

Monday, December, 15, 2003

Dear Prospective Provider,

On behalf of the Anyplace Research and Education Network, Inc. (A-REN) a response to the attached Request for Proposal is solicited. A-REN, Inc. is a non-profit Connecticut corporation made up of a consortium of research and education institutions from many of the northeastern states, including Connecticut, New York, Rhode Island, Massachusetts, Vermont, New Hampshire and Maine.

A-REN will be composed of Academic, Hospital, Corporate, and Government Members. The A-REN network will tie together in-state dark fiber initiatives effectively creating an e-Corridor linking the members not only to one another, but also to carriers and carrier facilities throughout the region. The network will primarily transport research and academic traffic, but is also intended to allow Corporate and Government members to form partnerships and collaborations with the region's Academic, Research, and Hospital members. All of A-REN's members may choose to use the enabling infrastructure to purchase additional services including point-to-point wavelengths, Internet access, and collocation at facilities where A-REN has a presence.

Through this RFP, A-REN expects to begin building a dark-fiber based multi-state network that will assure Northeast America's research and education community has the infrastructure to compete with peers throughout the United States and the world. The states view this activity as critical not only to our institutions' ability to recruit top research faculty, but also as an important component of our region's ability to retain high-technology research that depends on high-performance, carrier-independent dedicated access to similar national and international networks. This RFP has been prepared as a standardized information-gathering tool which is intended to allow A-REN to complete a fair and comprehensive evaluation of the dark-fiber solutions proposed by all vendors who have presented A-REN with RFP responses. From among the responses A-REN intends to analyze and select the best option(s) for completion of all stated objectives.

In general the outline of A-REN's approach to the project is as follows:

- A-REN will approach the vendor community as a single entity on behalf of the institutions of higher education in Northeast America. We will solicit proposals that encompass solutions for New York, Connecticut, Massachusetts, Rhode Island, Vermont, Maine, New Hampshire and bordering states.

The members of A-REN would like to express their gratitude to the A-REN technical team comprised of Robert Vietzke, Timothy Rue, Bill Owens, and Leo Donnelly, and Daniel Blanchard for their dedication to the completion of this RFP.

A-REN RFP

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- A-REN intends to secure long-term access to dark-fiber throughout the region to interconnect existing in-state dark fiber initiatives and to bring the Northeast in sync with existing dark fiber initiatives throughout the US. A-REN does not intend to own or build a new infrastructure. Instead, it plans to purchase capacity on an existing carrier's network through the traditional IRU process.
- A-REN would prefer to use a single vendor throughout the Northeast. We encourage vendors to partner with other providers in order to provide a unified program across the entire region. However, if necessary, A-REN will select multiple vendors. In the case that a multi-vendor solution is selected, straightforward interconnection procedures become critically important evaluation criteria.
- A-REN will evaluate the response to this RFP with consideration for both one-time costs and operating costs through the term. A-REN will analyze options based on a 3, 5 and 10-year operating window and will seek the solution that provides the lowest cost *and* the greatest flexibility during these time frames.
- A-REN is asking vendors to provide price-protection on additional strands of fiber throughout the A-REN footprint for 5 years. In addition, offering the option of obtaining additional collocation space throughout the A-REN footprint for 5 years, with price-protection, will be viewed as highly favorable.

A-REN is interested primarily in IRU-type pricing with a greater up-front payment and a lesser annual maintenance cost. It is anticipated that proposals will contain an initial IRU cost with a rough annual maintenance cost of approximately 10% of the IRU. A-REN will use IRU pricing and ongoing maintenance costs for overall cost comparisons. Additionally, A-REN welcomes proposals for a monthly-lease type payment structure as an additional option after IRU pricing has been provided. *Note that A-REN will be unable to evaluate proposals that include only monthly lease payment options.*

- A-REN actively seeks vendors willing to build out their network where necessary to reach A-REN facilities, in a way that is mutually beneficial to both parties. A-REN also welcomes vendor partnerships with other companies for local dark-fiber loops from a vendor's existing facilities to A-REN-related facilities.
- A-REN anticipates that this RFP describes only the first two phases of the dark fiber project and welcomes vendor proposals that would offer A-REN the opportunity to easily extend any contract to the south, west and north of these initially identified areas.
- A-REN encourages inclusion of detailed technical information in the RFP response. Ideally, this information should include detailed route maps, mid-span

splice locations along those routes, and fiber-access locations on any additional routes available in the Northeast U.S. region.

The deadline for responses is no later than [insert date here]. RFP responses shall be sent electronically to FIBER-PROPOSALS@A-REN.org. Confirmation of receipt shall be returned electronically to the party sending the RFB response.

Please direct questions related to this RFP to First Last-in Anyplace at (555) 555-5555 or First.Last@A-REN.org. All questions will be shared with the larger A-REN technical team. The technical team's response to any questions shall be returned to the vendor electronically by First Last.

The members of A-REN would like to express their sincere appreciation for all the efforts being made to assist the Northeast in building a first-class research and education network for the region.

Sincerely,

A-REN Technical Team

ANYPLACE RESEARCH & EDUCATION NETWORK

NETWORK SPECIFICATIONS

Summary:

This document outlines technical and contractual requirements necessary for a potential vendor to provide not-to-exceed costs for long-haul fiber segments, meet-me fees, cross connect fees, collocation fees, power fees, and all other costs to be charged to A-REN for the provision of services as described. The Vendor will be asked to commit that no additional charges will be levied on A-REN or its contractors, and that all costs required to provide a network that is fully ready to be lit upon the addition of A-REN equipment are included.

