APPLICANT'S NAME - MCNC (69)				
BUDGET INFORMATION - Construction Programs				
NOTE: Certain Federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case, you will be notified.				
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	$369,357	$81,568	$0	**$287,789**
2. Land, structures, rights-of-way, appraisals, etc.	$150,000	$33,126	$0	**$116,874**
3. Relocation expenses and payments	$0	$0	$0	**$0**
4. Architectural and engineering fees	$962,285	$212,510	$0	**$749,775**
5. Other architectural and engineering fees	$0	$0	$0	**$0**
6. Project inspection fees	$3,470	$766	$0	**$2,704**
7. Site work	$0	$0	$0	**$0**
8. Demolition and removal	$0	$0	$0	**$0**
9. Construction	$32,084,915	$7,085,594	$0	**$24,999,321**
10. Equipment	$6,415,529	$586,436	$3,760,038	**$2,069,055**
11. Miscellaneous	$0	$0	$0	**$0**
12. SUBTOTAL (add #1 through #11)	$39,985,556	$8,000,000	$3,760,038	**$28,225,518**
13. Contingencies	$0	$0	$0	**$0**
14. SUBTOTAL (add #12 and #13)	$39,985,556	$8,000,000	$3,760,038	**$28,225,518**
15. Project (program) income	$0	$0	$0	**$0**
16. TOTAL PROJECT COSTS (*subtract #15 from #14*)	**$39,985,556**	**$8,000,000**	**$3,760,038**	**$28,225,518**
FEDERAL FUNDING				
17. Federal assistance requested, calculated as follows: (Consult Federal agency for Federal percentage share.) Enter the resulting Federal share.	Enter eligible costs from line 16a Multiply X 20%			$7,997,111

DETAIL OF PROJECT COSTS

PLEASE COMPLETE THE TABLE BELOW FOR THE DIFFERENT CATEGORIES OF EQUIPMENT THAT WILL BE REQUIRED FOR COMPLETING THE PROJECT. EACH CATEGORY SHOULD BE BROKENDOWN TO THE APPROPRIATE LEVEL FOR IDENTIFYING UNIT COST

SERVICE AREA or COMMON NETWORK FACILITIES:		Eligibility (Yes/No)	Unit Cost	No. of Units	Total Cost	Support of Reasonableness
NETWORK & ACCESS EQUIPMENT						
Switching					$5,676,782	
	Cisco 7609 Chassis, Morehead City, southeastern network	Yes	$57,250	1	$57,250	Establishment of new layer-3 RPOP in rural southeastern North Carolina
	Cisco 7609 Chassis, Sylva, western network	Yes	$57,250	1	$57,250	Establishment of new layer-3 RPOP in rural western North Carolina
	Cisco 7609 10G Linecards, western network	Yes	$17,500	8	$140,000	Trunk Interface cards to establish new layer-3 RPOP in rural western North Carolina
	Cisco 7609 10G XENPAK's, western network	Yes	$2000	8	$16,000	Optics to establish new layer-3 RPOP in rural western North Carolina
	Cisco 7609 10G XENPAK's, southeastern network	Yes	$2000	10	$20,000	Optics to establish new layer-3 RPOP in rural southeastern North Carolina
	Cisco 7609 10G Linecards, southeastern network	Yes	$17,500	10	$175,000	Trunk interface cards to establish new layer-3 RPOP in rural southeastern North Carolina
Routing	Cisco 7609 1G Linecards, southeastern network	Yes	$15,000	2	$30,000	1G interfaces to establish layer-3 RPOP in rural southeastern network; client connection
	Cisco 7609 1G Linecards, southeastern network	Yes	$15,000	2	$30,000	1G interfaces to establish layer-3 RPOP in rural western network; client connection
	Cisco 7609 In Kind Match	Yes	$67,084	9	$603,753	Required equipment to build central NCREN core previously bought. Would have needed this to provided end to end connectivity with new project the grant would award.
	Cisco CRS-1 In kind Match	Yes	$422,448	3	$1,267,346	Required equipment to build central NCREN core previously bought. Would have needed this to provided end to end connectivity with new project the grant would award.
Transport						
	Cisco 15454 DWDM Optical	Yes	$108,057	7	$756,400	Enables multiple services and

