	1.5000	1349.72
81	341087	484	1	1.0000	1178.87
82	350739	192	1	1.0000	1807.56
83	351098	257	1	1.5000	584.12
84	351107	242	1	1.0000	1319.69
85	351108	87	1	1.5000	1380.98
86	351112	803	3	1.5000	1284.28
87	351115	1478	4	1.0000	1159.45
88	351119	212	1	1.5000	1201.71
89	351121	88	1	1.0000	1038.72
90	351125	3198	3	1.0000	536.58
91	351133	685	4	1.0000	1008.79
92	351137	441	2	1.0000	1062.17

Appendix B
2018 Average Schedule USF Study
Sample Average Schedule Study Areas
Data Underlying Cost per Loop Formula Development

	Study Area Code	Actual USF Loop Count	Exchange Count	Sample Weight	Actual Cost per Loop
93	351139	1130	4	1.0000	758.87
94	351146	199	1	1.5000	1819.22
95	351147	633	1	1.0000	2268.27
96	351157	617	2	1.5000	832.69
97	351166	592	1	2.5495	1144.07
98	351171	1730	1	2.5000	949.61
99	351173	1488	4	1.0000	790.28
100	351175	294	1	1.5000	982.18
101	351176	289	1	1.0000	1790.99
102	351188	331	1	1.5000	807.93
103	351189	688	2	1.0000	833.52
104	351191	485	1	1.5000	869.99
105	351199	341	1	1.5000	1028.63
106	351202	498	1	1.0000	993.84
107	351205	970	2	2.5000	1147.43
108	351222	551	1	3.4838	858.65
109	351232	459	1	2.7136	603.43
110	351238	205	1	1.5000	1108.39
111	351239	340	2	1.5000	1141.38
112	351246	554	2	1.5000	829.59
113	351247	705	4	1.5000	827.15
114	351250	351	1	1.5000	1052.74
115	351261	956	4	1.0000	858.71
116	351264	479	2	1.5000	1446.78
117	351265	165	1	1.0000	776.80
118	351266	206	1	1.0000	1906.61
119	351269	519	1	1.5000	624.04
120	351270	239	1	1.0000	1327.24
121	351275	142	1	1.5000	1246.43
122	351282	944	4	1.5000	759.31
123	351283	309	1	1.0000	1100.35
124	351285	771	2	1.0000	983.53
125	351291	1196	4	1.0000	1178.72
126	351292	187	1	1.0000	1295.83
127	351293	907	2	1.0000	808.49
128	351301	482	3	1.5000	954.66
129	351302	1037	1	1.0000	697.08
130	351307	131	1	1.0000	1252.15
131	351309	262	1	1.0000	2570.46
132	351331	3084	6	1.0000	1134.54
133	351334	2813	8	1.0000	770.54
134	351342	139	1	1.0000	2634.62
135	351424	830	3	1.5000	739.99
136	361348	71	1	1.0000	914.25
137	361365	207	1	1.5000	896.20
138	361372	121	1	1.5000	576.43

Appendix B
2018 Average Schedule USF Study
Sample Average Schedule Study Areas
Data Underlying Cost per Loop Formula Development