After preparing a technical proposal, A-REN also asks that each vendor include a sample invoice that details all line items, one-time costs, and recurring costs that A-REN will see on an actual future invoice. If available, A-REN asks that vendors attach sample contract that provides the separate IRU, maintenance and lit services described hereafter.

A checklist of some important documentation for this RFP is included as the final page of this document. This list should be used as a guideline for developing a response. However, all questions in the RFP should be answered as part of the response.

Scope of Project:

A-REN will be composed of Academic, Hospital, Corporate, and Government Members. The A-REN network will tie together in-state dark fiber initiatives, effectively creating an e-Corridor linking the members, not only to one another, but also to carrier facilities and carriers throughout the region. The network will primarily transport research and academic traffic but will also allow Corporate and Government members to form partnerships and collaborations with the regions Academic, Research, and Hospital members. This is intended to foster the primary A-REN goal of economic development within the Northeastern United States. All A-REN members may choose to use the enabling infrastructure to purchase additional services including point-to-point wavelengths, Internet access, and collocation at any selected A-REN facility.

A Business Case for Vendors to Lease Dark Fiber to A-REN

A-REN understands that while some service providers readily lease long haul dark fiber to the educational community, other service providers have yet to adopt business policies

that embrace the provisioning of dark fiber resources to customers like A-REN. A-REN believes its requirement to build a cutting edge research and educational network make it an ideal candidate for a leased dark fiber arrangement. In reality, a managed services approach can only fulfill a portion of A-REN's needs. Those needs left unfilled represent some of the most critical reasons for building A-REN.

A-REN encourages prospective vendors to consider the following prior to submitting an RFP response:

- 1.) A-REN intends to use the fiber network for experimental research on optical networking. By example, some of A-REN's member organizations are already actively involved in an international effort to prototype "lambda switching" and "hybrid optical packet networks". Some of these efforts include experimental dynamic configuration of wavelengths using prototype software written by A-REN members. This software interfaces through the craft interface on each add/drop DWDM node. The experimental nature of this research would simply not be wise *or even possible* on a production network. The results of this type of experiment in a large scale environment are invaluable, and could lead to a new generation of services and equipment that benefit A-REN as well as the larger carrier and network equipment provider community.
- 2.) A-REN members expect to purchase additional services, such as IP services, local loops, lambdas and support services. Some of these services may be provided by A-REN. However, it is expected that a substantial portion of these services will be purchased from one or more of the outside vendors with a presence at A-REN facilities. A-REN anticipates that many of its initial members may connect directly to the A-REN backbone via privately owned or leased fiber or other local options. However, as additional sites are brought in to the A-REN ring for research, A-REN anticipates that many members may want to peel-off spare bandwidth on their local loops into the A-REN sites to procure commercial services from the A-REN provider. Additionally, A-REN anticipates that many additional sites will want to attach beyond the initial POP sites. This will result in an opportunity for additional lit services back haul, local loops and other services to bring those sites to the A-REN points of presence.
- 3.) Nationally, research and education organizations are already building networks that have dark-fiber based architectures similar to the proposed A-REN network. The Northeast, with its rich institutional density, can not afford to allow it's institutions of higher education to be left out. Vendors, joining the several existing vendors that have already agreed to provide leased fiber to A-REN, have the opportunity to place themselves at the center of an important connectivity platform for the region's future.

Partial Proposals and Vendor Partnerships

A-REN, Inc. understands that not all vendors have a solution that fully addresses all of the sites A-REN intends to connect. A-REN strongly encourages national and regional vendors with significant owned facilities in the Northeast to submit proposals that identify what locations they can serve. ***A-REN strongly encourages vendors to contemplate fiber swaps, partnerships, or other means by which an aggregate solution for the entire region could be proposed to A-REN under a single contractual arrangement.***

Proposals that address only portions of this RFP will be considered significantly less attractive than those proposals that appear to provide a complete solution. In general, A-REN expects, at minimum, to see several complete proposals for the “A Ring”, “B Ring” and “A Ring Spur”. Individual proposals for each component are encouraged as well. It is also anticipated that some vendors may present partial solutions for an individual ring or spur. These partial solutions for each ring or spur will be considered significantly less attractive than solutions that include all required elements for a specific ring or spur.

Support Services and Integrated Solutions:

A-REN’s primary intention in issuing this RFP is to secure a long-term dark fiber network upon which A-REN can develop research and education services for the region. A-REN ***will not accept a lit services solution*** in place of this primary objective. Only after the fiber is secured and A-REN’s ability to provision its own services on that fiber are in place will A-REN consider additional lit services. Already the marketplace has responded with dark-fiber offerings from at least 3 vendors, and A-REN is assured that a dark fiber solution that meets its needs is available from commercial providers in the region.

However, A-REN may be interested in a strong partnership with a provider that could provide remote-hands support and possible installation and provisioning of equipment as part of an eventual contract. Using existing A-REN member expertise and staff, the A-REN team will weigh the benefits of such an arrangement against the flexibility and cost effectiveness of installing and maintaining its equipment.

To the extent that a vendor wishes to propose additive lit services, remote hands, equipment installation, equipment sales, etc., the A-REN team will actively investigate the benefit of those options and may consider them as strong additive evaluation criteria in selecting a final vendor. However, these proposals must be separable from the dark fiber solution, and any proposed services above and beyond dark fiber and collocation services should be proposed in an a-la-carte manner.

