

## DESCRIPTION AND JUSTIFICATION

### 1.0 Introduction and Description of Filing

In this tariff filing, scheduled to become effective February 15, 2012, the Bell Operating Companies (BOCs) propose changes to Tariff F.C.C. No. 1, 800 Service Management System (SMS/800) Functions (SMS/800 Tariff) to modify rates and charges based on an updated cost study and current cost and demand data and modify certain general regulation and service offering text. The BOCs also propose to eliminate the Additional Copies of Monthly Bill rate element. This rate was originally intended to capture the costs associated with sending additional copies of paper bills, some of which were thousands of pages long. The introduction of electronic delivery of primary bills in 2010, and the use of CD or DVD media for delivery of additional bills, obviates the need for this rate element.

The proposed modifications are detailed below.

### 1.1 Modify Regulations and Service Offerings

- Title Page 4, an update to the name, title and address of the tariff's issuing officers.
- On pages 10 and 11, the titles, issue numbers and dates for certain Technical Publications are updated. All publications are available as of the filing date for this tariff.
- General Regulations
  - ◆ Section 2.3.7(A), text changes are incorporated to reflect the title changes to the technical publications.
- Service Offerings
  - ◆ Sections 3.1, 3.3, 3.4 and 3.5, text changes are incorporated to reflect the title changes to the technical publications.
  - ◆ Section 3.7, reference to charging for the provision of an additional copy of the monthly bill is removed. The service description remains the same ensuring that SMS/800 customers can continue to request and receive additional electronic versions of their monthly bills. Language is added noting that this service is provided "at no additional charge".
- Schedule of Rates and Charges
  - ◆ Section 4.1.2 (F) and 4.2(F) are modified reflecting the elimination of the Additional Copies of Monthly Bill rate element.

## 1.2 Modify Rates and Charges

This tariff filing is also being made by the BOCs to modify rates and charges in the SMS/800 Tariff. The proposed changes, reflecting the BOCs' most current estimates of demand and cost for services provided under the tariff, would *decrease* revenue over the prospective one-year period of February 15, 2012 through February 14, 2013 by \$953,995. A comparison of current and proposed rates, as well as the revenue impact of the rate changes, is displayed in Table 1 (after section 4.9).

## 2.0 Revenue Requirement Development

The prospective revenue requirement for SMS/800 from February 15, 2012 through February 14, 2013 consists of expenditures for ongoing operations of the existing system. Virtually all of the costs are expense items. Specific budget items for SMS/800 ongoing operations are:

1. *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 records, and processing of requests for changes in Responsible Organization for toll-free numbers; (b) day-to-day management, planning and administrative oversight provided by SMS/800, Inc. and the SMS/800 Business Manager (DSMI), external operational support services such as billing and collections, accounting, cost analysis and website support, and general administrative and human resources expenses related to SMS/800; and (c) the indirect cost of internal resources that the Bell companies expend to support management, operation and administration of the SMS/800. These resources include employees in the companies' tariff, regulatory, legal, technical, financial, taxation, procurement, accounting, network operations, systems provisioning, and operations support organizations.

The estimated revenue requirement for SMS/800 operation and administration for the one-year period of February 15, 2012 through February 14, 2013 is \$10,359,213 distributed as follows: (a) Help Desk: \$2,030,497; b) Management and Administration: \$8,185,785; and (c) BOC indirect costs: \$142,931.

2. *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. The estimated revenue requirement for the data center operation is \$25,608,498.

3. *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. The estimated revenue requirement for software support is \$5,751,740.

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 SMS/800 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 (tape and disk drives) for toll-free number 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 the preparation of additional bills requested by SMS/800 customers, 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 Responsible Organizations. The proposed rate for each element is based on its projected revenue requirement and demand. The only exception is the proposed daily and hourly rates for Responsible Organization requested MGI Testing. This rate is based on changes to vendor contracts. The contractual rate of \$190 per hour, or \$1,520 per day, 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 year 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 ARIMA models, searching to find the best fit of the historical data. An ARIMA model predicts the future value of the dependent variable (toll free numbers) largely by analysis of past values of that variable.<sup>1</sup>

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.

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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).

The monthly forecasts for December 2011 through February 2013 reported in Table 3A represent linear interpolations of the quarterly forecasts. (For instance, if toll free lines were projected to rise from 22,000,000 to 22,300,000 from one quarter to the next, the consecutive estimated monthly totals would be 22,100,000, 22,200,000, and 22,300,000.) For the 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 was considered to be that number which would accrue to the middle month of each quarter. 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. It should be noted that this was the methodology used in previous forecasts.

Note that 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., 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 one or two months ahead, which is a fairly short run forecast. Twelve months of monthly data is used in this forecast to capture all the effects that might be observed in a year.