	Study Area Code	Actual USF Loop Count	Exchange Count	Sample Weight	Actual Cost per Loop
139	361390	2014	7	1.0000	1159.94
140	361401	1617	10	1.0000	1556.34
141	361403	701	1	1.0000	563.61
142	361404	819	2	1.5000	474.80
143	361408	1204	3	2.0000	602.92
144	361409	5697	1	1.0000	582.44
145	361413	1095	4	1.5000	607.33
146	361430	6056	8	1.0000	710.05
147	361431	1994	4	2.5000	655.19
148	361439	506	3	1.0000	1204.00
149	361443	7467	9	1.0000	671.52
150	361450	3006	6	2.0000	730.96
151	361472	3918	10	1.0000	566.44
152	361474	408	1	1.5000	1053.62
153	361475	3040	9	1.0000	864.00
154	361476	294	1	1.5000	662.29
155	361479	7509	3	1.0000	780.53
156	361487	922	1	2.5000	745.49
157	361495	527	2	1.5000	1068.29
158	361500	35	1	1.0000	1284.56
159	361502	1374	2	2.5000	507.58
160	361505	5208	18	1.0000	1245.00
161	361512	123	1	1.0000	1125.40
162	361515	1239	1	1.0000	674.62
163	361654	1263	3	1.5000	783.58
164	371530	1010	5	1.0000	1390.73
165	371555	4583	9	1.0000	759.52
166	371590	62	1	1.5000	1006.89
167	381509	266	2	1.0000	1196.47
168	381614	1608	6	1.0000	943.12
169	381615	1513	4	1.5000	1351.62
170	381622	799	2	1.0000	768.54
171	381638	897	2	1.0000	1383.45
172	391640	1347	3	1.0000	712.91
173	391649	1202	1	1.0000	460.28
174	391660	4125	8	2.0000	765.58
175	391664	2587	14	1.0000	1238.08
176	391671	1709	1	1.0000	665.65
177	401712	5257	8	1.0000	525.57
178	401722	2387	8	1.0000	888.80
179	421893	292	1	1.0000	1597.04
180	421936	300	1	1.5000	855.16
181	421942	1313	3	1.0000	679.44
182	431968	1155	1	1.0000	983.25
183	462198	737	1	2.5000	1137.30
184	462206	60	1	1.5000	1855.09

Appendix B
2018 Average Schedule USF Study
Sample Average Schedule Study Areas
Data Underlying Cost per Loop Formula Development

	Study Area Code	Actual USF Loop Count	Exchange Count	Sample Weight	Actual Cost per Loop
185	462210	63	1	1.0000	2755.88
186	472227	1043	5	1.0000	859.11
187	502279	1114	1	1.0000	648.35
188	502282	2324	2	1.0000	856.20
189	502283	1692	5	1.0000	800.01
190	532386	1305	1	1.0000	517.99
191	532396	551	1	1.0000	938.18
192	613005	66	1	1.5000	738.98
193	613026	159	1	1.5000	474.86

Appendix C
2018 Average Schedule USF Study
Comparison of Current and Proposed Monthly HCL Support Payments

