



CITY AND COUNTY OF SAN FRANCISCO
OFFICE OF THE CONTROLLER

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Ben Rosenfield
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Deputy Controller

MEMORANDUM

TO: Ken Bukowski, Deputy City Administrator – Chief Financial Officer, Office of the City Administrator
Leo Levenson, Deputy Director – CFO/CAO, Department of Technology

FROM: Randle McClure, Project Manager, City Services Auditor /s/
Joe Lapka, Performance Analyst, City Services Auditor /s/

SUBJECT: Analysis of CALNET 3 rates for the City’s telecommunications services

DATE: October 13, 2015

Executive Summary

This memorandum is in response to a request from the Board of Supervisors that the City Administrator and the City Services Auditor division of the Controller’s Office evaluate the best possible rates for telecommunications services under the State of California’s Integrated Telecommunications Network rate agreement known as CALNET 3 (C3).

Previously, AT&T provided the City with an analysis that compared the City’s costs for service under AT&T’s former CALNET 2 rates with the estimated costs under its new CALNET 3 rate structure.¹ However, as noted in a report prepared by the Budget and Legislative Analyst for a March 11, 2015 meeting of the Budget and Finance Sub-Committee, AT&T did not estimate the cost savings if the City were to select a CALNET 3 provider other than AT&T. Members of the Budget and Finance Sub-Committee subsequently requested such estimates by mid-October.

This memorandum supplements AT&T’s May 2015 analysis with estimates of monthly service charges based on published rates for the other potential CALNET 3 providers. Table 1a below summarizes our findings by comparing the estimated costs for service with AT&T under the CALNET 3 program to the estimated costs for service with the lowest-cost alternative provider in each of seven different service categories.

Because of the complexity of the services in question and time and resource constraints, we have made a number of simplifying assumptions throughout our analysis in order to provide as direct a comparison as possible of the rates among the potential service providers. As a result of these assumptions, our estimates of the monthly charges for service with AT&T may not necessarily match those previously provided by AT&T. Subsequent sections of this memorandum discuss in greater detail the assumptions we made as well as the general methodology we used to perform the analysis.

¹ Heather Petersen, personal communication, May 18, 2015; Christina Grove, personal communication, May 21, 2015
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Table 1a – Comparison of Estimated Monthly Costs for CALNET 3 Service (AT&T vs Lowest-cost Alternative Providers)¹
 [lowest estimated costs shown in bold]

Service Category	Provider	Estimated Monthly Cost for C3 Service	Potential Monthly Savings vs AT&T
1.1 – Dedicated Transport ²	AT&T	\$164,990	-
	Verizon	\$166,800	
1.2 – MPLS, VPN and Converged VoIP	AT&T	\$1,231	\$513
	Jive	\$718	
1.4 – Long Distance	AT&T	\$9,413	\$1,501
	CenturyLink	\$7,912	
1.5 – Toll Free	AT&T	\$529	-
	Verizon	\$611	
1.6 – Legacy Telecommunications	AT&T	\$186,937	-
	[no other C3 service providers]	—	
3 – Metropolitan Area Network Ethernet	AT&T	\$73,506	-
	[other estimates not available] ³	—	
5 – Managed Internet Services ⁴	AT&T	\$11,869	\$1,801
	Integra	\$10,068	
Total			\$3,815

- Notes: 1. Estimates for service categories 1.1-1.6 are based on billing data from January 2014; estimates for service categories 3 and 5 are based on billing data from December 2014
2. Excludes costs for services not identified in Verizon’s product catalog, services identified in AT&T’s product catalog for legacy telecommunications, and those not considered by AT&T to be C3 services; see discussion below on pages 10-11
3. See discussion below on page 11
4. Excludes the cost of services offered by AT&T but not Integra, and the cost of service in locations outside of Integra’s service area; see discussion below on pages 11-12

In addition to recurring monthly charges, the CALNET 3 providers also assess non-recurring charges when establishing new service for certain features. While these charges will not apply to service that remains with AT&T, they may apply to services that are moved to an alternative provider and they would offset the potential savings shown above. For each of the alternative service providers in Table 1a, Table 1b below estimates the corresponding non-recurring charges.

As shown below there are no non-recurring charges for MPLS and long distance service. For managed internet service, however, the \$10,000 in estimated non-recurring charges would offset approximately 5.5 months of the potential savings shown above in Table 1a.

Based on this information it is our conclusion that AT&T’s rates are generally competitive with the rates of the other CALNET 3 providers.

Table 1b – Estimated Non-recurring Charges for New Service with the Lowest-cost Alternative CALNET 3 Providers

Service Category	Lowest-Cost Alternative Provider	Estimated Non-recurring Charges
1.1 – Dedicated Transport	Verizon	\$741,187
1.2 – MPLS, VPN and Converged VoIP	Jive	\$0
1.4 – Long Distance	CenturyLink	\$0
1.5 – Toll Free	Verizon	\$200
1.6 – Legacy Telecommunications	-	-
3 – Metropolitan Area Network Ethernet	-	-
5 – Managed Internet Services	Integra	\$10,000

Where cost differences exist among the providers even after considering the non-recurring charges, it is important to note that the published CALNET 3 rates represent price ceilings and the City may be at liberty to negotiate them down. It should also be noted that monthly service charges are one of many factors that may be pertinent to the selection of a telecommunications service provider. Other relevant factors may include, but may not be limited to:

- the potential need for new service providers to redesign or reconfigure systems, networks, or circuits and install new equipment or infrastructure;
- the time, cost, and other resource demands associated with the above activities;
- the cost and logistical complexity associated with avoiding disruptions in service during a transition from one provider to another;
- potential differences in the technologies used by alternative providers and the compatibility of those technologies with other City systems or operations;
- differences in the quality or level of service offered by potential providers such as the typical frequency and duration of system outages and the responsiveness of technical staff when outages occur; and
- future plans that DT or other City departments may have regarding changes in service.

These factors may be more relevant for some services than they are for others.

CALNET 3 Services and Service Providers

The CALNET program provides government entities throughout the state with a vehicle for purchasing a comprehensive array of telecommunications services. This is accomplished through competitively-bid master contracts established by the California Department of Technology (CalTech). While AT&T was the sole service provider under the CALNET 2 (C2) program, the State allowed other service providers to compete with AT&T for CALNET 3 service contracts. In carrying out its multi-year competitive process to award the CALNET 3 contracts, CalTech divided the range of services into a number of categories and subcategories with the intent to award them to multiple vendors. The selected vendors are identified below in Table 2. With the exception of SONET service, which is used solely by the Airport, services shown in gray are not utilized by the City. For a general description of these services, refer to the notes accompanying Table 3 of the Budget and Legislative Analyst’s March 11, 2015 report.