DETAIL OF PROJECT COSTS

	Nodes, Common Elements, western North Carolina network					transport capabilities on the fiber infrastructure. Given distances involved, and capabilities of the system, provides the lowest cost service for aggregation of the services for rural western North Carolina.
	Cisco 15454 DWDM Optical Nodes, Common Elements, southeastern North Carolina network	Yes	$98,799	8	$790,395	Enables multiple services and transport capabilities on the fiber infrastructure. Given distances involved, and capabilities of the system, provides the lowest cost service for aggregation of the services for rural southeastern North Carolina.
	Cisco 10Gbps Optical Transponders, western North Carolina network	Yes	$26,900	8	$215,200	Transponders required to enable 10G IP transport network for NCREN rural western North Carolina network.
	Cisco 10Gbps Optical Transponders, southeastern North Carolina network	Yes	$26,900	10	$269,000	Transponders required to enable 10G IP transport network for NCREN rural eastern North Carolina network.
	Cisco 15454 DWDM Optical Nodes and Transponders, In Kind Match	Yes	$149,399	8	$1,195,188	Existing optical infrastructure procured in NCREN network expansion upgrade that would be needed to interconnect rural southeastern North Carolina and rural western North Carolina together.
Access						
Other	Staff installation labor of electronics	Yes	$100/hr	540	$54,000	Estimate based on installation interval we've seen for similar installations we've performed and what Cisco has confirmed is a general standard for a configuration of this magnitude. The estimate is for work at 15 locations at roughly 36 man hours per location. $100/hr is the blended rate for our engineers including benefits.
OUTSIDE PLANT					$32,778,662	
Cables	Corning, singlemode fiber, 48 ct.	Yes	$0.50/ft	2,534,400	$1,267,200	Current rate of fiber being bought today is in this price range.
		Yes		$28,750	$28,750	This fiber build ties in to a lease

DETAIL OF PROJECT COSTS

	Winston-Salem/Wake Forest Access Fiber-In kind		1			of Qwest long haul fiber in Winston-Salem.. Would have needed to enable this new network.
	Raleigh/Fayetteville/Wilmington Long Haul Fiber	Yes	1	$365,000	$365,000	This is previously acquired fiber from ITC Deltacom that is being leveraged to construct southeastern network path. This path would have been required to purchase to produce this ring enabled by grant.
	Greensboro Metro Fiber	Yes	1	$300,000	$300,000	This fiber build ties in to a lease of Qwest long haul fiber in Greensboro. Would have needed to enable this new network.
Conduits	Blue Diamond SDR 9 1.25" hdep conduit, 2 in all fiber plant construction	Yes	$0.33/ft	5,068,800	$1,672,704	Current rate of conduit being bought today is in this price range.
	1.25" hdpe conduit couplings,	Yes	$4.85/each	8,578	$41,603	Current rate of conduit being bought today is in this price range.
Ducts						
Poles						
Towers						
Other 1	Fiber Construction	Yes	$7.51/ft	2,534,400	$19,043,957	Required labor construction to get to underserved areas. Cost per foot is a blended rate over entire service area. Southeastern build will provide less impediments such as rock and will allow it to offset the overall costs in the west. Fiber contractor has provided this general rate as a starting point for basis of providing a budgetary quote.
	Rock Adder	Yes	$28.25/ft	346,236	$9,781,167	Potential for rock in the construction areas is high. We've added a reasonable amount of adder to allow for covering that, realizing that we could be high or low depending on what is discovered once construction starts. If a significant amount is discovered,

