Budget Narrative

Applicant Name: Mr. Gary Howard Hanson

EasyGrants Number: #2823

Organization Type (from Question 1D on BTOP application): Local, State, or Other Government Entity

Proposed Period of Performance: 24 Months

Total Project Costs: $14,830,204

Total Federal Grant Request: $11,864,164

Total Matching Funds (Cash): $1,630,075

Total Matching Funds (In-Kind): $1,335,965

Total Matching Funds (Cash + In-Kind): $2,966,040

Total Matching Funds (Cash + In-Kind) as Percentage of Total Project Costs: 20%

1. Administrative and legal expenses

- List breakout of position(s), time commitment(s) such as hours or level-of-effort, and salary information/rates with a detailed explanation, and additional information as needed.

	Description	Unit Basis	Unit Cost	Number of Units	Total Cost
Item 1	Legal Fees	Hourly	$250	156	$39,000
Total					$39,000

Legal fees to cover the costs of agreements for the fiber build out between public entities and private and any legal expenses required for permitting and right of ways. The legal services will be provided by an outside legal firm that understands specific language required to create and finish the agreements for the DATA project. We have estimated the average cost is $250/hour with 156 hours of work to be

performed. The total hours estimated is determined by scaling previous experience of network builds. These are standard hourly rates for Lawyers in the Illinois area.

- Provide description, calculation, and basis of evaluation for Cash Matching Funds

COST CLASSIFICATION	a. Total Cost	b. Matching Funds (Cash)	c. Matching Funds (In-Kind)	d. Federal Funding Request (Columns a-b-c)
1. Administrative and legal expenses	$39,000	$7,800	$0	**$31,200**

Allocation of cash contribution from participants, 20%, totaling $7,800.00.

- Provide description, calculation, and basis of evaluation for In-Kind Matching Funds.

There is no in-kind contribution match for this category.

2. Land, structure, rights-of-way, appraisals, etc.

- Provide description of estimated costs, proposed activities, and additional information as needed.

	Description	Unit Basis	Unit Cost	Number of Units	Total Cost
Item 1	Purchase of 12 Fibers/Mile from NIU	5 Mile Segments	97,000	2	$194,000.00
Item 2	Lease of Duct System DeKalb/Sycamore	69,590 Feet	881,485	1	$881,485.00
Item 3	Railroad Permits and Construction	Per Crossing	20,000	13	$260,000.00
Item 4	NICOR Permits and Construction	Per Crossing	20,000	4	$80,000.00
Item 5	Standard Oil Permits and Construction	Per Crossing	20,000	1	$20,000.00
Total					$1,435,485.00

Details of Item 1

A fiber lease of 12 fibers to a small village and education center area west of Northern Illinois University (NIU). The fiber was initially installed as a partnership between a Community College and NIU is able to allow the DATA network to lease portions of that fiber. The lease will also include a fiber into NIU for all members to pick up ISP services at no additional charges. The lease is a onetime charge with no monthly or annual fees.

The estimated cost is $808 per fiber strand mile at a not-for-profit cost provided by NIU.

This allows all of the DATA member's access into the POP center at Northern Illinois University via a fiber connection over the equipment. Schools will be able to obtain ISP services from the Illinois Century Network or NIUNet with no last mile charges.

Cost is based on the rate that the University paid to have the cable installed and estimated maintenance over a 20 year period.

Details of Item 2

A lease of duct space is part of the in-kind contribution of DFO to the DATA network. This lease will allow the DATA participants to access duct through a metropolitan region into the POP locations in Sycamore and DeKalb.

The value per unit is $13.00/foot and no additional monthly or yearly fees applied over the term of the agreement. This duct is already installed in a population center and will connect the networks from the rural areas to the north and south regions. This duct in installed in a metropolitan region it is a valuable contribution to the DATA network providing a gateway into major service areas where DATA members can obtain low cost services.

Detailed costs are explained in the document "Narrative on DFO's In-Kind Contribution" submitted as part of the grant proposal. A summary of the costs is that DFO through its history built a significant fiber footprint within the DeKalb / Sycamore area. The most significant portion of DFO's contribution comes from the agreement to provide 48 strands of fiber through DFO's existing duct system and cable plant. The expansion of the fiber is for the County's use to provide a fiber path to the schools, municipals, libraries and healthcare as mentioned in the grant proposal. This contribution of duct space in most cases exhausts the ability for DFO to expand the fiber system throughout the heaviest metropolitan business districts in the DeKalb County region. If additional fiber is required to be added to the system, as a result of DFO's business expanding, DFO at its own expense will have to bore additional duct along parallel paths. DFO is also contributing this duct under the agreement with no long term costs for locating and maintenance charged back to the County or DATA participants. DFO has established enough business partnerships throughout the defined existing duct and fiber system segment that DFO will contribute, at no cost, to the County this service for a minimum of 20 years. As part of the onetime

in-kind contribution DFO believes that the fair market value of more than 67,806.5 feet of duct is $13.00/foot or $881,485. This cost includes the contribution to locate and maintain this segment of fiber over the length of the contract that typically would cost over $17,300/year to maintain in a standard locate agreement not including the cost of emergency repair or cable moves and changes. DFO is acting on this in-kind contribution in a cooperative fashion that will benefit both the County and DFO for the long term relationship that we have constructed over the past three years.