Obs	Study Area Code	Loops	Exch	Loops per Exch	Current Payments	Proposed Cost per Loop *	Proposed Payment (Fund Cap Appl.)	Per Loop Payment Difference	Payment Percent Difference
1	100019	2,666	6	444	$19,432	$946.33	$22,397	$1.94	15.3%
2	120042	20	1	20	$431	$1,201.92	$411	$3.31	-4.6%
3	120043	1,391	1	1,391	$0	$662.67	$0	$0.00	0.0%
4	140053	810	1	810	$137	$752.57	$254	$0.14	85.4%
5	140064	2,694	6	449	$19,990	$943.31	$22,293	$1.21	11.5%
6	150076	734	1	734	$657	$771.51	$811	$0.26	23.4%
7	150125	4,323	2	2,162	$0	$614.85	$0	$0.00	0.0%
8	170156	2,899	1	2,899	$0	$614.85	$0	$0.00	0.0%
9	170171	925	1	925	$0	$734.78	$0	$0.00	0.0%
10	170175	2,426	1	2,426	$0	$614.85	$0	$0.00	0.0%
11	170195	366	1	366	$3,416	$993.34	$3,844	$1.90	12.5%
12	170196	3,903	4	976	$0	$726.88	$0	$0.00	0.0%
13	170197	891	1	891	$0	$740.04	$0	$0.00	0.0%
14	170205	1,591	2	796	$0	$754.74	$643	$0.40	100.0%
15	170210	1,027	1	1,027	$0	$718.99	$0	$0.00	0.0%
16	190220	156	1	156	$1,664	$1,119.93	$2,589	$2.37	55.6%
17	190239	650	1	650	$2,056	$822.14	$2,091	$0.13	1.7%
18	190243	2,201	2	1,101	$0	$707.54	$0	$0.00	0.0%
19	190250	16,818	9	1,869	$0	$614.85	$0	$0.00	0.0%
20	197251	581	1	581	$2,419	$863.73	$2,878	$1.10	19.0%
21	220324	1,031	1	1,031	$0	$718.37	$0	$0.00	0.0%
22	220380	3,723	6	621	$13,072	$839.62	$14,695	$0.61	12.4%
23	220389	2,908	3	969	$0	$727.97	$0	$0.00	0.0%
24	230478	1,145	1	1,145	$0	$700.73	$0	$0.00	0.0%
25	230491	34,925	3	11,642	$0	$614.85	$0	$0.00	0.0%
26	230494	745	1	745	$0	$764.87	$616	$0.83	100.0%
27	230496	11,187	8	1,398	$0	$661.59	$0	$0.00	0.0%
28	230497	1,895	2	948	$0	$731.22	$0	$0.00	0.0%
29	230501	25,763	12	2,147	$0	$614.85	$0	$0.00	0.0%
30	230503	10,312	6	1,719	$0	$614.85	$0	$0.00	0.0%
31	230505	2,415	3	805	$754	$753.35	$837	$0.03	11.0%
32	230511	15,351	10	1,535	$0	$640.39	$0	$0.00	0.0%
33	240515	2,613	1	2,613	$0	$614.85	$0	$0.00	0.0%
34	240516	10,923	3	3,641	$0	$614.85	$0	$0.00	0.0%
35	240532	247	1	247	$3,025	$1,065.08	$3,447	$2.23	14.0%
36	240541	1,726	1	1,726	$0	$614.85	$0	$0.00	0.0%
37	240546	13,628	7	1,947	$0	$614.85	$0	$0.00	0.0%
38	250285	623	1	623	$2,336	$838.41	$2,428	$0.23	3.9%
39	260398	14,739	8	1,842	$0	$614.85	$0	$0.00	0.0%
40	260408	4,400	3	1,467	$0	$650.91	$0	$0.00	0.0%
41	270428	919	1	919	$0	$735.71	$0	$0.00	0.0%
42	280451	1,766	1	1,766	$0	$614.85	$0	$0.00	0.0%
43	290554	10,106	5	2,021	$0	$614.85	$0	$0.00	0.0%
44	290565	16,918	10	1,692	$0	$616.09	$0	$0.00	0.0%
45	290570	3,516	5	703	$3,809	$790.19	$6,624	$0.89	73.9%
46	290598	1,022	4	256	$12,056	$1,059.66	$13,997	$1.92	16.1%

Appendix C
2018 Average Schedule USF Study
Comparison of Current and Proposed Monthly HCL Support Payments