Table 2 – CALNET 3 Services and Service Providers

Category 1	
1.1 - Dedicated Transport (p. 10) <ul style="list-style-type: none">• AT&T• Verizon	1.4 - Long Distance (p. 8) <ul style="list-style-type: none">• AT&T• CenturyLink
1.2 – MPLS, VPN and Converged VoIP (p. 9) <ul style="list-style-type: none">• AT&T• Integra• Jive• NWN• Verizon	1.5 - Toll Free (p. 6) <ul style="list-style-type: none">• AT&T• CenturyLink• Verizon
1.3 - Standalone VoIP <ul style="list-style-type: none">• AT&T• Integra• Jive• Verizon	1.6 - Legacy Telecommunications (p. 6) <ul style="list-style-type: none">• AT&T
Categories 2 - 7	
2 - Network Based Web Conferencing <ul style="list-style-type: none">• AT&T• CenturyLink• NWN	5 - Managed Internet Services (p. 11) <ul style="list-style-type: none">• AT&T• Integra
3 - Metropolitan Area Network Ethernet (p. 11) <ul style="list-style-type: none">• AT&T• CenturyLink• Integra	6 - Hosted IVR/ACD Services <ul style="list-style-type: none">• AT&T• NWN• Verizon
4.1 - SONET – Ring Connectivity <ul style="list-style-type: none">• Integra• Verizon	7 - Network Based Managed Security <ul style="list-style-type: none">• AT&T• CenturyLink• Verizon
4.2 - SONET – Point-to-Point Connectivity <ul style="list-style-type: none">• AT&T• Integra• Verizon	

Notes: Page numbers indicate where in this document further information can be found.

Under the CALNET 3 program, local governments may procure services on a month-to-month basis whereas under CALNET 2 they were generally required to make a 2-year service commitment.

AT&T's Analysis of Monthly Savings to the City under CALNET 3

As explained in the Budget and Legislative Analyst's March 11, 2015 report, AT&T previously retained a consultant to estimate the savings to the City after migrating from AT&T's CALNET 2 rates to its CALNET 3 rates. AT&T performed this analysis in two phases. The first phase was completed in April 2014 for subcategories 1.1 through 1.6, and the second phase was completed in January 2015 for service categories 2 through 7. In both cases, the analysis was based on the most recent monthly bill available at the time. The results of AT&T's analysis are summarized below in Tables 3 and 4.²

² The amounts shown here differ from those in Table 4 of the Budget and Legislative Analyst's March 11, 2015 report because the latter includes data for the San Francisco International Airport and the Redevelopment Agency.

Table 3 – Estimated Monthly Savings to the City for Category 1 Services under AT&T’s CALNET 3 Rates¹

Service	CALNET 2 Monthly Cost	CALNET 3 Monthly Cost	Monthly Savings/(Increase)
1.1 – Dedicated Transport	\$211,878	\$201,484	\$10,394
1.2 – MPLS, VPN and Converged VoIP	\$4,557	\$1,231	\$3,327
1.4 – Long Distance	\$18,195	\$9,490	\$8,705
1.5 – Toll Free	\$821	\$529	\$291
1.6 – Legacy Telecommunications	\$173,834	\$186,937	(\$13,103)
		\$399,671	\$9,614

Notes: 1. Based on data from January 2014

Table 4 – Estimated Monthly Savings to the City for Category 2-7 Services under AT&T’s CALNET 3 Rates¹

Service	CALNET 2 Monthly Cost	CALNET 3 Monthly Cost	Monthly Savings/(Increase)
3 – Metropolitan Area Network Ethernet	\$92,607	\$73,506	\$19,101
5 – Managed Internet Services	\$24,310	\$15,274	\$9,037
		\$88,780	\$28,137

Notes: 1. Based on data from December 2014

Comparison of Monthly Costs Among Alternative CALNET 3 Service Providers

Two primary sources of information were used to estimate the City’s monthly costs for telecommunications services among the available CALNET 3 providers. The first source is the collection of service catalogs published on CalTech’s CALNET 3 website. As illustrated in Figure 1 below by an excerpt from Verizon’s catalog for toll free service, these catalogs identify and describe individual line item features that are available to customers. Each feature is identified by a standard feature name and a product identification code that is assigned by the respective contractors. The catalogs also state the contractors’ monthly recurring charges for the feature (column G), the amount of any non-recurring charges (column F), and the unit of measure that is used to calculate the charges (column H).

Figure 1 – Excerpt from Verizon’s Toll Free Service Catalog

1.5.2.4 Toll-Free Domestic Services

Contractor’s Summary description of service: Toll-free domestic services										
Geographic Availability: Statewide										
Service Limitations and Restrictions: N/A										
Change Charge Applicability: Change Charge Applicability varies by service and feature code. See Column E for change charge applicability.										
A	B	C	D	E	F	G	H	I	J	K
Line item #	Feature Name	Contractor’s Product Identifier	Feature Description	Feature Restrictions, Limitations and Additional Information	Non-Recurring Charge per item	Monthly Recurring Charge/item per unit	Unit of measure	Charge per charge per item	Delegation Needed (Yes/No)	Required or Discretionary
1	Basic Coverage - California Dedicated Access	TLTR0005	Allows a Customer to receive toll-free calls from anywhere in the State of California on a dedicated line.		N/A	\$0.012	minute	N/A	No	Required
2	Basic Coverage - California Switched Access	TLTR0006	Allows a Customer to receive toll-free calls from anywhere in the State of California on a switched line.		N/A	\$0.018	minute	N/A	No	Required

The second source of information we used to estimate the City’s monthly cost of service for the other CALNET 3 providers is the aforementioned analysis provided by AT&T; an excerpt of the analysis is provided in Appendix A. The information provided by AT&T includes a description of the City’s service features (columns D through K), AT&T’s CALNET 3 rate for each item (column R), and the quantities (number of calls, number of minutes, etc.) that are needed to calculate the total monthly costs (columns L through N). In performing our analysis, we used the product ID codes supplied by AT&T to identify the standard feature name for each line item in their analysis. We then used the standard feature names to identify the matching features and pricing information in the catalogs for the other CALNET 3 providers. Finally we used the service volume and quantity data from AT&T’s analysis to carry out the cost calculations for the various providers.³ The details of our analysis are discussed further below for each of the relevant service categories; the categories are generally presented in order of increasing complexity with respect to the analysis.

Subcategory 1.6 – Legacy Telecommunications

As shown in Table 2 (above), AT&T is the only CALNET 3 provider for legacy telecommunications services. Therefore no cost analysis was performed for this service category. As shown in Table 3 (above), AT&T estimated that the cost for this service will increase by slightly more than \$13,000 per month under the CALNET 3 program absent an Individual Price Reduction. However, since the published CALNET 3 rates represent price ceilings and participating agencies are at liberty to negotiate further, DT has negotiated lower pricing with AT&T for a subset of these services in order to lessen the amount of the price increase.