Details of Item 3

There are 13 areas where the DATA network will have to cross under the path of a Railroad. There are several items of work to be performed when crossing these barriers that include on-site personnel, special construction, insurance and fees. The cost is based off past experience of crossing under railroads in the Northern Illinois Region. In order to complete the network, these types of barriers must be crossed. A detail of the costs of permitting for railroads can be found in the document "Detailed Project Budget" submitted as part of this grant. Railroads are expensive to cross as a result of the permitting fees and the over build construction required to place the cable in a ridged conduit under the railroad bed. Our past experience for crossing under railroad tracks averaged $20,000 per crossing of which we will have to cross 13 railroads. This average railroad crossing required permitting fees, licensing, construction, insurance and miscellaneous fees in order to obtain the rights to cross. Each railroad owner has a different procedure to cross under of which we have several owners we will have to work with. We have anticipated these costs from our past experience in working with railroads.

Details of Item 4

There are 4 areas where the DATA network will have to cross under the path of a Natural gas Pipeline. There are several items of work to be performed when crossing these barriers that include on-site personnel, special construction, insurance and fees. The cost is based off past experience of crossing under pipelines in the Northern Illinois Region. In order to complete the network, these types of barriers must be crossed. In summary pipelines also require a permit license to cross under the utility easement. We will have to cross 4 NICOR pipelines in the DATA project area. In previous projects NIU has participated in, the quoted cost to cross under a pipeline is $20,000 for a private company.

Details of Item 5

There is one area where the DATA network will have to cross under the path of an oil gas pipeline. There are several items of work to be performed when crossing these barriers that include on-site personnel, special construction, insurance and fees. The cost is based off past experience of crossing under pipelines in the Northern Illinois Region. In order to complete the network, these types of barriers must be crossed. In summary pipelines also require a permit license to cross under the utility easement. We will have to cross one Standard Oil pipeline in the DATA project area. In previous projects NIU has participated in, the quoted cost to cross under a pipeline is $20,000 for a private company.

- Provide description, calculation, and basis of evaluation for Cash Matching Funds.

COST CLASSIFICATION	a. Total Cost	b. Matching Funds (Cash)	c. Matching Funds (In-Kind)	d. Federal Funding Request (Columns a-b-c)
2 . Land, structures, rights-of-way, appraisals, etc.	$1,435,485	$115,437	$881,485	**$438,563**

The participant cash contribution is 21% of the total costs minus the in-kind contributions and applied towards items 1,3,4 and 5 listed above.

21% = 115,437 / (1,435,485 – 881,485)

The participant cash contribution for the "Total Cost" of Land, structures, rights-of-way, appraisals, etc. including the in-kind match would be 8%.

The calculation was based on dividing the Total Matching Funds (Cash) by Total Costs.

8% = $115,437 / $1,435,485

- Provide description, calculation, and basis of evaluation for In-Kind Matching Funds.

COST CLASSIFICATION	a. Total Cost	b. Matching Funds (Cash)	c. Matching Funds (In-Kind)	d. Federal Funding Request (Columns a-b-c)
2 . Land, structures, rights-of-way, appraisals, etc.	$1,435,485	$115,437	$881,485	**$438,563**

The participant in-kind contribution is 61% of the total costs and applied towards item two listed above. The detail of the value of this contribution from DFO is listed above in "Details of Item 2".

3. Relocation expenses and payment

- Provide explanation for the relocation, description of the person involved in the relocation, method used to calculate costs, and additional information as needed.

There are no costs for this category.

- Provide description, calculation, and basis of evaluation for Cash Matching Funds.

N/A

- Provide description, calculation, and basis of evaluation for In-Kind Matching Funds.

N/A

4. Architectural and engineering fees

- Provide description of estimated fees, explanation of proposed services, and additional information as needed.