DETAIL OF PROJECT COSTS

						we will switch to aerial construction on those parts.
Other 2	Fiber Route Markers	Yes	$48	2672	$128,256	Required location materials for new construction. Current rate of material bought today is in this price range.
	Fiber Closures	Yes	$325	85	$27,625	Required splice enclosures along route to enable interconnect locations and splicing of lengths of cable. Current rate of fiber closures being bought today is in this price range.
	Fiber Handholds, 30x36x30	Yes	$255	480	$122,400	Required to terminate conduit as it it placed in the ground. Current rate of handholds being bought today is in this price range.
SERVICE AREA or COMMON NETWORK FACILITIES:		Eligibility (Yes/No)	Unit Cost	No. of Units	Total Cost	Support of Reasonableness
BUILDINGS					$150,000	
New Construction						
Pre-Fab Huts	Regeneration hut in Lincolnton	Yes	$150,000	1	$150,000	Regeneration site needed due to rural nature of the route. Prefab hut presents cheapest option.
Improvements & Renovation						
Other						
CUSTOMER PREMISE EQUIPMENT					$45,000	
Modems						
Set Top Boxes						
Inside Wiring						
Other	Racks, DC power plant termination blocks at 9 locations.	Yes	$5000	9	$45,000	There will be power work required at nine new facilities. The power will be bought from the building owner, but we require DC management systems, and breaker boxes to terminate the power. In past installations we've seen this cost around $5000 per site.
BILLING SUPPORT AND OPERATIONS SUPPORT SYSTEMS						
Billing Support Systems						
Customer Care Systems						

DETAIL OF PROJECT COSTS

Other						
SERVICE AREA or COMMON NETWORK FACILITIES:		Eligibility (Yes/No)	Unit Cost	No. of Units	Total Cost	Support of Reasonableness
OPERATING EQUIPMENT						
Vehicles						
Office Equipment/Furniture						
Other						
PROFESSIONAL SERVICES					$962,285	
Engineering Design	Route Engineering	Yes	$0.25/ft	2,534,400	$633,600	
Project Management	Project Management Oversight by partner, with support from MCNC employees	Yes	$328,685/one time	1	$328,685	Project oversight of construction firm and crews.
Consulting						
Other						
TESTING						
Network Elements						
IT System Elements						
User Devices						
Test Generators						
Lab Furnishings						
Servers/ Computers						
OTHER UPFRONT COSTS					$372,827	
SITE PREPARATION						
Other	Pre-award consulting (legal, mapping, grant writing, fiber planning)	Yes	$122,500	1	$122,500	
	Pre-award labor, 1904.76 hours x $4.10/hr	Yes	$44.10/hr	1904.76	$84,000	
	Benefits @ 44.6% of labor	Yes	$37,464	1	$37,464	
	Direct/Labor Overhead, 54.8327% of labor and benefits	Yes	$66,602	1	$66,602	
	G&A	Yes	$58,791	1	$58,791	
	Travel, workshop attendance, fiber route inspection	Yes	$3470	1	$3470	

$39,985,556

MCNC (69)

General Budget Overview

Budget	Loan Request	Federal Funding Request	Matching Funds (Cash)	Matching Funds (In-Kind)	Equity	Debt	Bond	Other	TOTAL
Network & Access Equipment (switching, routing, transport, access)		2,033,996	576,498	3,066,288					$5,676,782
Outside Plant (cables, conduits, ducts, poles, towers, repeaters, etc.)		24,999,318	7,085,594	693,750					$32,778,662
Buildings and Land – (new construction, improvements, renovations, lease)		116,874	33,126						$150,000
Customer Premise Equipment (modems, set-top boxes, inside wiring, etc.)		35,062	9,938						$45,000
Billing and Operational Support Systems (IT systems, software, etc.)		0	0						$0
Operating Equipment (vehicles, office equipment, other)		0	0						$0
Engineering/Professional Services (engineering design, project management, consulting, etc.)		749,775	212,510						$962,285
Testing (network elements, IT system elements, user devices, test generators, lab furnishings, servers/computers, etc.)		0	0						$0
Site Preparation		0	0						$0
Other		290,493	82,334						$372,827
TOTAL BROADBAND SYSTEM:	**$0**	**$28,225,518**	**$8,000,000**	**$3,760,038**	**$0**	**$0**	**$0**	**$0**	**$39,985,556**