Subcategory 1.5 – Toll Free Service

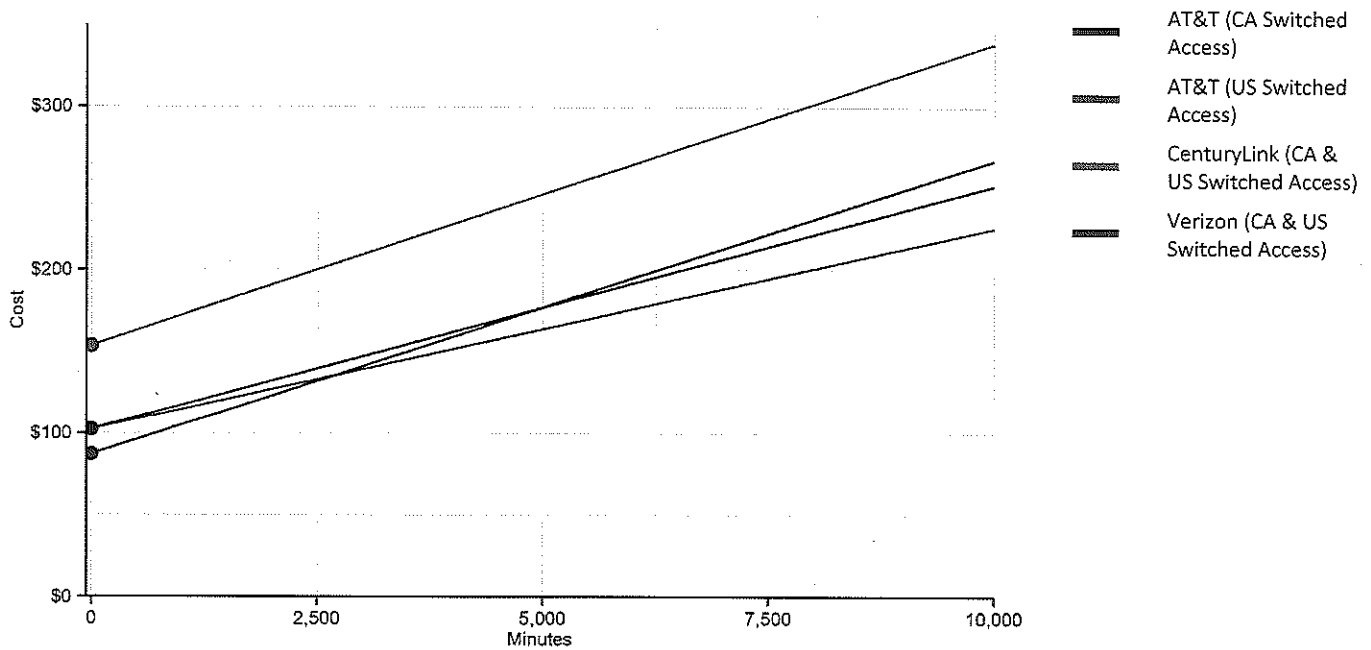
The data provided by AT&T reveals that the fees for the City’s toll free service include charges for: 1) basic coverage, which allows a customer to receive toll free calls from anywhere in the state of California on a

³ Differences may exist among AT&T’s estimates of the City’s total monthly costs and our own estimates in part because of slight differences in the rates that were used. For example, in calculating the cost of international calls to Mexico that originate on a switched network access circuit during off-peak time, AT&T used a rate of \$0.1015/minute while the rate published by CalTech (and used in our analysis) is \$0.101/minute.

switched line; 2) extended coverage, which allows a customer to receive toll free calls from the 50 United States, the District of Columbia, the Virgin Islands, and Puerto Rico on a switched line; and 3) a Primary Rate Interface (PRI) transport charge.⁴

Based on the product catalogs for toll free service, AT&T charges a rate of \$0.0149/minute for basic toll free coverage and it charges \$0.0123/minute for extended coverage while Verizon charges a range of \$0.018/minute for all calls (i.e., it does not distinguish between basic and extended coverage in terms of price). Similarly, CenturyLink – the third CALNET 3 toll free service provider – charges a singular rate of \$0.0185/minute. The PRI transport charges for CenturyLink, AT&T, and Verizon are a flat \$153.75, \$102.50, and \$87.13 per month, respectively. This cost structure is represented graphically in Figure 2 below.

Figure 2 - CALNET 3 Cost Structure for the City’s Toll Free Service



AT&T Monthly Cost = \$102.50 + \$0.0149/minute (CA) + \$0.0123/minute (US)

CenturyLink Monthly Cost = \$153.75 + \$0.0185/minute (US & CA)

Verizon Monthly Cost = \$87.13 + \$0.018/minute (US & CA)

Notes: 1. Excludes rates for international toll free calls

As is evident in the figure above, the monthly cost of service with Verizon surpasses that of AT&T at around 5,000 minutes per month. While we have not collected historical billing data to assess the month-to-month variability in toll free calls to the City, the analysis provided by AT&T shows that for the month of January 2014, the total duration of toll free calls exceeded 29,000 minutes – 5.8 times the 5,000 minute threshold. As a result, we believe that most months are likely to fall in the range where AT&T is the lowest cost provider. That said, the rates among the various providers are similar enough, and the total expenditures on toll free service are low enough, that the choice of service provider in this case may be influenced more by factors other than

⁴ The billing data also included minimal charges for international toll free calls. However, that data has been excluded from the analysis because the Product ID provided by AT&T could not be found in the published service catalog and the duration of these calls amounted to 0.01% of the total call time.

monthly costs such as business or technical considerations. Table 5 below compares the monthly cost for toll free service under the C2 rates with the estimated cost of service from the three CALNET 3 providers.

Table 5 – Comparison of Monthly Charges for Toll Free Service (C2 vs Potential C3 Providers)¹

Provider	Estimated Monthly Cost	Savings (vs C2)
AT&T (C2)	\$821	\$0
AT&T (C3)	\$529	\$292
Verizon	\$611	\$210
CenturyLink	\$692	\$129

Notes: 1. Based on billing data provided by AT&T for the month of January 2014

Subcategory 1.4 – Long Distance Service

According to the data provided by AT&T, the City’s monthly costs for long distance service include charges for audio conferencing, directory assistance, and domestic and international long distance calling. The product catalogs for the two CALNET 3 service providers (AT&T and CenturyLink) indicate that directory assistance charges are assessed on a per-call basis while audio conferencing and long distance calling charges are based on per-minute rates. The long distance rates vary depending on factors such as the geographic location that is called, the times that calls are placed (peak vs. off-peak periods), and whether the calls involve switched or dedicated access.