	Description	Unit Basis	Unit Cost	Number of Units	Total Cost
Item 1	NIU BBD Engineering Services for Anchor Inst.	Hourly	$ 125.00	1,536	$ 192,000.00
Item 2	Cable Plant Engineering	Hourly	$ 115.00	3,952	$ 454,480.00
Total					$ 646,480.00

Details for Item 1

The DATA project costs include support from Northern Illinois University to help engineer and integrate the DATA members existing network into the new DATA network architecture. Most of the DATA members do not have the expertise or skills to perform these tasks. NIU can assist in this migration using the Broadband Development Group and The Department of Information Technology Services. The costs are based on onsite visits with engineering assistance. The cost is based on a $125/Hour fee with estimates to spend two days with each site. These costs are necessary to complete a successful integration into the new network and determine appropriate equipment needs. NIU is a not-for-profit University and consults at these rates to other public entities throughout the Illinois region.

Details for Item 2

The cable plant engineering and project management will require an assessment of the cable path to determine the most cost effective route. The engineering will include planning as well as overseeing the construction of the project from start to finish. The engineering will include the drawings and documentation of the fiber plant network for when under construction and as-built documentation. The cost is based on engineering at $115.00/hour. These charges are required in order to have successful implementation of the cable plant. The engineering is also required for the long term maintenance of the network for locating, adds, changes and moves. These charges are included as part of the cable installation. Many engineering charges are in the range of $300-$500/hour. These charges apply to a full time person onsite for the duration of the construction over the anticipated 24 months.

- Provide description, calculation, and basis of evaluation for Cash Matching Funds.

COST CLASSIFICATION	a. Total Cost	b. Matching Funds (Cash)	c. Matching Funds (In-Kind)	d. Federal Funding Request (Columns a-b-c)
4. Architectural and engineering fees	$646,480	$36,665	$454,480	**$155,335**

The participant cash contribution is 5.6% of the total architectural and engineering fees and applies to item 1.

- Provide description, calculation, and basis of evaluation for In-Kind Matching Funds.

COST CLASSIFICATION	a. Total Cost	b. Matching Funds (Cash)	c. Matching Funds (In-Kind)	d. Federal Funding Request (Columns a-b-c)
4. Architectural and engineering fees	$646,480	$36,665	$454,480	**$155,335**

The participant in-kind contribution is 70% of the total architectural and engineering fees and applies to item 2. The detail of this in-kind contribution from DFO is listed in “Details for Item 2” above.

5. Other architectural and engineering fees

- Provide description of estimated fees, explanation of proposed services, and additional information as needed.

	Description	Unit Basis	Unit Cost	Number of Units	Total Cost
Item 1	Engineering Drawings	Hourly	$ 120.00	375	$ 45,000.00
Total					$ 45,000.00

Additional costs for drawings for permits, easements, or rights-of-way may require stamped PE certified drawings and printed specifications. These costs are an unavoidable part of obtaining access to easement and rights-of-way. The costs were based on 45 possible instances and were estimated to range from $200 to $1,500 each. The estimated charges are per past experience of obtaining permits, easements and rights-of-ways.

- Provide description, calculation, and basis of evaluation for Cash Matching Funds.

COST CLASSIFICATION	a. Total Cost	b. Matching Funds (Cash)	c. Matching Funds (In-Kind)	d. Federal Funding Request (Columns a-b-c)

5. Other architectural and engineering fees	$45,000	$9,000	$0	**$36,000**

The participants are providing a 20% cash match of $9,000.00 for other architectural and engineering fees.

- Provide description, calculation, and basis of evaluation for In-Kind Matching Funds.

There is no in-kind match for this category.

6. Project inspection fees

- Provide description of estimated fees, explanation of proposed services, and additional information as needed.

There are no fees in this category.

- Provide description, calculation, and basis of evaluation for Cash Matching Funds.

N/A

- Provide description, calculation, and basis of evaluation for In-Kind Matching Funds.

N/A

7. Site work

- Provide description of estimated fees, explanation of proposed services, and additional information as needed.

There are no fees in this category.

- Provide description, calculation, and basis of evaluation for Cash Matching Funds.

N/A

- Provide description, calculation, and basis of evaluation for In-Kind Matching Funds.

N/A

8. Demolition and removal

- Provide description of estimated fees, explanation of proposed services, and additional information as needed.

There are no fees in this category.

- Provide description, calculation, and basis of evaluation for Cash Matching Funds.

N/A

- Provide description, calculation, and basis of evaluation for In-Kind Matching Funds.

N/A

9. Construction

- Provide description of estimated fees, explanation of proposed services, state whether the work is being completed by the applicant or an outside contractor, and additional information as needed.

