Budget Narrative Guidance for Middle Mile Grant (MMG) Projects

DCN, LLC (DBA Dakota Carrier Network) is submitting a single Middle Mile Grant application in collaboration with BEK Communications Cooperative, Griggs County Telephone Company, Dakota Central, and RTC Networks. In completing the detailed budget, DCN used the SF-424C template and has completed a combined forecast depicting the existing operations along with the expected results of Middle Mile Grant project per the NOFA.

One of DCN's core competencies is middle mile operations and services. With the demand of customer bandwidth, need to maintain and grow interconnections, provide higher levels of required cybersecurity, and perform to the Statutory Purpose and service level agreements, DCN and its subrecipients must upgrade the current networks (capacity, resiliency, speed, and security) to be able to accommodate new users and continue reliable and reasonably priced service to current customers. This will result in a fiscally sustainable project and long-term operations. DCN has a proven record of accomplishment in building and operating a middle mile network as evidenced by successful implementation of NTIA BTOP grant in 2010. Through the historical and audited financials provided, as well as the pro-forma financial projections and analysis, the project demonstrates it will adopt fiscally sustainable middle mile strategies and the anticipated revenues with the project will be sufficient to allow long-term continuation of services considering the anticipated costs. Current and future financial capabilities, commitment of match funding and bank credit, along with management experience and capabilities will enable the project to succeed and continue long-term service without a financial burden to consumers.

Total project cost is $43,801,276.61 ($24,090,702.14 in 55% cash match, $19,710,574.47 in grant funding). The non-federal match funds will come from recipients' cash accounts and no State or Federal funding sources will be used for cash match.

Total Federal Funding for MMG Project

Primary Applicant Name: DCN, LLC
Applicant Type: Cooperative
Proposed Period of Performance: 24 months
Total Project Costs: $43,801,276.61
Total Federal Grant Request: $19,710,574.47
Total Matching Funds (Cash): $24,090,702.14
Total Matching Funds (In-Kind): $0
Total Matching Funds (Cash + In-Kind): $24,090,702.14 (cash)
Total Matching Funds (Cash + In-Kind) as Percentage of Total Project Costs: 55% (Cash)

1. **Administrative and Legal expenses - $0.00**

DCN and subrecipients will not claim any administrative and legal expenses as part of this project.

2. Land, structures, rights-of-way, appraisals, etc. - $750,668.00

DCN will enter an IRU (Indefeasible Right of Use) for 612.99 route miles of fiber optic cable to facilitate fiber route additions providing the redundancy required for the critical institutions served by the network infrastructure. Adding resiliency and capacity is required to meet the needs of DCN's anchor institutions. The reimbursement for the lease is two years to match the project schedule and funding timeline. The lease is contractually longer than two years but grant funding is not being requested beyond the two years.

The lease rate of $50/route mile will be applied for a total two-year cost of $735,588.00. The $50/route mile lease rate was determined by actual price quotes from the lessor. The lessor will be accountable for the design, engineering, construction, installation, recording, and testing of said fiber route miles. In addition, all operations, administration, and maintenance of the fiber facilities will be the responsibility of the lessor.

BEK Communications attempts to acquire private right-of-way for all cable placements. BEK contract with an engineering firm to obtain all proper environmental clearances.

BEK will assume a rate of $1500.00 per mile to acquire new private land easements. This cost will include land research, drafting and obtainment of new land easements. BEK will need to obtain 2.7 miles of the 28.46 mile buildout in new right of way.

BEK Communications has had successful deployment of buried Fiber to the Home Plant since 2004. From overbuilds of our existing copper exchanges in our ILEC service territory to new CLEC service areas across the State of North Dakota. The projects below of FTTH deployments required procurement of new Right of Way.

*2004-2011 FTTH Overbuild of Existing ILEC exchanges

*2010 CLEC Rural Burleigh County area 546 subscribers

*2013-2016 CLEC Rural Barnes County area under

(2) USDA Community Connect Grants

*2018-2021 CLEC Rural Morton County under (3) USDA Community Connect Grants

* 2019-Present ICTC purchase and Overbuild of existing copper Plant

Due to the extensive history of buried FTTH deployment, BEK is confident that the assumed rate of $1500/ mile is accurate.

BEK received a quote of $11,000 from a local 3rd party Engineer to obtain the proper Environmental clearances.

3. Relocation expenses and payments - $0.00

DCN and their subrecipients will not claim any relocation expenses as part of this project.

4. Architectural and engineering fees - $861,930.00

BEK will design routes, map the routes, stake the routes and design the circuits.

BEK will request to use 3rd party engineering to design cable routes, circuit and record newly installed plant assets. BEK understands through historical work with 3rd party engineering that this rate is approximately $7,500 per mile of cable installation.

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Project Management ($79,560) – Project management consists of the time for each of the following items (but not limited to) progress meetings, invoice review, contractor questions, design changes, etc. It is anticipated that the Engineer will require 520 hours @ $153 per hour to maintain proper management of the project. The costs are estimated based on historical projects and our engineer's anticipated future rates.