Based on the data we extracted from AT&T’s analysis and the product and pricing information in the published product catalogs, Appendix B contains a detailed breakdown of the estimated monthly charges by service feature and provider. A summary of that breakdown is provided in Table 6 below.

Table 6 – Comparison of Monthly Charges for Long Distance Service (C2 vs Potential C3 Providers)¹

Provider	Estimated Monthly Cost	Savings (vs C2)
AT&T (C2)	\$18,195	\$0
CenturyLink	\$7,912	\$10,283
AT&T (C3)	\$9,413	\$8,782

Notes: 1. Based on billing data provided by AT&T for the month of January 2014

Particularly where long distance calling is concerned, it is important to keep in mind that the single month of billing data provided by AT&T may not be representative of every month over the life of an entire contract. However, due to time and resource limitations we were unable to collect and analyze additional data.

Subcategory 1.2 – MPLS, VPN and Converged VoIP

According to the data provided by AT&T, the City's services for Subcategory 1.2 include MPLS transport DS3 port service at a minimum line rate of 10 Mbps, and MPLS transport Ethernet port service at a minimum line rate of 50 Mbps. The charges for these services are based on the number of ports that the City has, and AT&T's analysis indicates that in January 2014 the City was billed for a total of 3 ports (2 of the former and 1 of the latter). Tables 7 and 8 below show the estimated charges by provider for each of these services, and Table 9 compares the total estimated monthly costs among the providers.

Table 7 – Estimated Monthly Cost of MPLS Transport DS3 Port Service at a Minimum Line Rate of 10 Mbps based on CALNET 3 Rates

Provider	Product ID	Non-recurring Charge per Port	Recurring Charge per Port	Number of Ports	Total Recurring Cost
Jive	BW-DS3-P-10000	\$0	\$102.50	2	\$205.00
AT&T	17999	\$0	\$265.91	2	\$531.82
Verizon	MTDS0010	\$0	\$342.35	2	\$684.70
Integra	121012	\$500	\$784.13	2	\$1,568.26
NWN	NWNCA-10KDS	\$150	\$927.63	2	\$1,855.26

Table 8 – Estimated Monthly Cost of MPLS Transport Ethernet Port Service at a Minimum Line Rate of 50 Mbps based on CALNET 3 Rates

Provider	Product ID	Non-recurring Charge per Port	Recurring Charge per Port	Number of Ports	Total Recurring Cost
Integra	121031	\$500	\$415.13	1	\$415.13
Jive	BW-ETH-P-50	\$0	\$512.50	1	\$512.50
AT&T	18010	\$0	\$699.09	1	\$699.09
Verizon	PIET0050	\$0	\$777.98	1	\$777.98
NWN	NWNCA-50Mbps	\$0	\$892.78	1	\$892.78

Table 9 – Comparison of Monthly Charges for MPLS Service (C2 vs Potential C3 Providers)

Provider	Estimated Monthly Cost	Savings (vs C2)
AT&T (C2)	\$4,558	\$0
Jive	\$718	\$3,840
AT&T (C3)	\$1,231	\$3,327
Verizon	\$1,463	\$3,095
Integra	\$1,983	\$2,575
NWN	\$2,748	\$1,810

As shown in Table 9 above, the difference in cost between AT&T and Jive is \$513 per month.

Subcategory 1.1 – Dedicated Transport

According to the data provided by AT&T, the City’s services for Subcategory 1.1 consist of carrier DS0 service, carrier DS1 service, carrier DS3 service, and primary rate ISDN access to the local public switched telephone network. A detailed breakdown of the estimated costs by vendor is provided in Appendix C and a summary of the estimated monthly costs is provided below in Table 10.

Our ability to estimate the monthly costs in this case is limited by the fact that for DS0, DS1, and DS3 service, the costs include intra-LATA and/or inter-LATA variable mileage charges (see lines 9 and 10 in Table C-2, for example). A LATA, or Local Access and Transport Area, is a geographic area within which telephone carriers may provide local and/or long distance telecommunications services. Connections between points in the same region are called intra-LATA connections while connections between points in different regions are known as inter-LATA connections. AT&T’s product catalog for dedicated transport service explains that intra-LATA mileage fees are required when service locations are in different Serving Wire Centers, while inter-LATA mileage fees are assessed on a per-circuit basis. In either case, the monthly fees are assessed on a per-mile basis measured as the airline mileage between the serving central offices for the service locations in question. Thus, the total monthly fees are a function of the City’s individual service locations in relation to the LATA boundaries and the locations of the service providers’ central offices. While AT&T’s analysis discloses the mileage it used to calculate the City’s costs, the only way to determine the corresponding mileage for service with Verizon is to request that information from Verizon directly. As that is not feasible due to time and resource constraints, we have simplified our analysis by assuming that the total mileage with Verizon would be the same as it is with AT&T.

It should also be noted that AT&T’s dedicated transport analysis includes a number of services that are not explicitly identified in Verizon’s product catalog⁵ as well as a number of services that are identified in its product catalog for legacy telecommunications or that are not considered to be CALNET 3 products.⁶ Those charges have also been excluded from the estimates in Table 10 to further simplify the analysis and ensure accurate rate comparisons between the providers.⁷

Table 10 – Estimated Monthly Costs for CALNET 3 Dedicated Transport Service by Provider

Provider	Estimated Monthly Cost¹	Savings (vs C2)
AT&T (C2)	-	-
AT&T (C3)	\$164,990	-
Verizon	\$166,800	-

Notes: 1. Excludes costs for services not identified in Verizon’s product catalog, those identified in AT&T’s product catalog for legacy telecommunications, and those not considered by AT&T to be C3 services

Excluding the costs for services that are not identified in Verizon’s product catalog, the table above indicates that the City’s monthly costs for dedicated transport would be approximately \$1,810 lower with AT&T than with Verizon. However, it is also advisable in this case to consider the potential impact of non-recurring costs.

⁵ See lines 4-6 in Table C-1, line 11 in Table C-2, line 15 in Table C-3, and lines 18-21 in Table C-4.

⁶ These services are collectively identified in AT&T’s analysis with the following product ID codes: 1L56X, BCND+, CNLRX, DFOSC, GN3RR, P2W, P3H, T6E2D, T6E2X, T6E4X, and Not C3.

⁷ However note that by excluding some services from the analysis we are unable to compare the estimated CALNET 3 costs directly with the previous costs under the CALNET 2 program.

