DESCRIPTION AND JUSTIFICATION

1.0 Introduction and Description of Filing

In this tariff filing, scheduled to become effective February 15, 2019, Somos, Inc. (hereinafter referred to as "Company") proposes changes to Tariff F.C.C. No. 1, <u>800 Service Management System (SMS/800) Toll-Free Number Registry (TFN Registry) Functions</u> (SMS/800 Tariff) including: update to Technical Publications, removal of references to 3270 as that interface is no longer available, changes due to FCC changes in the hoarding and warehousing rules that allow for an auction and secondary market for certain TFNs, as well as modify rates and charges based on an updated cost study and current cost and demand data. The proposed modifications are detailed below.

1.1 Modify Regulations and Service Offerings

- On pages 10 and 11
  - Update the titles, issue numbers and dates for certain Technical Publications. All publications are available as of the filing date for this tariff.
  - Eliminated technical publications related to the 3270. As noted in TN 4 and TN 5, the 3270 interface was decommissioned on October 31, 2018.
- Section 2.1.7, add, "Except as otherwise authorized by the FCC," to account for the Commission's new rules on Toll-Free Assignment. *See, Toll Free Assignment Modernization*, WC Docket No. 17-192, CC Docket No. 95-155, Report and Order, FCC 18-137 (rel. Sept. 27, 2018) (TFAM Order).
- Section 2.2, add, "The provisions of sections (A) and (B) shall not apply to toll free numbers assigned via competitive bidding or to numbers transferred under this exception." to account for the TFAM Order.
- Section 2.3.7 (A), eliminate reference to 3270 Technical Publication.
- Section 2.4.1, add language that deposits seized by Somos for non-payment forfeit accrued interest.
- Section 3.1.1, replace 3270 technical manual reference with "SMS/800 Toll-Free Number Registry User Guide" reference.
- Section 3.1.3, eliminate reference to 3270 Technical Publication.
- Section 4.1.2 (D), eliminate reference to 3270 Technical Publication.

1.2 Modify Rates and Charges

This tariff filing is being made by Company to modify rates and charges in the SMS/800 Tariff. The proposed changes, reflecting the Company's most current estimates of demand and cost for services provided under the tariff, would increase revenue over the prospective one-year period of February 15, 2019 through February 14, 2020 by $1,679,635. A comparison of current and proposed rates, as well as the revenue impact of the rate changes, is displayed in Table 1 (after section 4.8).

2.0 Revenue Requirement Development

The prospective revenue requirement for SMS/800 from February 15, 2019 through February 14, 2020 consists of expenditures for ongoing operations of the existing system as well as expenses related to the design, architecture and development of a new SMS/800 platform. Specific budget items for the Company's ongoing operations are:

- SMS/800 Operation and Administration which consists of: (a) Help Desk operational support to SMS/800 users including telephone assistance related to interfacing with SMS/800 and preparation/maintenance of Toll-Free Number (TFN) records, service establishment, and processing of requests for changes in Responsible Organization (Resp Org) for TFNs; and, (b) day-to-day management, planning and administrative oversight provided by Company, external operational support services such as billing, accounting, cost analysis, website support and TFN authentication, and expenses associated with the Company's membership and Board of Directors to support management, operation and administration of the SMS/800.

  The estimated revenue requirement for SMS/800 operation and administration for the one-year period of February 15, 2019 through February 14, 2020 is $38,452,268.

- SMS/800 Data Center Operation reflects the cost of the ongoing support, maintenance of the existing production and test/disaster recovery SMS/800 data centers and operation of a Service Center (Help Desk) facility to handle security and access problems. It also includes costs associated with a technologically updated data center that will replace the existing data center. The estimated revenue requirement for the data center operation is $18,812,112.

- SMS/800 Software Support includes the provision of software maintenance, computer site and application support, and software development for new features for the existing SMS/800 system. It also includes costs associated with the design and architecture of an updated software platform. The estimated revenue requirement for software support is $3,574,344.

  A comparison of projected past year and actual past year costs, and projected future year costs are shown in Table 2.