*Forecasting December 2011 Monthly Demand*

Because the available data ends in November 2011, to produce a quarterly forecast as described above, it is first necessary to produce a monthly forecast for the fourth quarter of 2011. The best differenced, logged ARIMA model includes contemporaneous TFNs with one AR term:

R-Square = 0.800 R-Square Adjusted = 0.798

PARAMETER	ESTIMATES	STD ERROR	T-STAT
TFN	1.0020	0.0305	32.8154
AR(1)	-0.2622	0.0742	-3.5330
CONSTANT	0.0003	0.0003	1.0750

In equation form, the monthly model indicates that:

$$d(\ln\text{CRA}_t) = .0003 + 1.002*d(\ln\text{TFN}_t) - 0.2622*d(\ln\text{CRA}_{t-1}) + u_t$$

The forecast for December 2011 is 31,772,815.

*Forecasting Quarterly Demand Through February 2013*

The ARIMA model that appeared to produce the best fit using the most recent 12 quarters of data includes a time trend, one AR and one MA term and is defined by the following parameters and summary statistics:

R-Square = 0.998 R-Square Adjusted = 0.997

PARAMETER	ESTIMATES	STD ERROR	T-STAT
TIME	633,024	9,384	67.4591
AR(2)	-0.6056	0.2458	-2.4636
MA(3)	-0.9779	0.0167	-58.5890
CONSTANT	-15,155,183	655,562	-23.1179

In equation form, the model indicates that:

$$\text{Forecasted CRA}_t = -15,155,183 + 633,024 * \text{TIME} - 0.6056 * \text{CRA}_{t-2} + u_t - 0.9779 u_{t-3}$$

The results of the forecast are shown in Table 3A.

**4.2 Change of Responsible Organization for Toll-Free Number**

This element provides for changing the Responsible Organization for a toll-free number and is charged on a non-recurring (per request) basis. Demand during the current tariff period is expected to be approximately 15,143. Projected demand is estimated to be 15,000 for the prospective one-year period of February 15, 2012 through February 14, 2013.

**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. The monthly demand for the non-dedicated access during the last year declined to approximately 810 and the demand is anticipated to remain at this level for the upcoming tariff period. Monthly demand for dedicated MGI access has remained steady at 32 during 2011 and is anticipated to remain stable for the upcoming tariff period. Monthly demand for non-MGI dedicated access has remained steady during 2011, rising slightly to just over 199 connections, and is projected to remain at that level. Projected demand is estimated to be 2,390 for the prospective one-year period of February 15, 2012 through February 14, 2013.

#### **4.4 Service Establishment**

This service element provides for various aspects of establishing service, i.e., first logon ID, subsequent (additional) logon IDs and Smart Cards 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 averaged just over 1 requests per month over the last 12 months and is forecast to continue at a this same rate resulting in an annual forecast of 15 for the upcoming tariff period. Demand for subsequent logon IDs has declined from previous years, averaging approximately 45 requests per month during this calendar year. The demand is expected to increase from the current levels resulting in annualized demand projection of 745 for the prospective tariff period. Smart Cards are projected to be similar to the recent average resulting in an annual projection of 93 Smart Cards for the prospective tariff period of February 15, 2012 through February 14, 2013. The demand for Resp Org restoration of service (post suspension) is based on recent history of this activity and is set at 65 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, 2012 through February 14, 2013 is 98, equal to the total expected for the current tariff period. The online report is charged “per report”. Off-line reports are charged “per hour” to prepare and deliver for each customer request. After significant activity in 2010, Resp Orgs in 2011 have not requested off-line reports. Off-line report demand is anticipated to be less than one hour per month, a total of 10 hours during the prospective tariff period of February 15, 2012 through February 14, 2013.

#### **4.6 MGI Additional Testing per Hour**

This service element provides for initial and/or additional MGI testing as requested from the SMS/800 software support team and is charged on an hourly basis as required. Annualized demand for this tariff period is expected to be approximately 29. The demand for the prospective tariff period February 15, 2012 through February 14, 2013 is anticipated to increase to 45 hours.

#### **4.7 Copy of Additional Bill**

It is proposed to eliminate this service element with this filing.

#### **4.8 Batch Updates**

This service element allows customers to request changes and updates to many toll-free records and is charged per file. Monthly demand during the last 12 months has declined. The demand is expected to remain at these levels for the prospective tariff period February 15, 2012 through February 14, 2013 resulting in a projected annualized demand of 483 batch updates.

#### **4.9 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. Annual demand for the prospective tariff period February 15, 2012 through February 14, 2013 is anticipated to be 7.5 hours.