Contractual Requirements:

A-REN anticipates that there will be at least two, if not three, contract frameworks that will result from this RFP process. First, A-REN asks the vendor to enter into a 20 Year IRU for at least one fiber backbone ring (1 pair) of fibers among designated sites. Second, A-REN asks the vendors to enter into a 5-year maintenance and collocation agreement with three (3) five-year renewals. Finally, depending on the ability of the provider to also offer local fiber loops and potentially lit services from the fiber POPs to A-REN edge sites, A-REN would also like to arrange a blanket agreement under which A-REN participants could contract with the provider for local loops into their facilities.

The separation of the IRU from the maintenance agreement is important to A-REN for several reasons. Most notably it allows for adjustments in market and technology changes that may occur in the Research and Education market over each five year period. A-REN's interest in providing a cutting-edge, flexible backbone network should be well served by the flexibility that a bifurcated fiber agreement will bring.

Vendors MUST include all property tax liabilities or other taxes and fees that would be assignable to A-REN with the IRU in the fee schedule to A-REN from the vendor. A-REN would strongly prefer to pay these through the vendor, and not directly to any collecting government agency. A-REN asks that management of the tax liability and the taxes themselves are included in cost proposals and sample invoices from the vendors.

Collocation costs should include power fees, installation and ongoing fees for adding supplementary amperage to existing power feeds, cross connect costs, rack installation and ongoing rental fees and, where specified, meet-me area or customer-provided fiber entrance charges.

To the extent that a vendor may have a draft contract that meets these terms already written and available, A-REN requests that such a contract be attached in the RFP response as a sample.

Facility Inspection, Build-Out and Turn Over of Fiber and Collocation

A-REN anticipates an aggressive build-out of its facilities upon signature of a final contract. Facilities must be in place within 120 days of contract signature, or by (Enter Date Here), which ever is sooner.

During final contract negotiations, A-REN expects the vendor to provide an opportunity to visit at least one of each type of fiber collocation sites it may have along its routes (IE: typical running line, typical gateway and perhaps any extra-ordinary site types.) A-REN also will expect the vendor to provide actual OTDR readings on the fiber pairs and cross-connect jumpers that will be assigned to A-REN during this phase of negotiation.

The vendor should indicate in its proposal response how quickly, upon notice that it is a finalist for the A-REN contract award, it would be able to make these site visits, fiber assignments and test results available. The vendor should also indicate its maximum turn-around for final assignment and collocation rack availability upon final signature of a contract.

General Overview of Fiber Ring Requirements:

A-REN intends to purchase a multi-state fiber network ring of at least two fibers that would connect New York City through Connecticut and Rhode Island to Boston, then to Springfield, Albany and close back to New York City. We anticipate a second ring will start at Boston, go north to Maine, cross New Hampshire to Vermont, and close back to Springfield or Albany. There is also interest in a spur from Albany to Buffalo or Cleveland, and a small ring in New Hampshire may be considered.

A-REN anticipates that there are some rural locations where A-REN might be better served by meeting the vendor's fiber network with a mid-span meet-me at a splice case, as opposed to connecting or backhauling to the nearest collocation site. A-REN has specifically requested the locations of splice cases in the areas where this is likely.

A-REN anticipates installing a 10 Gbps DWDM network on the vendor's fiber. It is highly desirable that the vendor provides LEAF, TRUEWAVE or other dispersion compensated fibers consistently throughout the network to simplify engineering and maintenance of the A-REN DWDM electronics. *Vendors must identify the fiber type they use and should explicitly note any segments that contain other than dispersion-compensated fibers in their response.*

Collocation Requirements:

A-REN intends to use equipment and machine rooms at its own locations wherever possible to house equipment for the A-REN ring. In New York City, East Hartford, Connecticut, Providence, Rhode Island, Cambridge, Mass, Springfield, Mass and Albany, NY, A-REN's own facilities will be interconnected to the long-line fiber provided by the vendor. (The fiber interconnection requirements to use A-REN's own sites are described in the fiber requirements that follow.)

In all other locations, A-REN will require a collocation rack in the vendor's facilities to house optical regeneration or add-drop equipment. In general, assuming LEAF-type fiber, A-REN will require a single collocation rack and power at intervals of no more than 50 to 60 miles. The requirements for these collocation sites are as follows:

- Fiber vendors must provide 7x24 Access by A-REN designated staff or contractors. Access arrangements and any related costs should be detailed in the RFP response.
- Collocation Racks must provide the following power at each rack.
 - o -48vdc dual power feeds of 30 amps each for running line sites.
 - o -48vdc dual power feeds of 60 amps each for any primary A-REN site where equipment will be located
 - o Convenience power outlets of 120 volt AC within 8 feet of the A-REN rack.
- In listing their collocation capabilities, vendors should indicate if they believe plain-old-telephone service is available in each of the collocation sites. Additionally, vendors should outline any costs to A-REN to extend POTS service from the telco demarcation point to the A-REN collocation racks.
- Vendors must agree to allow A-REN staff to enter the facilities for maintenance purposes. Vendors should attach a copy of their policies and any potential fees describing the requirements to allow A-REN staff to access the facilities for maintenance purposes.
- Cross connect expectations and contractual requirements should be fully detailed including costs to connect from A-REN collocation racks to vendor long-line fibers, costs to cross-connect to other vendors already in each facility, and approaches and costs to bring new A-REN provided fibers to meet-me or termination locations at each facility.

Cross Connect and Open Interconnection Requirements:

A-REN requires that the vendor support “vendor neutral” or “open interconnection cross connect” requests within their facilities. Pricing for cross connects should be included in the proposal and include both recurring and non-recurring costs for the initial A-REN network described. It is possible that after the initial build, A-REN will require additional cross-connects to A-REN provided fiber, to the LEC’s terminal at a POP or to alternate carriers. At locations where these options are available, the vendor must describe any cross-connect policies and all related cross-connect non-recurring and recurring costs.