2.1 Revenue Requirement Distributions

A detailed hardware, software and activity based cost study was performed to identify average unit costs for the SMS/800 rate elements. The updated costing methodology is consistent with the methodology used for previous SMS/800 Tariff filings. The average unit costs developed are shown in Table 5. The resulting revenue requirement for each rate element is shown in Table 4. Cost-causation analyses were performed and applied to budget elements as follows:

- A Task Oriented Costing (TOC) study was used to distribute Help Desk costs to rate elements. Help Desk managers identified the primary tasks performed, how often the tasks were performed, and the average time spent performing them. Each task was then analyzed and associated with the particular rate element it supports. To the extent that Help Desk costs are not specific to a rate element, the costs are included in the CRA rate element. The resulting unit costs are shown in Table 5, column (a).

- Data center costs consist primarily of: (a) network equipment and facilities needed to provide communications access for customers' links; (b) storage hardware for TFN record data; and (c) a processing community used to respond to and execute customer requests for SMS/800 services. *Network costs* are attributable almost entirely to rate elements required to access SMS/800. A unit cost analysis of each type of connection to SMS/800 was used to determine its cost. The processing community, consisting of central processing units and server-based distributed processors, and storage costs are related almost exclusively to the support and processing of customer records and were therefore, with only a few minor exceptions, assigned to the CRA rate element. The Data Center also supports production of some reports and batch updates. Activity based analyses were used to capture these costs and associate them with the appropriate rate elements. The resulting average unit costs for the Data Center are shown in Table 5, column (b).

- The cost of software support includes software maintenance, site support and software development for new features. The software maintenance and site support dollars were attributed on the basis of analyses of effort by software personnel for the basic functions of software development, software maintenance and support services. The costs of the various functions were attributed to rate elements based on these analyses. The software development staff also supports production of some reports. Activity based analyses were used to capture these costs and associate them with the appropriate rate elements. The average unit costs developed for software costs are shown in Table 5, column (c).

- The Operations and Administration cost are analyzed to determine if they explicitly support any of the SMS/800 rate elements. With the exception of a small amount associated with Resp Org restoration (post suspension), the operations and administration costs are shared and common costs. The resulting average unit costs are shown in Table 5, column (d).

3.0 Basis of Ratemaking

The rate structure for SMS/800 consists of service elements that are used by Resp Orgs. The proposed rate for each element is based on its projected revenue requirement and demand. The only exception are the proposed hourly rates for Resp Org requested MGI/WSI Additional Testing. This rate is based on changes to vendor contracts. The contractual rate of $200 per hour is expected to remain valid for the proposed tariff period. This information is shown in Table 6.

4.0 Demand Forecast

The demand forecast for the prospective tariff period is displayed in Table 3. Information and/or data considered in developing the forecast are discussed in the following sections.

4.1 Customer Record Administration (CRA)

This rate element represents the quantity of toll-free numbers for which customer records exist in the SMS/800 and is charged on a recurring (monthly) basis for each number record administered. Following the methodology used to produce prior CRA forecasts, we examined alternative statistical models (e.g., simple regression, ARIMA), searching to find the best fit of the historical data. These models predict the future value of the dependent variable (toll-free numbers) largely by analysis of past values of that variable.[1]

The first issue addressed involved data frequency. The toll-free number data are collected and reported weekly, but previous tariff filings (as well as the CRA rate element charge) use monthly data. A two-year forecast of monthly data requires a 24-period forecast. Because data typically contain random elements, projections tend to become less reliable with the number of periods forecast. This problem can be mitigated by using lower data frequency, allowing random influences to offset, smoothing observed values. When high frequency forecasts are not needed, modeling the dynamics at a lower frequency is usually more accurate. For example, estimating a moving average error term with quarterly data provides an average over three months to improve the forecast, while using monthly data produces just one month's worth of moving average correction. When the individual months are not required in their own right—as is the case here—the longer observation period provides an error correction more closely related to the longer forecast needed. Of course, lower frequency data yield fewer observations over the same time frame and, all else equal, additional observations tend to improve estimation accuracy. Given that the use of annual data is ruled out due to insufficient degrees of freedom, we chose to perform our estimations with demand measured quarterly. This approach is designed to balance forecast variance against loss of observations.