MCNC Due Diligence-Derivation of SF-424C #1 from 11-24-09 Request Version 2

Please submit a budget narrative that explains in a short paragraph how each line of your SF-424C form was calculated. Please be as specific as necessary for others not familiar with your proposal to understand your approach and figures.

Standard Form 424C information was based on data used to prepare Attachment G, *Detail of Project Costs* as included in our proposal.

Line 1 Administrative and legal expenses – The total of $369,357 represents pre-award consulting (legal, mapping, grant writing, fiber planning), pre-award labor of 1904.76 hours as recorded in our timekeeping system and associated benefits. Our direct labor overhead (DLO) ($66,602) and General and Administrative (G&A) burdens ($58,791) are computed using rates for this fiscal year. The $81,568 in cash match was derived by applying equal proportioning of the total cash match contributions to all non-in-kind costs.

Line 2 Land, Structures, rights-of-way, appraisals – Our design calls for a single pre-fab hut housing regeneration and amplification equipment near Lincolnton, NC. We estimate the total cost of this at $150,000. The $33,126 cash match was derived by applying equal proportioning of the total cash match contributions to all non-in-kind costs.

Line 3 Relocation expenses and payments – None

Line 4 Architectural and engineering fees – This total of $962,285 represents engineering fees estimated at $0.25/ft for 2,534,400ft totaling $633,600 plus project management and oversight by our partner FRC supported by MCNC staff of $328,685. The $212,510 cash match was derived by applying equal proportioning of the total cash match contributions to all non-in-kind costs.

Line 5 Other architectural and engineering fees – None.

Line 6 Project inspection fees – Estimated at $3,470 for project inspection travel costs of in-house personnel. The $766 cash match was derived by applying equal proportioning of the total cash match contributions to all non-in-kind costs.

Line 7 Site work – None.

Line 8 Demolition and removal – None.

Line 9 Construction – Our middle mile construction costs are estimated at $32,084,915. This consists of the following elements based on a budgetary quote from a fiber construction company:

Labor ($7.51/ft for 2,534,400ft) - $19,043,958

Rock Adder ($28.25/ft for 346,236ft) - $9,781,168
Route markers - $128,256
Handholds – $122,400
Splice enclosures - $27,625
Conduit and couplings - $1,714,308
Fiber - $1,267,200

These values were based on the collective experience of MCNC and our partner, FRC, and budgetary quotes from potential construction companies. The "Rock Adder" estimate represents the additional construction labor cost that will be incurred if rock is encountered along the route. The estimated amount of rock is based on field experience and visual route inspection. The actual cost for "rock-adder" cannot be known until construction begins. We intend to manage the project such that we can switch to aerial deployment if necessary to stay within budget. The $7,085,594 cash match was derived by applying equal proportioning of the total cash match contributions to all non-in-kind costs.

Line 10 Equipment – This represents Switching, routing, DC power, and Wave Division Multiplexing (WDM) equipment to enable IP and lambda (10Gbps circuit) services of $2,655,495 plus in-kind contributions of similar equipment and underlying fiber of $3,760,038 for a total cost of $6,415,529. The in-kind match represents re-tasked routers, DWDM equipment, and fiber that would have had to have been included in the BTOP proposal had it not already been recently acquired by MCNC. The $586,436 cash match was derived by applying equal proportioning of the total cash match contributions to all non-in-kind costs.

Line 11 Miscellaneous - None