Obs	Study Area Code	Loops	Exch	Loops per Exch	Current Payments	Proposed Cost per Loop *	Proposed Payment (Fund Cap Appl.)	Per Loop Payment Difference	Payment Percent Difference
47	300588	687	1	687	$1,411	$799.84	$1,571	$0.33	11.3%
48	300589	425	1	425	$3,386	$957.78	$3,774	$1.31	11.5%
49	300591	455	1	455	$3,343	$939.70	$3,697	$0.98	10.6%
50	300609	1,160	1	1,160	$0	$698.41	$0	$0.00	0.0%
51	300614	614	1	614	$2,336	$843.84	$2,532	$0.46	8.4%
52	300619	1,040	1	1,040	$0	$716.98	$0	$0.00	0.0%
53	300625	1,384	1	1,384	$0	$663.75	$0	$0.00	0.0%
54	300639	888	1	888	$0	$740.50	$0	$0.00	0.0%
55	300650	1,291	2	646	$4,592	$824.55	$4,284	-$0.27	-6.7%
56	300656	710	1	710	$893	$785.97	$1,213	$0.53	35.8%
57	300663	182	1	182	$2,654	$1,104.27	$2,884	$2.84	8.7%
58	300664	873	1	873	$0	$742.82	$0	$0.00	0.0%
59	310675	3,419	4	855	$0	$745.61	$80	$0.02	100.0%
60	310676	5,362	4	1,341	$0	$670.41	$0	$0.00	0.0%
61	310678	857	1	857	$0	$745.30	$9	$0.01	100.0%
62	310688	606	1	606	$2,279	$848.66	$2,621	$0.78	15.0%
63	310694	449	1	449	$3,370	$943.31	$3,716	$0.89	10.3%
64	310703	803	4	264	$9,421	$1,054.83	$10,811	$1.97	14.8%
65	320751	1,484	2	742	$1,344	$766.68	$1,340	$0.03	-0.3%
66	320756	562	1	562	$2,534	$875.19	$3,053	$1.31	20.5%
67	320771	303	1	303	$3,268	$1,031.32	$3,736	$1.96	14.3%
68	320792	1,528	1	1,528	$0	$641.47	$0	$0.00	0.0%
69	320826	393	1	393	$3,408	$977.06	$3,819	$1.79	12.1%
70	320827	710	1	710	$186	$785.97	$1,213	$1.48	552.2%
71	320839	505	1	505	$3,068	$909.55	$3,467	$1.16	13.0%
72	330843	4,396	3	1,465	$0	$651.22	$0	$0.00	0.0%
73	330846	2,867	2	1,434	$0	$656.02	$0	$0.00	0.0%
74	330847	680	1	680	$1,926	$804.06	$1,675	-$0.38	-13.0%
75	330848	89	2	45	$1,619	$1,186.85	$1,764	$3.13	9.0%
76	330872	1,169	1	1,169	$0	$697.02	$0	$0.00	0.0%
77	330889	1,202	2	601	$4,906	$851.68	$5,350	$0.52	9.1%
78	330896	1,046	2	523	$5,812	$898.70	$6,708	$1.27	15.4%
79	330925	1,249	1	1,249	$0	$684.64	$0	$0.00	0.0%
80	330938	3,435	4	859	$0	$744.99	$0	$0.00	0.0%
81	330946	451	2	226	$5,993	$1,077.74	$6,569	$2.74	9.6%
82	340983	745	2	373	$3,607	$989.12	$7,672	$6.80	112.7%
83	340990	229	1	229	$2,870	$1,075.93	$3,316	$2.16	15.5%
84	341021	58	1	58	$1,045	$1,179.01	$1,128	$3.12	7.9%
85	341041	61	1	61	$1,045	$1,177.20	$1,181	$3.03	13.0%
86	341046	117	1	117	$1,776	$1,143.44	$2,074	$2.68	16.8%
87	341050	1,457	1	1,457	$0	$652.46	$0	$0.00	0.0%
88	341053	2,201	2	1,101	$0	$707.54	$0	$0.00	0.0%
89	341062	464	1	464	$3,343	$934.27	$3,665	$0.76	9.6%
90	341087	534	1	534	$3,181	$892.07	$3,277	-$0.04	3.0%
91	351098	246	1	246	$3,036	$1,065.68	$3,440	$2.31	13.3%
92	351101	955	1	955	$0	$730.13	$0	$0.00	0.0%

Appendix C
2018 Average Schedule USF Study
Comparison of Current and Proposed Monthly HCL Support Payments