Design ($23,520) – Consist of the time required to finalize the overall design and prepare the plans & specifications for the project. It is anticipated that the Engineer will require 160 hours @ $147 per hour to complete this task. The costs are estimated based on historical projects and our engineer's anticipated future rates.

Staking ($139,800) – Implementing the finalized designed into detailed construction diagrams. These will be used by the contractor to build the project. This is a fee-based item and it is anticipated that the Engineer will stake 233 miles @ $600 per mile. The costs are estimated based on historical projects and our engineer's anticipated future rates.

Drafting ($16,800) – The Engineer will complete all drafting using a computer-based design program in AutoCAD for the construction, permits, and cable location records. It is anticipated that the Engineer will require 160 hours @ $105 per hour to complete. The costs are estimated based on historical projects and our engineer's anticipated future rates.

Contract ($80,000) – The Engineer will complete all contract related items including (but not limited to) final Bid Packet, Pre-Bid meeting, Bid Opening, Contract Execution and change orders. This is a fee-based item, and it is anticipated that the Engineer will charge $80,000 for these items. The costs are estimated based on historical projects and our engineer's anticipated future rates.

Construction Supervision ($228,800) – Project management consists of the time for each of the following items (but not limited to) progress meetings, invoice review, contractor questions, design changes, etc. It is anticipated that the Engineer will require 520 hours @ $153 per hour to maintain proper management of the project. The costs are estimated based on historical projects and our engineer's anticipated future rates.

Closeout Documents ($80,000) – The Engineer will complete all closeout related items including (but not limited to) final reconciliation of invoices, final contract review/acceptance, and all required

documentation. This is a fee-based item, and it is anticipated that the Engineer will charge $80,000 for these items. The costs are estimated based on historical projects and our engineer's anticipated future rates.

5. Other architectural and engineering fees - $200,000.00

Environmental / SHPO Review ($30,000) – It is anticipated that we **MAY** have limited consultation with outside organizations for the Environmental and Section 106 compliance. This is just a lump-sum estimate. The costs are estimated based on historical projects.

Programming and Implementation of Electronics ($170,000) – This is required to do final layouts and engineering of the BEK transport equipment so that it can be programmed, turned up and tested before traffic is placed on the system.

6. Project Inspection fees - $51,228.00

BEK will have the outside plant construction project supervised by the 3rd party engineer who designed the cable routes. BEK understands through historical work with 3rd party engineering that project supervision rates are approximately $1,800 per mile of cable installation.

7. Site work - $8,000.00

The optical fiber transport routes will need to be terminated in existing central office locations using internal labor. BEK ISP fiber splicing technicians are familiar with the type of fiber and termination equipment needed to produce a high-quality network. Technicians will produce test results to splice test standards set by the 3rd party engineer. An estimated 100 hours of labor will be needed to terminate the optical fiber. This estimate is based on previous work/experience and the amount of work that is required on this project.

8. Demolition and removal - $0.00

DCN and their subrecipients will incur no demolition or removal expenses.

9. Construction - $5,592,134.00

BEK intends to bid an outsourced contractor to install the 28.46 miles of buried fiber optic plant. BEK understands through historical work with 3rd party contractors that this rate in approximately $15,840 per mile. This labor includes cable installation methods of direct plow insertion, boring, OSP handhole installation, fiber optic splicing and testing.

BEK has received quotes for the 8 new fiber distribution panels needed to terminate the fiber optic cabling in their existing central offices. These panels were quoted at $3,911.00 per unit.

BEK has estimated the optical fiber and handholes materials to complete the 28.46 miles of cable route placement. BEK understands through historical work and recent material quotes that these rates equate to approximately $9,160.00 per mile.

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BA 4 ($36,402) – $158.27 for each stub post (230) to be placed to protect each pedestal (2 per BDO 7). The estimated quantity of 230 is based on a designed total. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

BD 2 ($3,829) – $191.44 for each locate pedestal (20) to be placed at each hand hole location. The estimated quantity is based on a designed total. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

BDO 7 ($102,569) – $891.90 for each pedestal (115) to be placed to allow for splicing of cable and fiber access. The estimated quantity is based on a designed total. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

BFO 144I ($50,127) – $2.26 is a per foot charge of 22,180 feet of 144 fiber pulled through a new inner duct under the BFOV Unit. The estimated quantity is based on a designed total. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

BFO 144IE ($93,840) – $2.55 is a per foot charge of 36,800 feet of 144 fiber pulled through an existing inner duct. The estimated quantity is based on a designed total. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

BFO 144W ($2,860,900) – $2.44 is a per foot charge of 1,172,500 feet of 144 fiber direct buried via a cable plow. The estimated quantity is based on a designed total. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

BFOV (1x1.5) ($342,989) – $16.24 is a per foot charge of 21,120 feet of 1.5” inner duct placed via directional boring. The estimated quantity is based on a designed total. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

BHF (30x48x36) T ($61,564) – $3,078.20 for each handhole (135) to be placed to allow for splicing of cable and fiber access. The estimated quantity is based on a designed total. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