	Description	Unit Basis	Unit Cost	Number of Units	Total Cost
Item 1	Lateral Duct Installation	Foot	$12.295	224,954	$2,763,822
Item 2	Backbone Duct Installation	Foot	$12.295	464,224	$5,703,729
Item 3	Materials	Foot	$3.39	689,170	$2,336,287
Item 4	Splicing and Termination	Average/Foot	$0.24	689,170	$165,401
Total					$10,969,239

Details of Item 1 and 2

The lateral and backbone duct installation involves labor and equipment to install a microduct package underground with a handhole system, markers and building entrance. The unit cost for installation of the completed fiber is $17.06/ft of which the duct installation rounded up is based on a $12.30* per foot average.

**The actual cost per foot for duct installation calculates to be $12.2951560990049 per foot. As a result of breaking down the costs, the cost per foot of the duct installation resulted in a large decimal number. In order to maintain the integrity of a balanced budget, this number was used for the calculation for the total amounts.*

The costs were calculated to include prevailing wage labor for the DeKalb County Area. The primary work performed is by plowing, directional boring or in special cases hand dug if required. The duct system will have handholes placed in engineered areas using a backhoe to place them. Utilities are located by hand digging during the installation process. Building entrance will be performed to local codes using protective duct or conduit up to 100' per facility. The fiber is air blown into one of the microduct conduits. The fiber is then marked, spliced and terminated. The work will be performed by DeKalb Fiber Optic named as a participant and contributor to this grant proposal and its subcontractors. The justification for the type of work and costs are proposed in the document "Detailed Project Budget" in this grant proposal.

Details for Item 3

The system requires the purchase of large quantities of materials. We have broken down the costs into the price per foot of duct, handholes and fiber. The costs for the duct and fiber come from past experience of installing this type of duct and fiber. We calculated the cost of the handholes by the requirement to have one for every 1500' throughout the fiber plant system. The purchase of the duct will be under an agreement with DeKalb Fiber Optic by direction of DeKalb County Government. This is the required duct, handholes and fiber to create a fiber plant. The justification for cost of construction can be found in the document "Detailed Project Budget" in this grant proposal.

Details for Item 4

Once the duct and fiber have been installed into the ground, the fiber system is completed by splicing and termination. This requires that each location where the fiber is not continuous to be spliced or in a building entrance terminated. Splice cases and materials are required for splicing and termination. The costs were calculated by the length and number of POI's required in the fiber plant. We calculated that cost into a .24/ft cost. Each cable that requires splicing will require the cable to be prepared, cleaved and fused. A splice case will be required in each handhole where the fiber is not continuous or where a building entrance is required. The termination will require the installation of a fiber termination unit, a pig tail with fiber ends, and splicing to fuse the fibers together. The work will be performed by DeKalb Fiber Optic named as a participant and contributor to this grant proposal. The splicing is required throughout the fiber plant for continuity of the fiber. The justification for cost of construction can be found in the document "Detailed Project Budget" in this grant proposal.

- Provide description, calculation, and basis of evaluation for Cash Matching Funds.

COST CLASSIFICATION	a. Total Cost	b. Matching Funds (Cash)	c. Matching Funds (In-Kind)	d. Federal Funding Request (Columns a-b-c)
9. Construction	$10,969,239	$766,223	$0	**$10,203,016**

The participants are providing a 7% cash match of $766,223 for construction costs.

- Provide description, calculation, and basis of evaluation for In-Kind Matching Funds.

There are not in-kind matching funds for this category.

10. Equipment

- Provide list of equipment with description, number of units, unit cost, state whether it is being purchased or leased, and additional information as needed.

	Description	Unit Basis	Unit Cost	Number of Units	Total Cost	Ref. Code
Item 1	1 Gig Switch/CWDM and Wireless	Per Site	10,000	55	550000	a)
Item 2	GPON Core Equipment	1 site	40,000	1	40000	b)
Item 3	Switches for GPON	Per Site	5,000	30	150000	c)
Item 4	DWDM Equipment	Selected POI	70,000	9	630000	d)
Item 5	Municipal Wireless	One AP	2,750	20	55000	e)
Item 6	Router	System	30,000	1	30000	f)
Item 7	CWDM @ 1 Gig Metro	Metro Laterals	20,000	10	200000	g)
Item 8	Connection to NITT DWDM	System	20,000	2	40000	h)
Total					1695000	

Details for Item 1

Each DATA member will be equipped with a gigabit switch and wireless, depending on location, to connect to the DATA network. The gigabit switch will be connected into a CWDM Metro type network. Each participating member will be equipped with a gigabit switch, CWDM optics and CWDM Passive Hub. The design also allows for DATA members to build a private network over the new fiber infrastructure over a baseband 1310 network. All products will be purchased and not leased. The costs of items are based on metro systems that NIU has helped develop for schools, hospitals and municipals. Switching gear can cost from $2,000-$4,000 while the CWDM can cost $4,000-$6,000, plus fiber optic cables will be required to interconnect the system. The price includes installation and testing of the CWDM connection. The items are all priced from historical data that NIU has collected for the installation of systems under the State of Illinois procurement system.