Obs	Study Area Code	Loops	Exch	Loops per Exch	Current Payments	Proposed Cost per Loop *	Proposed Payment (Fund Cap Appl.)	Per Loop Payment Difference	Payment Percent Difference
93	351107	240	1	240	$3,020	$1,069.30	$3,398	$2.41	12.5%
94	351113	1,232	1	1,232	$0	$687.27	$0	$0.00	0.0%
95	351133	676	4	169	$9,472	$1,112.10	$10,965	$2.45	15.8%
96	351141	659	1	659	$2,139	$816.72	$1,971	-$0.26	-7.9%
97	351153	595	1	595	$2,696	$855.29	$2,738	$0.07	1.6%
98	351157	648	2	324	$6,535	$1,018.66	$7,595	$1.35	16.2%
99	351162	983	2	492	$6,508	$917.39	$7,071	$0.65	8.7%
100	351166	600	1	600	$2,490	$852.28	$2,685	$0.46	7.8%
101	351175	273	1	273	$3,074	$1,049.41	$3,604	$1.69	17.2%
102	351188	286	1	286	$3,281	$1,041.57	$3,668	$2.57	11.8%
103	351189	736	2	368	$6,781	$992.13	$7,686	$1.30	13.3%
104	351191	467	1	467	$3,265	$932.46	$3,653	$1.21	11.9%
105	351199	358	1	358	$3,301	$998.16	$3,843	$0.67	16.4%
106	351202	465	1	509	$2,906	$907.14	$3,146	$0.61	8.3%
107	351205	1,209	2	605	$6,719	$849.27	$5,259	-$2.94	-21.7%
108	351232	498	1	498	$3,250	$913.77	$3,507	$0.52	7.9%
109	351242	398	1	398	$3,405	$974.05	$3,810	$1.71	11.9%
110	351246	578	2	289	$6,392	$1,039.76	$7,362	$1.87	15.2%
111	351269	564	1	564	$3,120	$873.98	$3,035	-$0.53	-2.7%
112	351270	225	1	225	$2,897	$1,078.34	$3,284	$2.37	13.4%
113	351275	142	1	142	$2,045	$1,128.37	$2,415	$2.50	18.1%
114	351278	633	1	633	$2,259	$832.39	$2,308	$0.14	2.2%
115	351283	301	1	301	$3,255	$1,032.53	$3,729	$1.92	14.6%
116	351292	185	1	185	$2,508	$1,102.46	$2,915	$2.34	16.2%
117	351293	901	2	451	$6,813	$942.11	$7,411	$0.32	8.8%
118	351301	487	3	162	$6,820	$1,116.32	$7,999	$2.42	17.3%
119	351302	1,067	1	1,067	$0	$712.80	$0	$0.00	0.0%
120	351306	651	1	651	$2,159	$821.53	$2,078	-$0.10	-3.8%
121	351320	475	1	475	$3,295	$927.64	$3,620	$0.83	9.9%
122	351322	307	1	307	$3,415	$1,028.91	$3,750	$3.57	9.8%
123	351331	3,046	6	508	$18,481	$907.74	$20,684	$1.05	11.9%
124	351336	931	1	931	$0	$733.85	$0	$0.00	0.0%
125	361353	1,148	1	1,148	$0	$700.27	$0	$0.00	0.0%
126	361356	4,199	5	840	$0	$747.93	$505	$0.12	100.0%
127	361390	1,840	7	263	$21,457	$1,055.44	$24,826	$1.96	15.7%
128	361396	2,618	4	655	$8,180	$819.13	$8,095	$0.02	-1.0%
129	361401	1,640	10	164	$23,089	$1,115.12	$26,841	$2.46	16.3%
130	361403	686	1	686	$1,708	$800.44	$1,586	-$0.14	-7.1%
131	361404	810	2	405	$6,823	$969.84	$7,600	$1.21	11.4%
132	361423	773	1	773	$1,173	$758.30	$428	-$1.04	-63.5%
133	361475	3,245	9	361	$30,268	$996.35	$34,548	$1.20	14.1%
134	361479	7,273	3	2,424	$0	$614.85	$0	$0.00	0.0%
135	361499	1,378	1	1,378	$0	$664.68	$0	$0.00	0.0%
136	361512	132	1	132	$1,989	$1,134.40	$2,283	$2.67	14.8%
137	371555	4,884	9	543	$27,509	$886.64	$28,863	$0.25	4.9%
138	371590	57	1	57	$986	$1,179.62	$1,110	$3.04	12.6%

Appendix C
2018 Average Schedule USF Study
Comparison of Current and Proposed Monthly HCL Support Payments