While those charges would not apply to existing services that were rolled over to a new contract with AT&T, the City likely would incur non-recurring charges when moving its business to Verizon. Based on the rates published in Verizon's product catalog and summarized in Appendix C, we estimate that those charges would amount to an additional \$741,187. In any case, given the limitations of our analysis in this instance, we would advise DT to request a quote for the cost of service directly from Verizon if the Department wishes to further consider moving some or all of the City's existing service to an alternate provider.

Category 3 – Metropolitan Area Network Ethernet

While AT&T, CenturyLink, and Integra all offer metropolitan area network Ethernet service under the CALNET 3 program, the City's current service consists entirely of a fully managed and administered switched Ethernet solution known as OPT-E-MAN. As an AT&T product, OPT-E-MAN is not among the services specifically identified in the product catalogs for the other CALNET 3 providers. Furthermore, estimating the cost of potential substitutes to OPT-E-MAN would entail working with the vendors to design a network and obtain a quote for services. As a result, a comparison of the cost for this service among the providers is not available at this time. Nevertheless, as shown in Table 4 above AT&T estimated that the City's cost for this service will decrease by slightly more than \$19,000 per month under the CALNET 3 program.

Category 5 – Managed Internet Service (MIS)

Specific services the City subscribes to within the MIS service category include Internet Flat Rate Service, Internet Flat Rate with Managed Router Service, Internet Sustained Bandwidth Ethernet Transport Service, Internet Sustained Bandwidth Ethernet Port Service, and Internet Sustained Bandwidth Ethernet Port with Managed Router Service. Appendix D provides a detailed breakdown of the components for each of these services and the associated non-recurring and monthly costs for the two CALNET 3 providers – AT&T and Integra.

A direct cost comparison between the two providers is difficult in this case for two reasons. First, while most of the service locations for the City's telecommunications services are within the boundaries of the City and County, the City does maintain service at a limited number of locations elsewhere throughout the state. Where managed internet service is concerned, two of the City's service locations are in Moccasin and Sunol, CA. According to Integra's MIS product catalog (pp. 2, 18, and 22), Moccasin and Sunol are not within Integra's service area. Thus, in these cases AT&T appears to be the only service provider.

It is also difficult to compare the cost of MIS service with AT&T to the potential cost with Integra because some of the services the City currently subscribes to are not identified in Integra's product catalog. For example, Table D-1 in Appendix D shows that the City's Internet Flat Rate (InFRa) Service consists in part of service at 10 Mbps with a dedicated internet port and T3 transport (see line 2). However, excerpts from the Integra and AT&T product catalogs in Figures 3 and 4 below show that while both providers offer InFRa service at 10 Mbps with a dedicated internet port and transport, only AT&T offers that service specifically with T3 transport. Similar differences in Integra's and AT&T's product offerings occur in two other instances.

Figure 3 – Excerpt from Integra’s CALNET 3 Product Catalog for Managed Internet Service

A	B	C	D	E	F	G	H	I	J	K
Line Item #	Feature Name	Contractor's Product Identifier	Feature Description	Feature Restrictions, Limitations and Additional Information	Non-Recurring Charge per item	Monthly Recurring Charge/item per unit	Unit of measure	Charge per change per item	Delegation Needed (Yes/No)	Required or Discretionary
12.	InFRa @ 10Mbps	501012	Internet Flat Rate Service (InFRa) at 10Mbps. Includes dedicated internet port and transport.		\$500.00	\$410.80	Each	\$500.00	No	Required

Figure 4 – Excerpt from AT&T’s CALNET 3 Product Catalog for Managed Internet Service

A	B	C	D	E	F	G	H	I	J	K
Line Item #	Feature Name	Contractor's Product Identifier	Feature Description	Feature Restrictions, Limitations and Additional Information	Non-Recurring Charge per item	Monthly Recurring Charge/item per unit	Unit of Measure	Charge per change per item	Delegation Needed (Yes/No)	Required/ Discretionary
12	InFRa @ 10Mbps	MI012	Internet Flat Rate Service (InFRa) at 10Mbps. includes dedicated internet port and transport.	Upload 10Mbps	\$0.00	\$551.66	each	\$0.00	No	Required
26	Flat Rate Internet 10Mbps	MI051	Internet Flat Rate Service at 10Mbps. includes dedicated internet port and T3 transport.	Upload 10Mbps	\$1,100.00	\$1,384.78	each	\$0.00	No	Required

In the cases where a direct comparison can be made, the total estimated monthly costs with service from AT&T amount to \$11,869 while the estimated monthly cost of service with Integra is \$10,068 (a difference of \$1,801 per month).

Conclusion

As indicated in Tables 3 and 4 above, AT&T previously estimated that the City could save more than \$37,000 per month in service charges after migrating from its CALNET 2 rates to its new CALNET 3 rates. Based on the analysis presented here, it is our conclusion that AT&T’s rates are generally competitive with those of other potential service providers. In cases where differences exist among the providers, it is important to note that the published CALNET 3 rates represent price ceilings and the City may be at liberty to negotiate lower rates. In addition, while some CALNET 3 vendors might have lower rates for some types of service, there exists a host of additional considerations that may be more pertinent to the ultimate selection of the City’s telecommunications service providers than incrementally lower monthly rates. As noted above, those considerations include, but may not be limited to:

- the potential need for new service providers to redesign or reconfigure systems, networks, or circuits and install new equipment or infrastructure;
- the time, cost, and other resource demands associated with the above activities;
- the cost and logistical complexity associated with avoiding disruptions in service during a transition from one provider to another;
- potential differences in the technologies used by alternative providers and the compatibility of those technologies with other City systems or operations;
- differences in the quality or level of service offered by potential providers such as the typical frequency and duration of system outages and the responsiveness of technical staff when outages occur; and

- future plans that the Department of Technology (DT) or other City departments may have regarding changes in service.

Before making any decision to move the City's existing book of business to one or more alternative service providers, we recommend that DT consider all such competing factors collectively.