Details for Item 2

The DATA project includes a fiber to the premises component. The equipment chosen is a GPON system that will support up to 128 nodes. This is the main unit that will support the GPON system for up to 1 Gigabit to each fiber to the premises. All products are purchased and not leased. The costs are based on the average purchase price of a 128 node system the cost was determined by observing

three vendors products. The cost is based on the main unit plus nodes. This system is based on industry standard commodity class equipment allowing for the maximum economy of scale.

Details for Item 3

The DATA project includes a segment of fiber to the premise. The equipment chosen is a GPON system and these are the end units to support the host unit. These units support 1 Gigabit to each fiber to the premise. All products are purchased and not leased. The costs are based on the average purchase price of a 128 node system the cost was determined by observing three vendors products that included the main unit plus nodes. This system is based on industry standard commodity class equipment allowing for the maximum economy of scale.

Details for Item 4

The core backbone is based off a robust DWDM backbone system capable of performing speeds up to 100 Gigabit per wave length. The design allows for 9 POI's that will have equipment placed where services can be obtained. This is the backbone equipment for the DATA network where metro networks will converge into. All products will be purchased not leased. The costs are based on a 10Gigabit system with capability to run up to 40 light waves in the 50-100Ghz range. The system costs are based off the average costs that NIU has determined from its own experience in building a State of the Art network called NIUNet.

Details for Item 5

The installation wireless access node will be added to the City of DeKalb downtown area. This will a standard based 802.11 wireless installations. The design is to cover the complete downtown business district in the City of DeKalb. This equipment will be purchased and not leased. The costs are based on the average cost per installed access point and determined by experience in the engineering of wireless networks from the DATA participants.

Details for Item 6

This is a router for the portion of the DATA network that will assist in the farmers COOP to deliver bulk services to agriculture. This will allow the traffic to be routed to multiple ISP's in the region. All products will be purchased not leased. The costs are based on a medium sized router that will handle BGP sessions and multiple routes. The system is based off the cost of a medium sized Cisco router in the switched and routed industry.

Details of Item 7

The equipment that will extend from the POI's with DWDM equipment and will create metro laterals with CWDM equipment. This cost is for the head end CWDM equipment. A CWDM headend will be placed at each POI along with an additional one placed at an end location where DWDM is not cost effective. The CWDM network will support up to 9 light waves up to 1 Gigabit per light wave. This is the means of getting transport from anchor institutions to the backbone network. All products will be purchased not leased. The costs are based on a 9 light wave system that will handle 1 Gigabit connections. The costs are based off the average costs that NIU has determined from its own experience in building CWDM metro networks.

Details of Item 8

The interconnection to the NITT will require DWDM equipment to integrate the DATA and the NITT systems. The equipment is based on installing a 10 Gigabit light wave with access to the NITT ring. All products will be purchased not leased. The cost is based on the estimates to upgrade the NITT system to handle the DATA network. The costs are part of a DWDM system and comply with industry standard costs for the required equipment.

- Provide description, calculation, and basis of evaluation for Cash Matching Funds.

COST CLASSIFICATION	a. Total Cost	b. Matching Funds (Cash)	c. Matching Funds (In-Kind)	d. Federal Funding Request (Columns a-b-c)
10. Equipment	$1,695,000	$694,950	$0	**$1,000,050**

The participants are providing a 41% cash match of $1,695.00 for equipment costs.

- Provide description, calculation, and basis of evaluation for In-Kind Matching Funds.

There are no in-kind matches for this category.

11. Miscellaneous

- Provide additional information as needed.

There are no fees in this category.

- Provide description, calculation, and basis of evaluation of Cash Matching Funds.

N/A

- Provide description, calculation, and basis of evaluation of In-Kind Matching Funds.

N/A

Addendum

- If indirect costs (i.e., indirect, overhead, general and administrative, facilities and administration, etc.) and/or fringe benefits are included in the budget, please provide a copy of your existing Negotiated Indirect Cost Recovery Agreement (NICRA), if available. If the NICRA is applied accordingly in the budget, there is no need to justify the costs. If a NICRA is not available or is not consistent with the rates/calculations in the budget, please provide an explanation of how the amounts were calculated. Please clearly list the manner in which indirect costs are calculated in the budget.

N/A