The monthly forecasts for January 2019 through February 2020 reported in Table 3A represent either linear interpolations of the quarterly forecasts (2Q2019 - 2Q2020) or the result of estimated monthly CRA (1Q2019).[2] For the quarterly forecast, we used the unweighted average of the three months in each quarter to construct the quarterly series of toll-free numbers. The average monthly number of lines for a quarter is considered to be that number which would accrue to the middle month of each quarter. For example, the middle month for the quarter ending March 2008 is February 2008, the middle month for the quarter ending June 2008 is May 2008, etc. Use of this averaging methodology tended to smooth out random fluctuations, as desired.

Similar to the choice of quarterly data, a three-year estimation window represents a tradeoff between regime stability and the number of estimation observations. Shorter time periods for estimation were considered, but there was reason to believe that these estimates were more susceptible to short term fluctuations and were less precise. Longer periods were not used because it is believed that factors that might drive demand change over time, and that factors that affected the market as recently as four years ago might not have any influence over current market conditions.

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[1] This is an example of the Box-Jenkins approach to time-series modeling that only uses past values of a variable to predict future values. In addition to past values, a time trend may also be considered as well as transformations of the variable (e.g. natural logarithms) and seasonal indicators (e.g. quarter). Indicator variables take on a value of 1 or 0 (e.g. an indicator for the first quarter of a year takes on a value of 1 for the first quarter; 0 for all other quarters).

[2] In the case of linear interpolations, if toll-free lines were projected to rise from 25,000,000 to 25,300,000 from one quarter to the next, the consecutive monthly totals would be 25,100,000, 25,200,000 and 25,300,000.

It should be noted that this forecast makes use of 13 quarters of CRA. To better estimate the first quarter of the tariff period, monthly data were used to estimate the months of December 2018 – March 2019 (actual CRA data were available through November 2018). The estimated months were then used to complete the 13-quarter series for the quarterly CRA tariff forecast (1Q2016 - 1Q2019). The CRA tariff quarterly forecast begins with 2Q2019.

In general, whenever actual data available ends mid-quarter, data for the remaining months of that quarter are unknown. This means that either some known data must be disregarded or that the remaining months in the quarter must be extrapolated. Since the former option requires disregarding actual data, the latter option is preferable. The methodology for forecasting demand for the remaining months of the quarter is similar to the methodology used for forecasting quarterly estimates (i.e., simple regression, ARIMA). The difference is that only monthly data will be used in this forecast, as opposed to smoothed quarterly data. The lack of smoothing is acceptable because the demand will only be forecasted three to four months ahead, which is a fairly short-run forecast.

Forecasting December 2018 to March 2019 Monthly Demand

Because the available data end in November 2018, to produce a quarterly forecast as described above, it is first necessary to produce a monthly forecast for December 2018 and for the first quarter of 2019. The best fit is a simple regression model which includes five lagged CRA terms, an indicator for the month of April, one for the April/May 2013 period and one for May 2013, lagged number of disconnects plus transitionals, and is defined by the following parameters and summary statistics:

R-Square = 0.9998   R-Square Adjusted = 0.9997

PARAMETER	ESTIMATES	STD ERROR	T-STAT
CONSTANT	247,001	49,012	5.0396
CRA(-1)	1.2609	0.0607	20.7604
CRA(-2)	-0.1931	0.0763	-2.5305
CRA(-4)	-0.0972	0.0459	-2.1194
CRA(-7)	0.0854	0.0317	2.6965
CRA(-12)	-0.0591	0.0141	-4.2037
MAY_2013_IND	-1,388,115	192,060	-7.2275
APR_IND	118,148	28,811	4.1008
APR_MAY_2013_IND	1,168,180	126,593	9.2278
DISC_TRANS_EOP(-4)	-0.2161	0.0394	-5.4878

In equation form, the model indicates that:

Forecasted Monthly $CRA_t = 247,001 + 1.2609*CRA_{t-1} - 0.1931*CRA_{t-2} - 0.0972*CRA_{t-4} + 0.0854*CRA_{t-7} - 0.0591*CRA_{t-12} - 1,388,115*MAY\_2013\_IND + 118,148*APR\_IND + 1,168,180*APR\_MAY\_2013\_IND - 0.2161*DISC\_TRANS\_EOP_{t-4} + u_t$

The forecast for December 2018 is 41,792,859. And for the first quarter 2019 the forecast is 41,766,804 (January), 41,786,224 (February), 41,843,201 (March).