A-REN would prefer that vendors include cross-connect costs for long-haul fiber interconnection to the A-REN collocation racks in the long-term operating costs charged to A-REN to the extent possible. A-REN expects a mostly static environment on the long-haul fibers after initial installation. A-REN will heavily weight the openness and costs of a vendor’s cross-connect policy – ***this will be one of the primary evaluation criteria of proposals***. A-REN will reward vendors that build cross-connect costs into the initial purchase arrangement and who reduce recurring long-term cross-connect costs.

Meet-Me Hole and Mid-Span Interconnection Splicing:

The vendor should detail policies and guidelines that document Meet-Me Manhole and Mid-Span Interconnection procedures along with detailed costs for these activities.

Vendors may assume that A-REN can bring fiber physically to a vendor-provided mid-span splice point on a vendor's long-haul network. Vendors should detail the operational requirements and costs to splice those A-REN fibers into the A-REN-leased fibers at the mid-span splice point. In scenarios where vendor fiber is not accessible to A-REN-provided fiber (such as where the mid-span meet-me point is on a high voltage transmission line tower), the vendor shall indicate procedures for constructing an accessible meet-me point as well as estimated per-foot construction costs based on prior similar build-outs.

Remote Hands Support:

A-REN is soliciting a quote as part of the RFP for Remote Hands Support during normal business hours as well as off-hours emergency support. Vendors should provide a description of how they envision such a service working. The vendor should detail in the charts included with the fiber segment details for the RFP response coverage availability and response times for each POP location. These services should be priced a-la-carte with the full knowledge that A-REN may choose to contract for only selected services (or for no services at all).

These services can include:

1. Power On/Off
2. Eyes on Equipment (with telephone support from the A-REN team)
3. Connect / Disconnect and Loop-Back optical fibers
4. Cross Connects

A sample response grid for each network ring and segment is included at the end of this RFP. Vendors may modify or extend this grid and are encouraged to document any proposals regarding these types of services on an a-la-carte basis.

A-REN LEASED DARK FIBER RING and SITE REQUIREMENTS:

In each of the fiber ring detail sections that follow, A-REN identifies the preferred locations where A-REN wishes to interconnect its services with the vendor's network. In all cases, the cities indicated where the network must appear are mandatory and must be serviced by the fiber provider. (The exception is in Connecticut, where Hartford is

preferred, but New Haven will be acceptable.) Given the number of vendors who are expected to respond to this RFP, and the lack of common cable routes or open collocation sites on some portions of this route, A-REN has identified three (3) typical scenarios which it asks the vendors to respond to. For each instance, the vendor should provide all of the information requested for the scenario that most closely resembles their situation in a given city.

As described previously, vendors who cannot serve all of the cities required by A-REN will be viewed as offering a significantly less desirable solution than those vendors who provide a complete solution for all of the required A-REN sites.

Scenario 1: The vendor's cable already is located in the A-REN designated facility:

The vendor should detail all non-recurring and recurring cross connect fees (if any) to get to A-REN controlled equipment location at the exact site within the building indicated in the description. If the site has a common meet-me room, the vendor should detail costs to get to that location only.

Scenario 2: The vendor's cable is not already located at the A-REN designated facility:

The vendor should indicate at least 2, preferably 3, approaches they believe A-REN could use to connect the specified locations with the vendors cable. The 3 approaches should include:

- a.) The vendor would detail the cost for the vendor to use a 3rd party to extend to the A-REN site.
- b.) The Vendor should detail the cost to bring A-REN provided fiber from a meet-me point into the vendor's facility. The vendor should designate where interconnections can occur near the vendors facility and potentially at splice points nearer to the A-REN facilities.

Scenario 3: The vendor's cable is not in the city A-REN wishes to serve:

- a.) If the city in question is a site where A-REN indicates that it intends to place equipment and attach other A-REN members, the vendor must provide pricing to extend dark fiber into the location in the city as specified by A-REN in this RFP. Proposals should indicate how redundancy would be maintained on the proposed interconnection route so that A-REN could continue to locate its equipment at A-REN facilities.
- b.) If a redundant feed is not practical, the vendor should adjust collocation, cross-connect and other details of their proposal to accommodate A-REN equipment at their nearest facility. A route map, or, less desirably, the fiber mileage of the unprotected segment, should also be included for evaluation by the A-REN team.

Generally, there are two types of facilities anticipated on each route. These site types are Primary Sites and regeneration or running-line Sites. Proposals should provide the following information for each site:

Primary Sites:

- Detail the address of the vendor's facility
- Detail site access policies and normal vendor staffing at the facility.
- Detail rack rental fees with 60 amps of power on A&B feeds.
- Where A-REN indicates it expects to bring its fiber to the facility to meet the vendor, the vendor should detail the side of the building and street on which any meet-me holes or building entry conduits may be available. The vendor should provide a site-plan diagram for the site and zero manhole locations.
- If known, the vendor is encouraged to detail any local loop providers, dark fiber providers, CLECs or other service providers that may have services available to reach remote sites for cross-connection at this facility. If the vendor has its own metro network connecting to this site, it should also detail its capabilities.
- Indicate if plain-old-telephone services are available in the facility and if there any fees or issues regarding extending that service to the A-REN racks.
- Detail cross connect fees, if any, between the collocation rack where A-REN will be located and the long-line fiber.