Appendix A

Excerpt from AT&T Cost Analysis

Figure A-1 – Excerpt from AT&T Analysis of January 2014 Billing Data

	D	F	J	K	L	M	N	O	R	S
1	C3 Subcategory	SrvType	Product ID	InvDesc	Qty	Calls	Minutes	Total	C3 CustRate	C3 Total
2	1.5	Toll Free	BHC	Primary Rate Interface (PRI) on DS1	1			102.5	102.5	102.5
3	1.5	Toll Free	TFUSS	Extended Call Coverage US Switched		22	65.7	1.49	0.0123	0.81
4	1.5	Toll Free	TFUSS	Extended Call Coverage US Switched		234	1205.25	28.15	0.0123	14.82
5	1.5	Toll Free	TFUSS	Extended Call Coverage US Switched		7	29.5	0.67	0.0123	0.36
6	1.5	Toll Free	TFUSS	Extended Call Coverage US Switched		6	13.05	0.3	0.0123	0.16
7	1.5	Toll Free	TFUSS	Extended Call Coverage US Switched		2	10.03333333	0.23	0.0123	0.12
8	1.5	Toll Free	TFUSS	Extended Call Coverage US Switched		2	1.616666667	0.04	0.0123	0.02
9	1.5	Toll Free	TFUSS	Extended Call Coverage US Switched		31	39.53333333	0.89	0.0123	0.49
10	1.5	Toll Free	TFUSS	Extended Call Coverage US Switched		3	1.5	0.03	0.0123	0.02
11	1.5	Toll Free	TFUSS	Extended Call Coverage US Switched		11	12.91666667	0.28	0.0123	0.16
34	1.5	Toll Free	TFCAS	Basic Coverage CA Switch Access		14	69.1	1.62	0.0149	1.03
35	1.5	Toll Free	TFCAS	Basic Coverage CA Switch Access		1580	14857.33333	351.36	0.0149	221.37
36	1.5	Toll Free	TFCAS	Basic Coverage CA Switch Access		14	706.1333333	16.65	0.0149	10.52
37	1.5	Toll Free	TFCAS	Basic Coverage CA Switch Access		15	10.31666667	0.22	0.0149	0.15
38	1.5	Toll Free	TFCAS	Basic Coverage CA Switch Access		2	8.133333333	0.19	0.0149	0.12
39	1.5	Toll Free	TFCAS	Basic Coverage CA Switch Access		2	5.766666667	0.14	0.0149	0.09
40	1.5	Toll Free	TFCAS	Basic Coverage CA Switch Access		2	10.01666667	0.23	0.0149	0.15
41	1.5	Toll Free	TFCAS	Basic Coverage CA Switch Access		11	96.2	2.25	0.0149	1.43
42	1.5	Toll Free	TFCAS	Basic Coverage CA Switch Access		263	322.1833333	12.35	0.0149	4.8
43	1.5	Toll Free	TFCAS	Basic Coverage CA Switch Access		334	386.2666667	10.45	0.0149	5.76
44	1.5	Toll Free	TFCAS	Basic Coverage CA Switch Access		29	204.55	4.8	0.0149	3.05
45	1.5	Toll Free	TFCAS	Basic Coverage CA Switch Access		205	415.25	10.11	0.0149	6.19
46	1.5	Toll Free	TFCAS	Basic Coverage CA Switch Access		163	604.3666667	14.59	0.0149	9.01

Appendix B

**Breakdown of Estimated Monthly Costs for Long Distance
Service by CALNET 3 Service/Feature and Provider**

Table B-1 – Audio Conferencing Service

Service	Rate per Minute		Minutes	Cost	
	AT&T	CenturyLink		AT&T	CenturyLink
Caller Paid Dial-in Reservation-less Service	\$0.015	\$0.012	15,464	\$231.96	\$185.57
Toll Free Dial-in Reservation-less Service	\$0.015	\$0.015	80,574	\$1,208.61	\$1,208.61
				<u>\$1,440.57</u>	<u>\$1,394.18</u>

Table B-2 – Operator Services

Service	Rate per Call		Calls	Cost	
	AT&T	CenturyLink		AT&T	CenturyLink
Directory Assistance	\$1.03	\$1.99	11	\$11.33	\$21.89
				<u>\$11.33</u>	<u>\$21.89</u>

Table B-3 – Long Distance Domestic Calling

Service	Rate per Minute		Minutes	Cost	
	AT&T	CenturyLink		AT&T	CenturyLink
IntraLATA Calling Dedicated to Switched Access Minute	\$0.0149	\$0.009	644.6	\$9.60	\$5.80
IntraLATA Calling Switched to Dedicated Access Minute	\$0.0149	\$0.009	45.3	\$0.67	\$0.41
IntraLATA Calling Switched to Switched Access Minute	\$0.0149	\$0.015	239,526	\$3,568.94	\$3,592.89
IntraState/InterLATA Calling Dedicated to Dedicated Access Minute	\$0.012	\$0.007	774.2	\$9.29	\$5.42
IntraState/InterLATA Calling Dedicated to Switched Access Minute	\$0.0149	\$0.009	99,838	\$1,487.59	\$898.54
IntraState/InterLATA Calling Switched to Dedicated Access Minute	\$0.0149	\$0.009	270.4	\$4.03	\$2.43
IntraState/InterLATA Calling Switched to Switched Access Minute	\$0.0149	\$0.015	34,444.8	\$513.23	\$516.67
Interstate Calling Dedicated to Switched Access Minute	\$0.011	\$0.008	105,700.3	\$1,162.70	\$845.60
Interstate Calling Switched to Switched Access Minute	\$0.011	\$0.013	26,122.9	\$287.35	\$339.60
				<u>\$7,043.40</u>	<u>\$6,207.36</u>

Table B-4 – Long Distance International Calling Dedicated Access – Peak

Service	Rate per Minute		Minutes	Cost	
	AT&T	CenturyLink		AT&T	CenturyLink
Canada	\$0.032	\$0.008	864.3	\$27.66	\$6.91
				<u>\$27.66</u>	<u>\$6.91</u>

Table B-5 – Long Distance International Calling Switched Access – Peak

Service	Rate per Minute		Minutes	Cost	
	AT&T	CenturyLink		AT&T	CenturyLink
Canada	\$0.036	\$0.014	26	\$0.94	\$0.36
Ireland	\$1.097	\$0.082	5.6	\$6.14	\$0.46
Korea	\$0.087	\$0.513	1.9	\$0.17	\$0.97
Sweden	\$1.015	\$0.072	18.1	\$18.37	\$1.30
United Kingdom	\$0.045	\$0.023	23.5	\$1.06	\$0.54
				\$26.68	\$3.63

Table B-6 – Long Distance International Calling Dedicated Access – Off Peak

Service	Rate per Minute		Minutes	Cost	
	AT&T	CenturyLink		AT&T	CenturyLink
Canada	\$0.032	\$0.008	1245.8	\$39.87	\$9.97
				\$39.87	\$9.97

Table B-7 – Long Distance International Calling Switched Access – Off Peak

Service	Rate per Minute		Minutes	Cost	
	AT&T	CenturyLink		AT&T	CenturyLink
Australia	\$1.169	\$0.062	5.2	\$6.08	\$0.32
Canada	\$0.036	\$0.014	220	\$7.92	\$3.08
China	\$0.053	\$0.036	1.2	\$0.06	\$0.04
France	\$0.051	\$0.025	4.6	\$0.23	\$0.12
Germany	\$0.041	\$0.025	30.4	\$1.25	\$0.76
Greece	\$1.445	\$0.103	1.8	\$2.60	\$0.19
Ireland	\$0.964	\$0.082	0.9	\$0.87	\$0.07
Israel	\$0.045	\$0.05	0.9	\$0.04	\$0.04
Korea	\$0.087	\$0.513	7.3	\$0.64	\$3.74
Mexico	\$0.101	\$0.056	11.1	\$1.12	\$0.62
Philippines	\$1.784	\$0.215	40.6	\$72.43	\$8.73
South Africa	\$2.347	\$0.092	0.7	\$1.64	\$0.06
Sweden	\$0.902	\$0.072	8.7	\$7.85	\$0.63
United Kingdom	\$0.045	\$0.023	18.7	\$0.84	\$0.43
				\$103.57	\$18.83