Forecasting Quarterly Demand Through February 2020

The model that appeared to produce the best fit using the most recent 13 quarters of data (1Q2016 - 1Q2019) is a simple regression model which includes three lagged CRA terms, an indicator of the first quarter and one for the third quarter of 2016, and is defined by the following parameters and summary statistics:

R-Square = 0.9845   R-Square Adjusted = 0.9735

PARAMETER	ESTIMATES	STD ERROR	T-STAT
CONSTANT	9,875,003	2,341,282	4.2178
CRA(-1)	0.7256	0.0846	8.5751
CRA(-4)	-0.4153	0.1101	-3.7721
CRA(-5)	0.4553	0.0854	5.3335
Q3_2016_IND	375,581	74,981	8.5751
Q1_IND	-158,625	41,740	-3.8003

In equation form, the model indicates that:

Forecasted Quarterly CRA_t = 9,875,003 + 0.7256*CRA_{t-1} - 0.4153*CRA_{t-4} + 0.4553*CRA_{t-5} + 375,581*Q3_2016_IND – 158,625*Q1_IND + u_t

The linearized monthly results of this forecast are shown in Table 3A.

4.2 Change of Resp Org for Toll-Free Number

This element provides for changing the Resp Org for a TFN and is charged on a non-recurring (per request) basis. Demand during the prior tariff period is expected to be 1,441 significantly below the anticipated demand due to the implementation and mandate of the Centralized Resp Org Change system. Projected demand is anticipated to decline slightly to 1,385 for the prospective one-year period of February 15, 2019 through February 14, 2020.

4.3 SMS/800 Access

This service element provides for the connection of dedicated and non-dedicated communications links to the SMS/800 and is charged on a recurring (monthly) basis. Monthly demand for non-dedicated access has been steady during 2018 but is expected to remain so with anticipated demand of 9,072 for the upcoming tariff period. Demand for dedicated MGI access has remained steady during 2018 and is expected to remain so with annualized demand of 684. Monthly demand for non-MGI dedicated access has been consistent throughout 2018 and is projected to remain at those levels resulting in demand of 2,448 for the prospective one-year period of February 15, 2019 through February 14, 2020.

4.4 Service Establishment

This service element provides for various aspects of establishing service, i.e., first logon ID, subsequent (additional) logon IDs and Security Keys as well as the restoration of services for Resp Orgs that have had service suspended. Charges for these services are applied on a non-recurring (one time) basis. Demand for first logon IDs is expected to decline over the upcoming tariff period to 15. Average monthly demand for subsequent logon IDs is anticipated to decline slightly resulting in annualized demand projection of 465 for the prospective tariff period. The issuance of Security Keys are projected to decrease slightly from the prior tariff period total of 43 to 35 for the prospective tariff period of February 15, 2019 through February 14, 2020. The demand for Resp Org restoration of service (post suspension) has been reduced in part due to changes in process and thus is anticipated to remain low with annual demand of 2 for the prospective tariff period.

4.5 Customer Reports

This service element provides for the preparation and delivery of customer specific off-line reports as well as the preparation and delivery of standard recurring on-line reports. The on-line report demand for the prospective tariff period February 15, 2019 through February 14, 2020 is 128. The on-line report is charged "per report." Off-line reports are charged "per hour" to prepare and deliver for each customer request. Eight (8) hours of effort are anticipated during the prospective tariff period of February 15, 2019 through February 14, 2020.

4.6 MGI/WSI Additional Testing per Hour

This service element provides for initial and/or additional testing as requested from the SMS/800 software support team and is charged on an hourly basis as required. There were no requests for MGI testing during the prior tariff period. As customers prepare for the API interfaces, additional testing needs for MGI are not anticipated during the prospective tariff period February 15, 2019 through February 14, 2020.

4.7 Batch Updates

This service element allows customers to request changes and updates for multiple Toll-Free records and is charged per file processed. Monthly demand declined during prior tariff period and demand for the prospective tariff period February 15, 2019 through February 14, 2020 is projected to be 96 batch updates.

4.8 Batch Update Testing per Hour

This service element provides for initial testing of batch update files and formats required to properly conduct batch updates on the SMS/800 system as requested from the SMS/800 support team and is charged on an hourly basis as required. No additional Resp Orgs are anticipated to be adding this functionality and thus there is no activity expected for the prospective tariff period February 15, 2019 through February 14, 2020.