Regeneration (Running Line)

- Detail the address of facility. If no street address is available, provide geographic coordinates of the facility.
- Detail site access policies and normal vendor site staffing.
- Detail rack rental fees with 30 amps of power on each of A&B feeds.
- Detail additional non-recurring and recurring costs to add amperage to the A&B feeds.
- Detail the side of the building and street on which any meet-me holes or building entry conduits may be available. The vendor should provide a site-plan diagram for the site and zero manhole locations.
- If known, the vendor is encouraged to detail any local loop providers, dark fiber providers, CLECs or other service providers that may have services available to reach remote sites for cross-connection at this facility. If the vendor has its own metro network connecting to this site, it should also detail its capabilities.
- Indicate if plain-old-telephone services are available in the facility
- Detail cross connect fees, if any, between the collocation rack and the long-line fiber

General Fiber Details

Vendors should provide a map of their entire route for the given fiber route proposed. A-REN strongly prefers this to be provided in an electronic format that allows A-REN to zoom-in. Data on street names, manhole locations, and splice points will be extremely helpful to A-REN in evaluating proposals. If vendors do not wish to disclose this information for the entire route, they are encouraged to provide a high level of detail for the areas surrounding major A-REN sites of interest described in each section below.

INSERT MAP HERE

General “A Ring” Overview

This A-REN ring will connect New York City through Connecticut and Rhode Island to Cambridge. The ring will then continue to the west through Worcester and Springfield to Albany and back to New York City.

Primary Site 1: New York City, New York – Avenue of the Americas

A-REN will establish its New York end-point on Avenue of the Americas. All collocation and equipment in New York will be located in BigApplenet’s facility near the mandatory meet-me room. A-REN does not anticipate any vendors will have cross-connect costs at this facility if they land at this location.

Through BigApplenet, A-REN has a limited fiber ring between Hudson Street, and Avenue. Vendors who do not have a direct presence in the meet me room at 8th Avenue of the Americas may use the secondary option of landing at either Hudson Street or 8th Avenue locations. Through BigApplenet, A-REN could then provide the metropolitan interconnection to Avenue of the Americas. Vendors should fully detail all costs to get from the A-REN BigApplenet locations to the vendor’s cable head at these alternate landings. Vendors should also provide collocation costs for these alternate landing sites in the event that A-REN must place equipment at these locations to transition between long-line and metropolitan fiber types.

Vendor proposals that can not go directly to Avenue of the Americas with a consistent long-line fiber type will be considered less-optimal than those that do. A-REN’s clear preference is for the vendor to land both sides of its ring at Avenue of the Americas with the same fiber type used throughout its long-haul network.

Vendors should describe how they provide physical route diversity into New York City and the individual facilities where they intend to cross-connect to A-REN. Diagrams or maps would be appropriate if available.

“A RING” FIBER SITE LOCATIONS AND SPECIFICATIONS

New York, Massachusetts, Rhode Island, Connecticut

Regen Site 1: Stamford, Connecticut (or alternate location pending vendor’s route)

A-REN anticipates most vendors will have a regeneration point on their southern route from New York to Boston at approximately Stamford, CT. The vendor’s facility will need to support an A-REN optical amplifier in a single collocation rack. Vendors must provide 4 jumpers to and from the long-line fiber into the collocation rack: two towards New York and two towards the East.

Vendors should provide meet-me and zero-manhole information at this site in the event A-REN wishes to eventually interconnect with a State Education Network at this site.

Regen Site 2: New Haven, Connecticut (or alternate location pending vendor’s route)

ALTERNATE Primary Site for Connecticut

A-REN anticipates most vendors will have a regeneration point on their Southern route from New York to Boston at approximately New Haven, CT. The vendor’s facility will need to support an A-REN optical amplifier in a single collocation rack. Vendor must provide 4 jumpers to and from the long-line fiber into the collocation rack, two towards New York and two towards Boston.

If the vendor’s cable does not pass through Hartford, Connecticut, A-REN anticipates it will use a New Haven Area facility for the primary tie-in to Connecticut A-REN users. An existing collocation site at Horton Place in West Haven is the ideal location. Other locations might include Meadow Street in New Haven. At either Horton Street or Meadow Street, vendors should include costs for a collocation rack, 60 Amps dual feed power and cross connects both to the long-line fiber and also to Connecticut provided fiber through GotchaFiber Networks.

Primary Site 2: East Hartford, Connecticut

The preferred site to locate Connecticut’s A-REN interconnection is the State Data Center in East Hartford, Connecticut. A-REN has limited LEAF fiber from East Hartford to the south end of Hartford on Locust Street where a meet-me tie in could be accomplished to vendor provided fiber. If this tie-in can be completed, A-REN would place its equipment at the State’s Data Center and not at the vendors’ facility.

Other locations in Hartford would require the tie in of Connecticut fiber through GotchaFiber Networks to the vendor’s collocation facility. In these instances, vendors should include in their responses costs for a collocation rack, 60 Amps dual feed power

“A RING” FIBER SITE LOCATIONS AND SPECIFICATIONS New York, Massachusetts, Rhode Island, Connecticut

and cross connects both to the long-line fiber and also to 2 pairs of Connecticut provided fiber through GotchaFiber Networks.

Regen Site 3: Storrs, Connecticut – Mid Span Meet

The ideal A-REN path would pass through Storrs, Connecticut. If a vendor’s route does not pass through Storrs, Connecticut, this interconnection will not be required.

A-REN controls a 12 strand LEAF fiber in the Level3/Wiltel joint build trench along Route 44 in Mansfield, Connecticut. A-REN has assured that it has slack cable and a splice-case in the manhole immediately to the south of the intersection of Route 195 and Route 44 in Mansfield, CT. A-REN also has the ability to extend its cable Eastward towards Rhode Island to meet up with the next adjacent splice case recommended by the vendor. The vendor is responsible for designating the correct manhole for interconnection, physically interconnecting the “State of Connecticut” manhole adjacent to their manhole with their manhole, and providing 25’ of LEAF fiber into the A-REN “State of Connecticut” manhole to splice into its network.

