

Attachment A: Comparison of the Comcast, County and Managed Service Network Options as Pertaining to the City of Saint Paul

The information included in table reflects staff understanding as of July 17, 2012; each option will require additional negotiations to reach a final agreement and contract.

	Comcast	County	Managed Services Lease
Description	Through the relationship created by the cable franchise, Comcast would upgrade the existing institutional network (I-Net) to a dark fiber/dark wavelength infrastructure. The City would provide the electronics to send data over the system	The City would lease dark fiber on a county wide fiber system owned by Ramsey County known as the Institutional Fiber Network (IFN). The dual-conduit system will provide network connectivity for government agencies as well as enabling economic development opportunities via a second privately owned conduit. The City would provide the electronics to send data over the system	The City would contract with a private entity to carry the City's network traffic. The private entity would provide all the infrastructure, equipment and management services needed to meet the specified service levels identified by the City.
Long term stability of arrangement	<ul style="list-style-type: none"> ▪ Initial 10 year term, with 10 year extension at the option of the City. ▪ Continued availability of network at proposed price unclear in the event that state or federal cable franchising law changes; depends on "competitive equity," according to Comcast, but competitive equity standard has not been defined 	<ul style="list-style-type: none"> ▪ Lease term could be up to 40 years, the estimated useful life of the fiber asset. ▪ Lease cancelation terms to be negotiated 	<ul style="list-style-type: none"> ▪ 10 year term, extension after 10 years to be negotiated.
Contractual Relationship	<ul style="list-style-type: none"> ▪ Comcast owns the fiber infrastructure. 	<ul style="list-style-type: none"> ▪ County owns the core fiber infrastructure. City would own its 	<ul style="list-style-type: none"> ▪ Vendor would own the fiber and equipment and manage the

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	<ul style="list-style-type: none"> ▪ City would contract as a customer for dark fiber/dark wavelengths. ▪ City would provide and manage most equipment needed to send/receive data over the network. ▪ Lease cost would include one router and equipment needed to enable coarse wave division multiplexing. 	<p>laterals after debt service is paid.</p> <ul style="list-style-type: none"> ▪ County would manage fiber infrastructure. ▪ City would provide and manage all equipment needed to send city data over the network. 	<p>network.</p> <ul style="list-style-type: none"> ▪ City would contract as a customer for a managed circuit.
Network Use	<ul style="list-style-type: none"> ▪ Use of the network is restricted to City purposes as defined by Comcast. Network usage is subject to periodic review by Comcast. ▪ Third party use is subject to approval by Comcast. City would be required to terminate existing contracts with state and County under which these entities use I-Net within two years. ▪ 	<ul style="list-style-type: none"> ▪ Use of the Government Conduit is restricted to non-commercial purposes. ▪ Government Conduit can be used by any government entity. ▪ City can use fiber for any government purpose. 	<ul style="list-style-type: none"> ▪ Contracted service to be used for City government purposes but cannot benefit a third party.
Network design	<ul style="list-style-type: none"> ▪ A conceptual network design has been offered, a more complete design of network is “subject to discussion [and] final design review.” ▪ Basic network elements (such as number of fibers available to City) will not be resolved for months, and may not be completed until after there is an agreement to proceed in place between Comcast and the City. ▪ Conceptual design proposes: 	<ul style="list-style-type: none"> ▪ Network design is primarily completed. ▪ Network design proposes: <ul style="list-style-type: none"> ○ Minimum six strands of fiber for each site ○ Uses single wave back haul to the network operating center. ○ Multiple fiber rings for redundancy. ○ City fiber would be comingled with other government fiber. 	<ul style="list-style-type: none"> ○ Network design is responsibility of vendor, required to design infrastructure to meet service levels specified in RFP #A-29510-02 ○ City fiber could be comingled with commercial fiber.

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	<ul style="list-style-type: none"> ○ Two strands to most sites, four strands to high priority sites. ○ Limited redundancy ○ Uses of “coarse wave division multiplexing” instead of single to combine traffic from various sites and minimize fiber use. ○ Reduction in number of existing fibers available to the City from number available under current agreement. ○ City fiber will be commingled with commercial fiber. 		
Network Expansion (ability to add sites) and Capacity (speed and traffic volume)	<ul style="list-style-type: none"> ▪ Capacity can be increased through equipment upgrades. ▪ Lack of network design limits understanding the expansion capability of the network. ▪ City responsible for costs related to expanding and increasing capacity of the network. 	<ul style="list-style-type: none"> ▪ Capacity can be increased through equipment upgrades. ▪ Network design includes excess fiber capacity for future expansion. ▪ City responsible for costs related to expanding and increasing capacity of the network. 	<ul style="list-style-type: none"> ▪ Extension to other sites to be negotiated. ▪ Increase in capacity available at a higher cost to be negotiated.
Maintenance	<ul style="list-style-type: none"> ▪ Physical maintenance of fiber provided by Comcast. Details of service levels to be negotiated. ▪ City provides most monitoring services. 	<ul style="list-style-type: none"> ▪ Physical maintenance of fiber provided by County. Service levels to be negotiated. ▪ County will provide basic 24/7 network monitoring. 	<ul style="list-style-type: none"> ▪ Physical maintenance of fiber provided by vendor ▪ Vendor provide 24/7 monitoring and management of circuit in accordance with service levels specified in RFP # A-29510-02
Economic Development	<ul style="list-style-type: none"> ▪ Unknown 	<ul style="list-style-type: none"> ▪ The second conduit built by the private partner will provide an open access, carrier neutral dark fiber network throughout the City of Saint Paul/Ramsey County 	<ul style="list-style-type: none"> ▪ Unknown

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		<p>thereby increasing the amount of fiber optics available to telecommunication carriers and other private sector businesses.</p> <ul style="list-style-type: none"> ▪ The network will pass within one mile of 80% of businesses in Ramsey County. ▪ Second conduit will enable easier access to the Tier 3 data center being built in White Bear Township and a telecommunications hub in Saint Paul. 	
Cost Model (see attached table for estimated cost comparisons)	<ul style="list-style-type: none"> ▪ First 10 years based on a lump-sum payment for build out costs then an increasing maintenance fee for years 2-10. Actual costs will be based on final network design. ▪ Costs for years 11-20 are based on \$500 per strand mile, inflated each year by Consumer Price Index. Actual costs will be based on final network design. 	<ul style="list-style-type: none"> ▪ Cost model, based on cost-recovery between government entities. ▪ Ramsey County is considering bonding for entire project; City of Saint Paul will pay for their portion of the debt service. ▪ After debt service is paid, City of Saint Paul will only pay for maintenance. 	<ul style="list-style-type: none"> ▪ Based on a monthly fee based on number of sites, bandwidth and service levels. ▪ Rolls build out costs into first five years ▪ Price changes if number of sites, bandwidth or services levels change.