Obs	Study Area Code	Loops	Exch	Loops per Exch	Current Payments	Proposed Cost per Loop *	Proposed Payment (Fund Cap Appl.)	Per Loop Payment Difference	Payment Percent Difference
139	381509	277	2	139	$3,962	$1,130.18	$4,734	$2.47	19.5%
140	381614	1,113	5	223	$14,261	$1,079.55	$16,309	$2.26	14.4%
141	381615	1,491	4	373	$13,604	$989.12	$15,355	$1.37	12.9%
142	381622	794	2	397	$6,828	$974.65	$7,624	$1.24	11.7%
143	381638	919	2	460	$9,813	$936.68	$7,351	-$2.37	-25.1%
144	391640	1,309	3	436	$10,085	$951.15	$11,260	$1.29	11.7%
145	391649	1,122	1	1,122	$0	$704.29	$0	$0.00	0.0%
146	391650	9,533	1	9,533	$0	$614.85	$0	$0.00	0.0%
147	391653	275	1	275	$3,172	$1,048.20	$3,615	$2.13	14.0%
148	391682	383	2	192	$5,122	$1,098.24	$5,957	$2.28	16.3%
149	401710	637	2	319	$6,695	$1,021.67	$7,559	$2.27	12.9%
150	421893	260	1	260	$3,204	$1,057.24	$3,531	$2.76	10.2%
151	421942	1,345	3	448	$10,128	$943.92	$11,164	$0.87	10.2%
152	431968	1,082	1	1,082	$0	$710.48	$0	$0.00	0.0%
153	442107	5,121	1	5,121	$0	$614.85	$0	$0.00	0.0%
154	462206	60	1	60	$955	$1,177.81	$1,163	$2.92	21.8%
155	462210	65	1	65	$1,060	$1,174.79	$1,251	$2.94	18.0%
156	502282	1,421	1	1,421	$0	$658.03	$0	$0.00	0.0%
157	532386	1,349	1	1,349	$0	$669.17	$0	$0.00	0.0%
158	532396	563	1	563	$2,922	$874.59	$3,044	$0.22	4.2%
	Total:	372,577			$520,200		$584,285	$0.23	12.3%

* Proposed Cost per Loop with Opex limit applied

Appendix C1
2018 Average Schedule USF Study
Model Companies Proposed 2019 USF Loops and Cost per Loop

Obs	Study Area Code	Loops	Exch	Loops per Exch	Proposed Cost per Loop *
1	100020	2,008	3	669	$810.69
2	100022	2,714	3	905	$737.87
3	170191	7,207	8	901	$738.49
4	170200	656	1	656	$818.53
5	170277	29	1	29	$1,196.50
6	190225	6,856	5	1,371	$665.77
7	190226	14,971	4	3,743	$614.85
8	190237	1,261	3	420	$960.80
9	190238	1,453	5	291	$1,038.56
10	200258	748	1	748	$763.07
11	240535	450	1	450	$942.71
12	250283	5,137	3	1,712	$614.85
13	250311	1,162	4	291	$1,038.56
14	250312	4,099	1	4,099	$614.85
15	280467	338	1	338	$1,010.22
16	300633	461	1	461	$936.08
17	300651	244	1	244	$1,066.89
18	300654	535	1	535	$891.47
19	300659	5,192	2	2,596	$614.85
20	300662	431	1	431	$954.16
21	310725	677	1	677	$805.87
22	310735	603	1	603	$850.47
23	320816	189	1	189	$1,100.05
24	320837	679	1	679	$804.66
25	330842	4,394	3	1,465	$651.22
26	330865	1,222	1	1,222	$688.82
27	330868	1,806	3	602	$851.07
28	330879	2,038	3	679	$804.66
29	330905	1,767	2	884	$741.12
30	330951	2,559	1	2,559	$614.85
31	340993	296	1	296	$1,035.54
32	341016	4,077	2	2,039	$614.85
33	341017	874	1	874	$742.67
34	341024	1,621	7	232	$1,074.12
35	341029	698	2	349	$1,003.59
36	341075	383	1	383	$983.09
37	341086	262	1	262	$1,056.04
38	341092	51	1	51	$1,183.23
39	351097	245	1	245	$1,066.29
40	351108	84	1	84	$1,163.34
41	351112	804	3	268	$1,052.42
42	351114	271	1	271	$1,050.61
43	351115	1,426	4	357	$998.77
44	351119	204	1	204	$1,091.00
45	351121	88	1	88	$1,160.93

Appendix C1
2018 Average Schedule USF Study
Model Companies Proposed 2019 USF Loops and Cost per Loop