All one time and recurring costs for this mid-span interconnection must be provided in the response.

Regen Site 4: Between Hartford & Providence, CT/RI Border Area

This facility will serve as a patch facility without optical amplifiers, assuming the Storrs mid-span and Providence connections are made. The vendor would need to provide 2 jumpers to connect the cable from Storrs/Hartford to the cable towards Providence/Boston.

Primary Site 3: Providence, Rhode Island - Promenade Street

The vendor should describe its ability to extend services to Promenade Street. It is anticipated that equipment will be placed at Promenade and collocation will not be required at the vendor’s Providence location, assuming appropriate fiber can be extended between the two locations. Vendors should detail any local fiber providers they may already interconnect with in Providence and how they would expect A-REN to connect from their facility to Promenade Street.

As a less desirable option to A-REN and vendors that do not have a direct path into Providence, A-REN may have a dual-path from Providence to the Level3/Wiltel joint build trench to the North of Providence. Vendors should detail exactly where a meet-me

“A RING” FIBER SITE LOCATIONS AND SPECIFICATIONS New York, Massachusetts, Rhode Island, Connecticut

could occur, what costs would be incurred for interconnection, and any other details of a possible interconnection.

Primary Site 4: Cambridge, Massachusetts – Bent Street

The vendor must provide cross-connects from its facility at Bent Street to the HowR U/BeanTown Connector-AP facility. A total of 4 cross-connects will be provided, including 2 towards Providence and 2 towards Worcester. Equipment will be placed in the existing BeanTown Connector racks in that suite.

Through the BeanTown Connector, A-REN has a limited fiber ring between Congress Street in Boston or Summer Street and Bent Street. Vendors who do not have a direct presence in Bent Street may use the secondary option of landing at Summer Street in Boston. Through the BeanTown Connector, A-REN could then provide the metropolitan ring to Bent Street. Vendors should fully detail all costs to get from the A-REN BeanTown Connector locations to the vendor’s cable head at these alternate landings. Vendors should also provide collocation costs for these alternate sites in the event that A-REN must place equipment at these locations to transition between long-line and metropolitan fiber types.

Regen Site 5: Worcester, Massachusetts – Main Street

The vendor should detail its regeneration facilities in the area of Worcester, Mass. A-REN strongly prefers a vendor solution that terminates at Main Street in Worcester, which is an existing facility for an A-REN participant.

A total of four cross-connects will be provided, including 2 towards Cambridge and 2 towards Springfield.

A collocation rack may also be required at this location.

Primary Site 5: Springfield, Massachusetts – Federal Street

The vendor must provide cross-connects from its long-line cable to the A-REN/Peek-A-boo U/Crocker collocation space in the basement of Federal Street. The vendor must detail all costs for installation, operation and maintenance of the fiber jumpers to the A-REN/Peek-A-boo U space. A total of 4 cross-connects will be provided, including 2 towards Worcester and 2 towards Albany.

A-REN also anticipates this site may be a landing point for fibers for the “B” ring towards the northern states.

“A RING” FIBER SITE LOCATIONS AND SPECIFICATIONS

New York, Massachusetts, Rhode Island, Connecticut

Regen Site 6: Lee, Massachusetts

A-REN anticipates most vendors will have a regeneration point on their northern route from New York to Boston at approximately Lee, MA. The vendor's facility will need to support an A-REN optical amplifier in a single collocation rack. Vendors must provide 4 jumpers to and from the long-line fiber into the collocation rack, two towards New York and two towards Boston.

Primary Site 6: Albany, New York

A-REN will need to establish a POP in Albany. Vendor's should provide the required details and also provide information for local meet-me at this facility to interconnect with BigApplenet in Albany.

Regen Site 7: Saugerties, New York

A-REN anticipates most vendors will have a regeneration point on their western route from New York to Boston at approximately Saugerties, NY. The vendor's facility will need to support an A-REN optical amplifier in a single collocation rack. Vendor must provide 4 jumpers to and from the long-line fiber into the collocation rack, two towards New York and two towards Albany.

Regen Site 8: New Paltz, New York

A-REN anticipates most vendors will have a regeneration point on their western route from New York to Boston at approximately Saugerties, NY. The vendor's facility will need to support an A-REN optical amplifier in a single collocation rack. Vendors must provide 4 jumpers to and from the long-line fiber into the collocation rack, two towards New York and two towards Albany.

PRICING Proposal

A-REN will ask each vendor to fill out the following pricing matrix. The intent will be to document all one-time and recurring operating costs associated with the work described above. All work related to A-REN, which would be charged to A-REN or its contractors by the vendor should be included in the spreadsheet below. The vendor will be encouraged to add rows and detail if necessary for any item.

