

## DESCRIPTION AND JUSTIFICATION

### 1.0 Introduction and Description of Filing

In this tariff filing, scheduled to become effective February 15, 2023, Somos, Inc. (hereinafter referred to as “Company”) proposes changes to Tariff F.C.C. No. 1, 800 Service Management System (SMS800) Toll-Free Number Registry (TFNRegistry™) Functions (TFN Registry Tariff) including: update to the availability and access to Technical Publications; and 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 to show that all technical publications are now available in the Somos Support Center (support.somos.com) as articles and they are updated as needed.

### 1.2 Modify Rates and Charges

This tariff filing is being made by Company to modify rates and charges in the TFN Registry Tariff. The proposed changes, reflecting 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, 2023 through February 14, 2024 by \$2,972,205. 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 TFN Registry from February 15, 2023 through February 14, 2024 consists of expenditures for ongoing operations and continued development of the TFN Registry platform. Specific budget items for Company’s ongoing operations are:

- TFN Registry Operation and Administration which consists of: (a) Help Desk operational support to TFN Registry users including telephone assistance related to interfacing with TFN Registry 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 Company’s membership and Board of Directors to support management, operation and administration of the TFN Registry.

The estimated revenue requirement for TFN Registry operation and administration, which includes the effort related to Resp Orgs obtaining STIR/SHAKEN delegated certificates, for the one-year period of February 15, 2023 through February 14, 2024 is \$47,680,907.

- TFN Registry Data Center Operation reflects the cost of the ongoing support, maintenance of the existing production and test/disaster recovery TFN Registry data centers and operation of a Service Center (Help Desk) facility to handle security and access problems. The estimated revenue requirement for the data center operation is \$9,514,251.
- TFN Registry Software Support includes the provision of software maintenance, computer site and application support, and software development for new features for the existing TFN Registry system. The estimated revenue requirement for software support is \$7,382,975.

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 TFN Registry rate elements. The updated costing methodology is consistent with the methodology used for previous TFN Registry 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 cloud-based: (a) network equipment and facilities needed to provide communications access; (b) storage hardware for TFN record data; and (c) a processing community used to respond to and execute customer requests for TFN Registry services. The processing community and storage costs are related exclusively to the support and processing of customer records and were therefore assigned to the CRA rate element.
- 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 and are almost exclusively related to the processing of customer records and are therefore assigned to the CRA rate element. 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 TFN Registry 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 TFN Registry 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 is the proposed hourly rate for Resp Org requested WSI Additional Resp Org Testing. This rate is based on changes to vendor contracts. The contractual rate of \$100 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 3B. 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 TFN Registry 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 number demand) largely by analysis of past values of that variable.<sup>1</sup>

The first issue addressed involved data frequency. The toll-free number data is collected and reported daily, 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.

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<sup>1</sup> 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).

The monthly forecasts for December 2022 through February 2024 reported in Table 3A represent either linear interpolations of the quarterly forecasts (2Q2023 -1Q2024) or the result of estimated monthly CRA (1Q2023).<sup>2</sup> 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 toll-free numbers 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 fluctuations, as desired.

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 2022 – March 2023 (actual CRA data were available through October 2022 with estimate from November 2022). The estimated months were then used to complete the 13-quarter series for the quarterly CRA tariff forecast (1Q2020 - 1Q2023). The CRA tariff quarterly forecast begins with 2Q2023.

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 forecast. 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 2021 to March 2022 Monthly Demand*

Because of the available data mid-November 2022, to produce a quarterly forecast as described above, it is first necessary to produce a monthly forecast for December 2022 and for the first quarter of 2023. Although monthly CRA data for the prior month are not released until the 15<sup>th</sup> of the following month, daily CRA data for the following month are available around the 15<sup>th</sup> of the month. An approximation of the billing calculations was used as an estimate for November 2022 CRA count. This provided a complete monthly CRA series through November 2022 which was used to estimate a model to forecast December 2022 through March 2023.

The model that best fits the monthly CRA series and reflects the current CRA trend is an ARIMA(1,2,1) using second differenced CRA series with an auto-regressive term and one moving average term. The model is defined by the following parameters and summary statistics:

#### **ARIMA MODEL (1,2,1) TERM COEFFS**

	<b>Estimate</b>	<b>Std. Error</b>	<b>z value</b>	<b>Pr(&gt; z )</b>
<b>AR1</b>	0.2317	0.0682	3.3948	0.000686705
<b>MA1</b>	-0.8648	0.0383	-22.5610	1.0463E-112

<sup>2</sup> 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.