Obs	Study Area Code	Loops	Exch	Loops per Exch	Proposed Cost per Loop *
46	351125	4,301	3	1,434	$656.02
47	351136	311	1	311	$1,026.50
48	351137	465	2	233	$1,073.52
49	351139	1,185	4	296	$1,035.54
50	351146	268	1	268	$1,052.42
51	351147	636	1	636	$830.58
52	351149	235	1	235	$1,072.32
53	351150	290	1	290	$1,039.16
54	351168	1,524	7	218	$1,082.56
55	351171	1,617	1	1,617	$627.70
56	351176	297	1	297	$1,034.94
57	351179	263	1	263	$1,055.44
58	351212	2,401	1	2,401	$614.85
59	351213	212	1	212	$1,086.18
60	351222	544	1	544	$886.04
61	351228	218	1	218	$1,082.56
62	351235	472	1	472	$929.45
63	351238	213	1	213	$1,085.58
64	351239	327	2	164	$1,115.12
65	351241	701	1	701	$791.40
66	351247	706	4	177	$1,107.28
67	351250	326	1	326	$1,017.45
68	351257	647	1	647	$823.95
69	351260	2,488	3	829	$749.63
70	351261	925	4	231	$1,074.73
71	351264	484	2	242	$1,068.10
72	351265	171	1	171	$1,110.90
73	351266	205	1	205	$1,090.40
74	351273	515	1	515	$903.52
75	351282	917	4	229	$1,075.93
76	351285	769	2	385	$981.89
77	351291	1,145	4	286	$1,041.57
78	351307	126	1	126	$1,138.02
79	351308	336	1	336	$1,011.43
80	351309	219	1	219	$1,081.96
81	351310	425	1	425	$957.78
82	351319	2,002	6	334	$1,012.63
83	351334	2,868	8	359	$997.56
84	351335	268	1	268	$1,052.42
85	351342	131	1	131	$1,135.00
86	351344	355	2	178	$1,106.68
87	351424	888	3	296	$1,035.54
88	361348	66	1	66	$1,174.19
89	361365	204	1	204	$1,091.00
90	361372	127	1	127	$1,137.41

Appendix C1
2018 Average Schedule USF Study
Model Companies Proposed 2019 USF Loops and Cost per Loop

Obs	Study Area Code	Loops	Exch	Loops per Exch	Proposed Cost per Loop *
91	361408	1,201	3	400	$972.84
92	361409	4,917	1	4,917	$614.85
93	361413	1,040	4	260	$1,057.24
94	361424	683	2	342	$1,007.81
95	361430	5,943	8	743	$766.08
96	361431	1,848	4	462	$935.48
97	361439	455	3	152	$1,122.34
98	361440	1,061	4	265	$1,054.23
99	361443	7,673	9	853	$745.92
100	361450	2,996	6	499	$913.17
101	361472	3,950	10	395	$975.86
102	361474	435	1	435	$951.75
103	361476	296	1	296	$1,035.54
104	361487	837	1	837	$748.40
105	361495	516	2	258	$1,058.45
106	361500	30	1	30	$1,195.89
107	361502	1,268	2	634	$831.78
108	361505	5,516	18	306	$1,029.51
109	361508	487	1	487	$920.40
110	361515	1,224	1	1,224	$688.51
111	361654	1,272	3	424	$958.38
112	371530	1,064	5	213	$1,085.58
113	371563	601	2	301	$1,032.53
114	371581	1,195	2	598	$853.49
115	381601	41	1	41	$1,189.26
116	391660	3,957	8	495	$915.58
117	391664	2,528	14	181	$1,104.87
118	401712	5,502	8	688	$799.24
119	401722	2,270	8	284	$1,042.78
120	421900	839	4	210	$1,087.39
121	421932	1,135	1	1,135	$702.28
122	421936	308	1	308	$1,028.31
123	442043	322	2	161	$1,116.93
124	462198	764	1	764	$759.69
125	472227	1,060	5	212	$1,086.18
126	482252	1,976	2	988	$725.03
127	502279	1,117	1	1,117	$705.06
128	502283	1,115	3	372	$989.72
129	613005	63	1	63	$1,176.00
130	613026	157	1	157	$1,119.33

* Proposed Cost per Loop with Opex limit applied