**“A RING” FIBER SITE LOCATIONS AND SPECIFICATIONS
New York, Massachusetts, Rhode Island, Connecticut**

Fiber Non-Recurring Costs for IRU for 1 Pair of Fibers

		One-Time Costs	Monthly Costs	Annual Costs
Fiber Ring				
Avenue of the Americas to Hudson St				
Hudson, Street to Stamford, CT				
Stamford, CT to New Haven, CT				
New Haven, CT to Hartford, CT				
Hartford, CT to Pomfret, CT				
Pomfret, CT to Providence, RI				
Providence, RI to Boston, MA				
Boston, MA to Bent Street, Cambridge				
Boston, MA to Worcester, MA				
Worcester, MA to Springfield, MA				
Springfield, MA to Lee, MA				
Lee, MA to Albany, MA				
Albany to Saugerties				
Saugerties to New Paltz				
New Paltz to New York City				

**“A RING” FIBER SITE LOCATIONS AND SPECIFICATIONS
New York, Massachusetts, Rhode Island, Connecticut**

Installation, Cross Connection and Other One-Time Activation Fees

New York City, NY				
	Construction			
	Cross-connects			
	Colo-Rack–Hudson St (optional)			
Stamford, CT				
	Cross-connects			
	Colo-Rack			
New Haven, CT				
	Cross-connects			
	Colo-Rack			
	Customer Provided Fiber interconnect Construction (optional)			
East Hartford, CT				
	Construction and Interconnection			
Storrs, CT				
	Construction and Interconnection			
Pomfret, CT				
	Cross-connects			
	Possible Colo-Rack			
Providence, RI				
	Cross-connects			
	Possible Colo-Rack			
	Customer Provided Fiber interconnect/Construction			
Boston, MA				
	Cross-connects			
	Possible Colo-Rack			
Worcester, MA				
	Cross-connects			
	Colo-Rack			
Springfield, MA				
	Cross-connects			

**“A RING” FIBER SITE LOCATIONS AND SPECIFICATIONS
New York, Massachusetts, Rhode Island, Connecticut**

	Possible Colo-Rack			
Lee, MA				
	Cross-connects			
	Colo-Rack			
Albany, New York				
	Cross-connects			
	Customer provided fiber interconnect costs			
	Collocation rack costs			
New Paltz, NY				
	Cross-connects			
	Collocation rack costs			
White Plains, NY				
	Cross-connects			
	Collocation rack costs			

Fiber Loss Budgets on Long-Line Spans

		Fiber Type per segment	Loss in dB @ 1550 nm	Distance in miles
New York	Stamford			
Stamford	New Haven			
New Haven	Hartford			
Hartford	Pomfret			
Pomfret	Providence			
Providence	Cambridge			
Cambridge	Worcester			
Worcester	Springfield			
Springfield	Lee			
Lee	Albany			
Albany	New Paltz			
New Paltz	White Plains			
White Plains	New York			

**“A RING” FIBER SITE LOCATIONS AND SPECIFICATIONS
New York, Massachusetts, Rhode Island, Connecticut**

Remote Hands and Eyes on Equipment Availability

(Please edit to indicate actual services available)

Location	Requested Coverage Availability	Requested Response Time	Normal Hourly Rate	Off-Hours Hourly Rate
Bent Street, Cambridge	7x24	2 hours		
Avenue of the Americas, New York City	7x24	2 hours		
Running Line sites, Connecticut	7x24	4 hours		
Running Line Sites, Rhode Island	7x24	4 hours		
Running Line Sites, Massachusetts	7x24	4 hours		
Running Line Sites, New York State	7x24	4 hours		

A RING ALBANY to BUFFALO SPUR

Fiber Non-Recurring Costs for IRU for 1 Pair of Fibers

		One-Time Costs	Monthly Costs	Annual Costs
Albany to Amsterdam				
Amsterdam to Mohawk				
Mohawk to Rome				
Rome to Syracuse				
Syracuse to Henrietta				
Henrietta to Rochester				
Rochester to Buffalo				
Buffalo to Seneca				
Seneca to Lawton				
Lawton to Brockton				
Brockton to Union City, PA				
Union City, PA to Conneaut				
Conneaut to Hartsgrove				
Hartsgrove to Cleveland				

**“A RING” FIBER SITE LOCATIONS AND SPECIFICATIONS
New York, Massachusetts, Rhode Island, Connecticut**

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Installation, Cross Connection and Other One-Time Activation Fees

Albany, New York			
	Additional Cross-Connect Fees		
	Additional Colo-Rack Costs		
Running Line (Approximately Amsterdam, NY)			
	Cross-Connect costs		
	Collocation rack costs		
Running Line (Approximately Mohawk, NY)			
	Cross-Connect costs		
	Collocation rack costs		
Running Line (Approximately Rome, NY)			
	Cross-Connect costs		
	Collocation rack costs		
Primary Facility (Approximately Syracuse, NY)			
	Cross-Connect costs		
	Collocation rack costs		
	Customer provided fiber interconnect costs		
Running Line (Approximately Henrietta, NY)			
	Cross-Connect costs		
	Collocation rack costs		
Primary Location (Approximately Rochester, NY)			
	Cross-Connect costs		
	Collocation rack costs		
Primary Location (Approximately Buffalo, NY)			
	Cross-Connect costs		
	Collocation rack costs		
Primary Location (Approximately West Seneca, NY)			
	Cross-Connect costs		
	Collocation rack costs		
Regen Location (Approximately West Seneca, NY)			

**“A RING” FIBER SITE LOCATIONS AND SPECIFICATIONS
New York, Massachusetts, Rhode Island, Connecticut**

	Cross-Connect costs			
	Collocation rack costs			
Regen Location (Approximately Lawtons, NY)				
	Cross-Connect costs			
	Collocation rack costs			
Regen Location (Approximately Brockton, NY)				
	Cross-Connect costs			
	Collocation rack costs			
Regen Location (Approximately Union City, PA)				
	Cross-Connect costs			
	Collocation rack costs			
Regen Location (Approximately Conneaut, OH)				
	Cross-Connect costs			
	Collocation rack costs			
Regen Location (Approximately Hartsgrove, OH)				
	Cross-Connect costs			
	Collocation rack costs			
Primary Location, Cleveland Ohio				
	Cross-Connect costs			
	Collocation rack costs			