BM 2 (5/8)(8) ($10,182) – $75.42 for each ground rod (135) to be placed at all pedestals and hand holes. The estimated quantity is based on a designed total. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

BM 3 ($2,120) – $2.12 is a per foot charge of 1,000 feet of grounding straps. The estimated quantity is based on historical quantities for a project of this size. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

BM 25-1P ($13,930) – $27.86 is a per foot charge of 500 feet of boring under an existing pipeline. The estimated quantity is based on historical quantities for a project of this size. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

BM 53 ($68,935) – $98.62 for each fiber optic warning sign (699) to be placed along the cable route. The estimated quantity is based on historical quantities for a project of this size. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

BM 60 (1x1.5) ($908,065) – $12.76 is a per foot charge of 71,165 feet of 1.5" inner duct placed via directional boring. These are for road crossing. The estimated quantity is based on historical quantities for a project of this size. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

BM 72 ($3,783) – $16.24 is a per square foot charge of 233 square feet of asphalt cutting and replacement. The estimated quantity is based on historical quantities for a project of this size. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

BM73 ($11,488) – $99.04 is a per square foot charge of 116 square feet of concrete cutting and replacement. The estimated quantity is based on historical quantities for a project of this size. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

HO-1 ($215,820) – $35.97 for each fiber optic cable splice required (6,000). The estimated quantity is based on historical quantities for a project of this size. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

HBFO (M) ($55,182) – $951.41 for each fiber optic splice (58) case installed. The estimated quantity is based on a designed total. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

W BHF ($7,623) – $423.49 for each existing facility entrance (18). The estimated quantity is based on historical quantities for a project of this size. The estimated costs are based on Engineers current/similar contract pricing and adjusting for anticipated inflation from 2022-2024.

10. Equipment - $36,337,316.37

The equipment costs in this section are based on budgetary numbers provided by the equipment vendors.

DCN will be installing Ciena transport equipment to augment the capacity of its current DWDM infrastructure and Nokia service routing equipment to augment the capacity of its current carrier Ethernet, MPLS (multiple protocol label switching) infrastructure. In addition, DCN will be installing Ciena transport equipment for additional DWDM routes to add additional redundancy to both the transport and carrier ethernet platforms. These upgrades will assist in meeting the capacity demands and ensure reliable, resilient connectivity to the anchor institutions within the state who are providing critical services for the citizens of North Dakota.

- Nokia Carrier Ethernet, MPLS Capacity Upgrades (L2 Capacity Upgrades) - $16,884,294.43
- Ciena DWDM Capacity Upgrades (L1 Capacity Upgrades) - $4,558,958.14

- Ciena DWDM Route Additions (Route Additions) – $728,030.65

Griggs will be upgrading and installing a mix of various type of Ciena transport technologies; DWDM, ROADM, and Router equipment in key parts of our network. In some portions of the network, this project will replace aging equipment that will no longer be able to support the upcoming capacity demands, while also creating greater geo-redundancy. These upgrades will allow for reliable connectivity for unserved and underserved areas in our territory as well as increase capacity to meet the needs of the state's anchor institutions.

Ciena 5164's ($136,895.99)

Ciena 6500's ($239,049.20)

Ciena 8110's ($708,509.92)

Ciena 8114's ($111,876.90)

Ciena MCP's ($95,167.48)

Ciena Maintenance Services ($443,880.48)

Executive Discount ($-98,499.98)

Taxes ($115,000.00)

BEK will be upgrading and installing a mix of various type of Cisco transport technologies; DWDM, ROADM, and Router equipment in key parts of our network. In some portions of the network, this project will replace aging equipment that will no longer be able to support the upcoming capacity demands, while also creating greater geo-redundancy. These upgrades will allow for reliable connectivity for unserved and underserved areas in our territory as well as increase capacity to meet the needs of the state's anchor institutions.

Cisco DWDM ROADM ($768,774.75)

Cisco ASR9010 ($987,136.20)

Cisco ASR9904 ($635,523.82)

Cisco NCS57C3 ($1,966,261.79)

Transceivers ($282,812.57)

RTC will purchase equipment needed to upgrade the network to 400G capabilities throughout their service area. They have many requests for 10 Gig circuits from Businesses to Cell Carriers. They cover over 9,000 square miles with long distances between data centers. They have a fiber and equipment redundant network with multiple paths to the internet. RTC is requesting help with the equipment piece

of the upgrades which totals $7,773,644.03. In addition to those costs RTC is prepared to cover the design, installation, power requirements and provisioning for this project using internal funding.

Cisco NCS-57B1 ($2,222,703,54)

Cisco NCS-57C3 ($3,621,475.20)

Cisco 400G-ZR ($1,392,369.60)

Cisco Optical Line System ($537,095.69)

11. Miscellaneous - $0.00

DCN and subrecipients will not incur any miscellaneous expenses.

12. SUBTOTAL (sum of lines 1-11)

Total: $43,801,276.61

13. Contingencies

N/A

14. SUBTOTAL

Total: $43,801,276.61

15. Project (program) income

N/A

16. TOTAL PROJECT COSTS

Total: $43,801,276.61