Table B-8 – Long Distance International Mobile Termination Charges

Service	Rate per Minute		Minutes	Cost	
	AT&T	CenturyLink		AT&T	CenturyLink
Australia	\$1.322	\$0.205	4.4	\$5.82	\$0.90
Brazil	\$0.241	\$0.261	35.6	\$8.58	\$9.29
China	\$0.046	\$0.123	64.8	\$2.98	\$7.97
Germany	\$0.30	\$0.271	6	\$1.80	\$1.63
Guatemala	\$0.154	\$0.277	61.1	\$9.41	\$16.92
Honduras	\$1.845	\$0.42	250.1	\$461.43	\$105.04
Nicaragua	\$1.968	\$0.42	48.5	\$95.45	\$20.37
Nigeria	\$1.62	\$0.4	66.1	\$107.08	\$26.44
New Zealand	\$1.958	\$0.246	3.9	\$7.64	\$0.96
Philippines	\$2.03	\$0.267	3.6	\$7.31	\$0.96
Korea	\$0.118	\$2.04	21.1	\$2.49	\$43.04
Spain	\$0.312	\$0.284	0.8	\$0.25	\$0.23
United Kingdom	\$0.251	\$0.41	36.6	\$9.19	\$15.01
				\$719.43	\$248.76

Appendix C

**Breakdown of Estimated Monthly Costs for Dedicated
Transport Service by CALNET 3 Service/Feature and Provider**

Table C-1 – Carrier DSO Service and Features

Service (AT&T ID/Verizon ID)	Non-recurring Charge per Item		Monthly Recurring Charge per Item		Qty	Total Monthly Recurring Charge	
	AT&T	Verizon	AT&T	Verizon		AT&T	Verizon
1. IntraLATA carrier DSO service, Channel Termination (one end point) (VAN++/CDIL0000) ²	\$378.00	\$306.00	\$39.98	\$22.50	427	\$17,071.46	\$9,607.50
2. Central office bridging (DFOBR/CNOB0000) ³	\$0	\$0	\$5.64	\$17.43	17	\$95.88	\$296.31
3. IntraLATA variable mileage for dedicated DSO transport (1L57X/CDIM0000) ⁴	-	-	\$1.21	\$0.51	502	\$607.42	\$256.02
						\$17,774.76	\$10,159.83
4. ADN multiplexing (MQO/-) ^{1,3}	\$0	-	\$41.00	-	6	\$246.00	-
5. ADN secondary channel (DSOSC) ^{1,2}	\$0	-	\$4.72	-	1	\$4.72	-
6. Customer network reconfiguration (DFOCO/-) ^{1,5}	\$0	-	\$2.46	-	3	\$7.38	-
						\$258.10	-

- Notes: 1. Service not identified in Verizon product catalog
2. Unit of measure: channel termination
3. Unit of measure: port
4. Unit of measure: mile
5. Unit of measure: month

Table C-2 – Carrier DS1 Service and Features

Service (AT&T ID/Verizon ID)	Non-recurring Charge per Item		Monthly Recurring Charge per Item		Qty	Total Monthly Recurring Charge	
	AT&T	Verizon	AT&T	Verizon		AT&T	Verizon
7. IntraLATA carrier DS1 service (TMECS/CDIL0001) ³	\$899	\$475	\$76.88	\$76.88	1,199	\$92,179.12	\$92,179.12
8. InterLATA/interstate carrier DS1 service (1LNV9/CDLA0001[CDIS0001]) ³	\$899	\$150	\$76.88	\$169.13	17	\$1,306.96	\$2,875.21
9. IntraLATA variable mileage for dedicated DS1 transport services (1L58X/CDIM0001) ⁴	\$0	\$0	\$10.29	\$0.51	1,049	\$10,794.21	\$534.99
10. InterLATA variable mileage for dedicated DS1 transport (1LNVX/CDLM0001) ⁴	\$0	\$0	\$2.31	\$1.80	615 ²	\$1,420.65	\$1,107.00
						\$105,701	\$96,696
11. DS1 to voice multiplexing (MQ1/-) ^{1,5}	\$0	-	\$315.87	\$0	2	\$631.74	-
						\$631.74	-

Notes: 1. Service not identified in Verizon product catalog
 2. Estimated
 3. Unit of measure: channel termination
 4. Unit of measure: mile
 5. Unit of measure: per 24 channel multiplexer

Table C-3 – Carrier DS3 Service and Features

Service (AT&T ID/Verizon ID)	Non-recurring Charge per Item		Monthly Recurring Charge per Item		Qty	Total Monthly Recurring Charge	
	AT&T	Verizon	AT&T	Verizon		AT&T	Verizon
12. IntraLATA carrier DS3 service (Z35AC/CDIL0003) ¹	\$1,100	\$0	\$913.28	\$743.13	19	\$17,952.32	\$14,119.47
13. InterLATA/interstate carrier DS3 service (1LN44/CDLA0003;CDIS0003) ¹	\$1,100	\$850	\$913.28	\$1,691.25	1	\$913.28	\$1,691.25
14. IntraLATA variable mileage for dedicated transport services (1L59X/CDIM0003) ²	0	0	\$62.07	\$2.05	2	\$124.14	\$4.10
						\$18,389.74	\$15,814.82
15. DS3 to DS1 multiplexing (?)	?	-	\$410		7	\$2,870	