Optical Loss Budgets		Fiber Type per segment	Loss in dB @ 1550 nm	Distance in miles
Albany	Amsterdam			
Amsterdam	Mohawk			
Rome	Syracuse			
Syracuse	Waterloo			
Waterloo	Henrietta			
Henrietta	Rochester			
Rochester	Batavia			
Batavia	Buffalo			
Buffalo	West Seneca			
Seneca	Lawtons			
Lawtons	Brockton			
Brockton	Union City			

**“A RING” FIBER SITE LOCATIONS AND SPECIFICATIONS
New York, Massachusetts, Rhode Island, Connecticut**

Union City	Conneaut			
Conneaut	Hartsgrove			
Hartsgrove	Cleveland			

**“B RING” FIBER SITE LOCATIONS AND SPECIFICATIONS
Massachusetts, Maine, New Hampshire, Vermont and Canada**

A-REN anticipates a second phase build-out of a “B Ring” to expand the initial “A” ring into the Northern States of Vermont, Maine and New Hampshire. The intent with this Northern Ring is to bring the same capacity found in the “A’ ring to the higher education institutions in these states and to provide a platform for future growth in the region.

A-REN is interested in fiber paths that ring from Boston north, through the northern states and back to Springfield and/or Albany. The intent is to assure that each individual site is diversely connected either to the A-REN “A” ring.

Key sites of interest to A-REN in this area are:

- Main Street, Brattleboro, Vermont
- U SoCold, Falmouth St or City Center, Portland, Maine
- College Avenue, Orono, Maine

B RING, Maine, New Hampshire and Vermont

Fiber Non-Recurring Costs for IRU for 1 Pair of Fibers

		One-Time Costs	Monthly Costs	Annual Costs
Cambridge	North of Boston			
North of Boston	Durham, NH			
Durham, NH	Portland, ME			
Portland, MN	Plymouth, NH			
Plymouth, NH	Hanover, NH			
Hanover, NH	Keene, NH			
Keene, NH	Springfield, MA			

Installation, Cross Connection and Other One-Time Activation Fees

Cambridge, MA (Bent Street)				
	Cross-connects			
North of Boston				
	Cross-connects			
	Colo-Rack			

**“B RING” FIBER SITE LOCATIONS AND SPECIFICATIONS
Massachusetts, Maine, New Hampshire, Vermont and Canada**

	Customer Provided Fiber interconnect Construction (optional)			
Durham, New Hampshire				
	Cross-connects			
	Colo-Rack			
	Customer Provided Fiber interconnect Construction (optional)			
Portland, Maine				
	Construction and Interconnection			
Plymouth, New Hampshire				
	Construction and Interconnection			
Hanover, New Hampshire				
	Cross-connects			
	Colo-Rack			
	Customer Provided Fiber interconnect/Construction			
Keene, New Hampshire				
	Cross-connects			
	Colo-Rack			
	Customer Provided Fiber interconnect/Construction			
Springfield, Mass				
	Cross-connects			
	Colo-Rack			
	Customer Provided Fiber interconnect/Construction			

Optical Loss Budgets		Fiber Type per segment	Loss in dB @ 1550 nm	Distance in miles
Cambridge	North of Boston			
North of Boston	Durham, NH			
Durham, NH	Portland, ME			
Portland, ME	Plymouth, NH			
Plymouth, NH	Hanover, NH			
Hanover, NH	Keene, NH			
Keene, NH	Springfield, MA			

**“B RING” FIBER SITE LOCATIONS AND SPECIFICATIONS
Massachusetts, Maine, New Hampshire, Vermont and Canada**

VERMONT AND CANADA SPUR

Keene, NH Brattleboro??			
	Cross-connects		
	Colo-Rack		
	Customer Provided Fiber interconnect/Construction		
Middlebury, VT			
	Cross-connects		
	Colo-Rack		
	Customer Provided Fiber interconnect/Construction		
Burlington, VT			
	Cross-connects		
	Colo-Rack		

Optical Loss Budgets		Fiber Type per segment	Loss in dB @ 1550 nm	Distance in miles
Brattleboro	Keene			
Brattleboro	Middlebury			
Middlebury	Burlington			

VENDOR RESPONSE CHECK LIST

Contractual And Pricing

- **Provided pricing for 20 Year IRU on each fiber segment by filing out fiber segment cost sheets**
- **Provided pricing for 5 Year Maintenance contract on IRU with 3 renewal options of 5 years each**
- **Provided all non-recurring and recurring cross connect costs on cross connect cost sheets**
- **Provided detail of interconnection, meet-me and local services from each site**
- **Provided sample contracts for the bifurcated IRU contract and maintenance contract**
- **Provided a sample invoice including taxes and other miscellaneous fees**
- **Responded to remote hands and facility access charges**
- **Responded to price protection for future purchases**

Operational Details:

- **Have included collocation facility access policy**
- **Described standard maintenance practices**
- **Described emergency maintenance practices**
- **Described testing and turn-over practices for new fiber assignments**
- **Described remote-hands capability**

Technical Details:

- **Provided Overall Fiber Segment Distances and Losses**
- **Provided a map of the fiber ring with the addresses or locations of each running line or access point on the network**
- **Provided detail maps of the areas surrounding sites of interest to A-REN, or preferably provided a full detail map of the entire ring.**
- **Provided Splice Point or zero-manhole information as requested**
- **Detailed all Fiber Types on each segment**
- **Described Power and Redundancy standards for all facilities and any exceptions**