**ARIMA MODEL (A1,2,1) STATISTICS FOR MONTHLY FORECAST**

<b>MODEL</b>	<b><u>MPE</u></b>	<b><u>MAPE</u></b>	<b><u>MASE</u></b>	<b><u>ACF1</u></b>	<b><u>SE SQ</u></b>	<b><u>AIC</u></b>
<b>A(1,2,1)</b>	0.0435	0.5199	0.6557	-0.0038	2.28E+10	9426.8242

The point forecast for the December 2022 to March 2023 period is shown below:

	<b>Point Forecast</b>
Dec-22	43,176,963
Jan-23	43,118,710
Feb-23	43,070,465
Mar-23	43,024,540

*Forecasting Quarterly Demand Through February 2022*

This monthly forecast model was used to complete the most recent 13 quarters of CRA data (1Q2020 - 1Q2023). Since using lagged regression models would have resulted in losing somewhat limited number of 13-quarterly datapoints, ARIMA Models were then fit to this quarterly series. The model that best fits the 13-quarters of CRA data and reflects the current CRA trend is a model an ARIMA (1,1,0) using differenced CRA with an auto-regressive term but no moving average term. The model is defined by the following parameters and summary statistics:

**ARIMA MODEL (1,1,0) TERM COEFFFS**

	<b>Estimate</b>	<b>Std. Error</b>	<b>z value</b>	<b>Pr(&gt; z )</b>
<b>AR1</b>	0.5869	0.2154	2.7248	0.0064

**ARIMA MODEL STATISTICS FOR QLY FORECAST**

<b>MODEL</b>	<b><u>MPE</u></b>	<b><u>MAPE</u></b>	<b><u>MASE</u></b>	<b><u>ACF1</u></b>	<b><u>SE SQ</u></b>	<b><u>AIC</u></b>
<b>A(1,1,0)</b>	0.1278	0.4798	0.6625	-0.0769	9.14E+10	340.2696

The point forecast for the 2023Q2 to 2024Q1 period is shown below:

	Point Forecast
2023Q2	42,913,148
2023Q3	42,820,352
2023Q4	42,765,884
2024Q1	42,733,912

The end of global pandemic and continued developments in the use of 10DLC numbers for messaging applications add unique dynamics into the CRA forecast process for the upcoming tariff period. As an impact of end of global pandemic, need for communication services and technologies moderated in Y2022 and led to a decline in demand for toll-free numbers in H2 Y2022, the full impact of which will continue to be realized in Y2023. The decline is likely related to reduced demand for video and other conferencing resources needed to accommodate the educational system from kindergarten through colleges as well as return of workforce to offices and a return to normal ways of life like in-store shopping. With continuation of vaccination efforts across the United States and Canada, the expectation is that, over time, as life returns to normal, toll-free demand will continue to moderate. In Y2023, Company expects that demand related to pandemic driven investments in communication services to level off to pre-pandemic patterns. Additionally, starting Q1-2023 and beyond, Company expects toll-free demand to be subdued due to continued use of 10DLC numbers for messaging applications.

The statistical analysis described above produces a point and interval forecast as follows:

	Point Forecast - 1.5*SE	Point Forecast	Point Forecast + 1.5*SE
2023Q2	42,460,208	42,913,148	43,366,087
2023Q3	41,970,745	42,820,352	43,669,960
2023Q4	41,546,370	42,765,884	43,985,397
2024Q1	41,177,872	42,733,912	44,289,952

The interval forecast (+/- 1.5\*standard forecast error (SE)) represents a 86% forecast interval, i.e., there is a 86% probability that actual tariff demand will lie within the interval forecast.

Company believes the recent substantive impacts related to the pandemic compounded with an developments in 10DLC numbers for messaging described above, will lower the demand during the proposed tariff period and it will be less than the point forecast. Company remains confident that actual CRA will reside within the interval forecast and above the lower bound established by the point forecast less twice the standard forecast error. With further visibility into TFNs in Disconnect/Transitional state at end of Q42022 which are expected to Spare post their mandatory Aging period, Company establishes forecast to be point forecast less 1.5 standard forecast error as described below.

Point Forecast - 1.5*SE
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2023Q2	42,460,208
2023Q3	41,970,745
2023Q4	41,546,370
2024Q1	41,177,872

The linearized CRA forecast maintains the characteristics of the point forecast resulting in a total TFN Demand for the proposed tariff period of 503.42M, about 2.0% less than the point forecast. 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 3,496, although a significant portion of that was a one-time event. Projected demand is expected to be 1,200 for the prospective one-year period of February 15, 2023 through February 14, 2024.

#### **4.3 Service Establishment**

This service element provides for various aspects of establishing service including: first logon ID, subsequent (additional) logon IDs, and 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 increase during the upcoming tariff period to 14. Average monthly demand for subsequent logon IDs is anticipated to be similar to the prior tariff period, resulting in annualized demand projection of 250 for the prospective tariff period. The demand for Resp Org Restoration of service (post suspension) remains low, in part, due to changes in process and thus is anticipated to have a demand of 1 for the prospective tariff period.

#### **4.4 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, 2023 through February 14, 2024 is 36, same as experienced in prior tariff period. The on-line report is charged “per report.” Off-line reports are charged “per hour” to prepare and deliver for each customer request. Four and one-half (4.5) hours of effort are anticipated during the prospective tariff period of February 15, 2023 through February 14, 2024.

#### **4.5 WSI Additional Resp Org Testing per Hour**

This service element provides for initial and/or additional testing as requested from the TFN Registry support team and is charged on an hourly basis as required. There were no requests for WSI testing during the prior tariff period, and as the WSI is relatively mature, additional testing needs for WSI are not anticipated during the prospective tariff period February 15, 2023 through February 14, 2024.