Notes: 1. Unit of measure: channel termination

2. Unit of measure: mile

Table C-4 – ISDN PRI Configurations and Features

Service (AT&T ID/Verizon ID)	Non-recurring Charge per Item		Monthly Recurring Charge per Item		Qty	Total Monthly Recurring Charge	
	AT&T	Verizon	AT&T	Verizon		AT&T	Verizon
16. ISDN PRI Package #1 @ 56 Kbps (or 64 Kbps) – basic monthly rate (PRAS1/PRIB0056;PRIB0064) ²	\$0	\$200	\$123	\$234.73	169	\$20,787.00	\$39,669.37
17. ISDN PRI Package #2 @ 56 Kbps (or 64 Kbps) – basic monthly rate (PRAS3/PRPB0056;PRPB0064) ²	\$0	\$200	\$123	\$234.73	19	\$2,337.00	\$4,459.87
						\$23,124.00	\$44,129.24
18. Primary Rate ISDN Package 2 24 B-channels (PRAS2/-) ^{1,3}	\$0	-	\$133.35	-	17	\$2,266.95	-
19. Primary Rate ISDN alternate routing (PRAAR/-) ^{1,4}	\$50	-	\$10.25	-	55	\$563.75	-
20. Primary Rate ISDN dialing plan (PRADP/-) ^{1,4}	\$175	-	\$51.25	-	3	\$153.75	-
21. Primary Rate ISDN calling name delivery (NMIPG/-) ^{1,4}	\$125	-	\$10.25	-	5	\$51.25	-
						\$3,035.70	-

- Notes: 1. Service not identified in Verizon product catalog
2. Unit of measure: package per month
3. Unit of measure: interface port
4. Unit of measure: per feature

Appendix D

Breakdown of Estimated Monthly Costs for Managed Internet Service by CALNET 3 Service/Feature and Provider

Table D-1 – Internet Flat Rate Service (InFRa)

Service (AT&T ID/Integra ID)	Non-recurring Charge per Item		Monthly Recurring Charge per Item		Qty	Total Monthly Recurring Charge	
	AT&T	Integra	AT&T	Integra		AT&T	Integra
1. InFra @ 1.544Mbps with dedicated Internet port and transport (MI001/501001) ³	\$899	\$500	\$250.31	\$159.50	6	\$1,501.86	\$957
2. Internet Flat Rate Service at 10Mbps with dedicated Internet port and T3 transport (MI051/-) ^{1,2,3}	\$1,100	-	\$1,384.78	-	1	\$1,384.78	-
3. Internet Flat Rate Service at 20Mbps with dedicated Internet port and T3 transport (MI053/-) ^{1,3}	\$1,100	-	\$1,705.09	-	1	\$1,705.09	-

- Notes: 1. Service not identified in Integra product catalog
 2. Service location (Moccasin, CA) is outside of Integra's service area
 3. Unit of measure: each feature

Table D-2 – Internet Flat Rate with Managed Router Service (InFRaM)

Service (AT&T ID/Integra ID)	Non-recurring Charge per item		Monthly Recurring Charge per item		Qty	Total Monthly Recurring Charge	
	AT&T	Integra	AT&T	Integra		AT&T	Integra
4. InFRaM @ 1.544Mbps with dedicated Internet port, transport, and a Contractor owned, maintained and managed router (MI026/502001) ²	\$899	\$500	\$276.14	\$183.25	1	\$276.14	\$183.25
5. Internet Flat Rate Service at 3Mbps with dedicated Internet port and 2xT1 transport, maintained and managed router (MI207/-) ^{1,2}	\$899	-	\$447.16	-	1	\$447.16	-

- Notes: 1. Service not identified in Integra catalog
 2. Unit of measure: each feature

Table D-3 – Internet Sustained Bandwidth Ethernet Transport Service (InSBET)

Service (AT&T ID/Integra ID)	Non-recurring Charge per Item		Monthly Recurring Charge per Item		Qty	Total Monthly Recurring Charge	
	AT&T	Integra	AT&T	Integra		AT&T	Integra
6. InSBET Service with maximum burstable data rate of 10Mbps (LNET10/503005) ²	\$0	\$500	\$400.78	\$194.75	1	\$400.78	\$194.75
7. InSBET Service with maximum burstable data rate of 50Mbps (LNET50/503007) ²	\$0	\$500	\$484.83	\$194.75	3	\$1,454.49	\$584.25
8. InSBET Service with maximum burstable data rate of 500Mbps (LNET500/503011) ²	\$0	\$1,500	\$910.20	\$666.25	1	\$910.20	\$666.25
9. InSBET Service with maximum burstable data rate of 50Mbps (LNET50/503007) ^{1,2}	\$0	–	\$484.83	–	1	\$484.83	–

Notes: 1. Service location (Sunol, CA) is outside of Integra's service area
 2. Unit of measure: each feature

Table D-4 – Internet Sustained Bandwidth Ethernet Port Service (InSBEP) [NOT to be provisioned with InSBET 10G-Base-LSR 10G Ethernet Transport]

Service (AT&T ID/Integra ID)	Non-recurring Charge per Item		Monthly Recurring Charge per Item		Qty	Total Monthly Recurring Charge	
	AT&T	Integra	AT&T	Integra		AT&T	Integra
10. Ethernet minimum monthly bandwidth commitment charge – 30 Mbps (8313/504025) ²	\$0	\$500	\$307.65	\$461.25	1	\$307.65	\$461.25
11. Ethernet minimum monthly bandwidth commitment charge – 50 Mbps (8382/504033) ²	\$0	\$500	\$478.81	\$563.75	1	\$478.81	\$563.75
12. Ethernet minimum monthly bandwidth commitment charge – 30 Mbps (8313/504025) ^{1,2}	\$0	–	\$307.65	–	1	\$307.65	–

Notes: 1. Service location (Sunol, CA) is outside of Integra's service area.
 2. Unit of measure: each feature

Table D-5 – Internet Sustained Bandwidth Ethernet Port Service (InSBEP) [to be provisioned with InSBET 10G-Base-LSR 10,000 Mbps Ethernet Transport]

Service (AT&T ID/Integra ID)	Non-recurring Charge per Item		Monthly Recurring Charge per Item		Qty	Total Monthly Recurring Charge	
	AT&T	Integra	AT&T	Integra		AT&T	Integra
13. 10G InSBEP minimum bandwidth commitment charge – 1500 Mbps (8385/505001) ¹	\$0	\$1000	\$5,762.94	\$5,535	1	\$5,762.94	\$5,535

Notes: 1. Unit of measure: each feature

Table D-6 – Internet Sustained Bandwidth Ethernet Port with Managed Router Service (InSBEPM) [NOT to be provisioned with InSBET 10G Ethernet Transport]

Service (AT&T ID/Integra ID)	Non-recurring Charge per Item		Monthly Recurring Charge per Item		Qty	Total Monthly Recurring Charge	
	AT&T	Integra	AT&T	Integra		AT&T	Integra
14. Ethernet minimum monthly bandwidth commitment charge – 10 Mbps; includes Contractor owned, managed and maintained router (8331/506017) ¹	\$0	\$500	\$223.04	\$358.75	1	\$223.04	\$358.75
15. Ethernet minimum monthly bandwidth commitment charge – 50 Mbps; includes Contractor owned, managed and maintained router (8383/506033) ¹	\$0	\$500	\$552.72	\$563.75	1	\$552.72	\$563.75

Notes: 1. Unit of measure: each feature