



# LAKE HAMILTON SCHOOL DISTRICT

300 Wolf Street • Percy, Arkansas 71964 • (501) 767-6800 • [lhvolves.net](http://lhvolves.net)

## Request for Proposal

### WAN Infrastructure Upgrade

#### **Mandatory Walk Through**

1st December 3, 2020 9:00 AM, 2nd December 8, 2020 9:00

Justin Orrell

Administration Building

Boardroom

205 Wolf Street

Percy, Arkansas 71964

#### **Deadline for Questions**

12/9/2020

#### **RFP Responses Due Date**

1/11/2021



## **SCOPE OF SERVICES**

Lake Hamilton School District wishes to compare Transport (No ISP Service Included), and self-provisioned network construction for delivery of Wide Area Network Services to the district. The Transport option includes consideration for leased lit fiber, leased dark fiber, IRU and any other type of point-to-point broadband service delivered over a service provider or other third party owned network. The current Wide Area Network Services are provided via school owned multimode fiber, but enhanced bandwidth fiber services are now required to support rapidly growing bandwidth needs and to meet the State Education Technology Directors Association standard recognized in the FCC Second E-rate Modernization order as the benchmark standard for bandwidth for school districts.

## **SERVICE LOCATIONS**

- Service is expected to be delivered from the district hub, the Elementary School at 240 Wolf Street, Pearcy, AR 71964
- Service is expected to be delivered to the eligible service locations from the district hub at the following locations:
  - o Eligible Entity 1, the Primary School at 136 Oakbrook Street, Pearcy, AR 71964
  - o Eligible Entity 2, the Intermediate School at 104 Wolf Street, Pearcy, AR 71964
  - o Eligible Entity 3, the Middle School at 120 Wolf Street, Pearcy, AR 71964
  - o Eligible Entity 4, the Junior High School at 281 Wolf Street, Pearcy, AR 71964
  - o Eligible Entity 5, the High School at 280 Wolf Street, Pearcy, AR 71964
  - o Eligible Entity 6, the Technology at 300 Wolf Street, Pearcy, AR 71964
  - o Eligible Entity 7, the Maintenance/District Receiving at 119 Wild Wolf Park, Pearcy, AR 71964
  - o Eligible Entity 8, the Administrative Office at 205 Wolf Park, Pearcy, AR 71964
  - o Eligible Entity 9, the Bus Shop at 150 Wild Wolf Park, Pearcy, AR 71964
  - o Eligible Entity 10, the Parent Center at 309 Wolf Street, Pearcy, AR 71964
  - o Eligible Entity 11, the ISS (In School Suspension) at 241 Wolf Street, Pearcy, AR 71964

At the specified sites, respondent must run infrastructure or service to an existing network closet designated by Lake Hamilton School District, identified by site walk-through. Mounting of vendor provide LIU (wall or rack mounted) will vary by location. Layout for each site, to include proposed route through the building, location of MDF, type of LIU, etc. will be available not later than the day of the first walk-thru. Vendor will not be responsible for providing any racks.

The new service is planned to begin July 1, 2021.



## **OPTIONS**

The Lake Hamilton School District is seeking three options for bids.

**Option 1 – Lit-Leased Fiber (LLS)**, which is defined as any technology neutral point-to-point broadband service that provides the desired connectivity end-to-end. This could be fiber-optic cable, microwave, or other media where the service provider installs, operates and maintains all the equipment necessary to provide end-to-end service for Lake Hamilton School District. Detail on this option can be found in the section titled **LEASED LIT SERVICE**.

**Option 2 - Leased Dark Fiber or Leased Dark Fiber IRU (LDF)**, which is defined as either existing fiber-optic cable, or fiber-optic cable that is installed for the use of Lake Hamilton School District for the duration of the contract. The fiber-optic cable is maintained by the service provider, but Lake Hamilton School District provides, operates and maintains the electronics to light the fiber. Detail on this option can be found in the section titled **LEASED DARK FIBER**.

**Option 3 - Self-Provisioned Network** is defined as fiber-optic cable installed for Lake Hamilton School District, or any other type of connection (including wireless), that will be owned, maintained by Lake Hamilton School District after construction is completed. Detail on the fiber option can be found in the section titled **SELF-PROVISIONED NETWORK**.

Vendors may submit proposals for any and all options as listed above that will provide point-to-point connectivity at the desired bandwidth. For all options Lake Hamilton School District will consider traditional network designs (such as hub and spoke) or alternative proposals (such as ring, bus, tree or other) that, in accordance with E-rate guidance, maximize cost effectiveness. Respondents should clearly illustrate proposed network design and construction routes. Lake Hamilton School District is not advocating or mandating any preconceived network design or construction route and leaves this decision up to the vendor to present their best solution while recognizing the cited termination locations. For each response, vendor must include a network diagram displaying the paths to be used to serve each endpoint.

Vendors providing proposals should have an ERate Service Provider Information Number (SPIN) from the SLD and should include their SPIN on their proposal. There is no cost to register for a SPIN, and application can be made at <https://www.usac.org/e-rate/service-providers/step-1-obtain-a-spin/>

## **TIMELINE**

For each response, respondents must include a construction roadmap timeline. For lit fiber, dark fiber and self-provisioned fiber responses, preference is given to responses with a service start for all sites on July 1, 2021. Actual start date on a self-provisioned fiber construction project is dependent on the timing of the E-rate funding commitment decision letter.

## **DEMARC**

All solutions whether lit fiber, leased dark fiber, leased dark fiber (IRU) or self-provisioned network



construction must terminate service or infrastructure to an existing network closet inside of the site specified. Solutions bringing service to the property line but not inside of the demarc address are not acceptable.

Respondent must specify your expected demarc setup included in base fees, e.g. fiber shelf with set-top box CPE and handoff.

## **SPECIAL CONSTRUCTION**

In E-rate terminology, **Special construction** refers to the upfront, non-recurring costs associated with the installation of new fiber to or between eligible entities. Applicants may seek funding for special construction charges in connection with leased lit fiber, leased dark fiber, and self-provisioning. Special construction charges eligible for Category One support consist of three components:

- construction of network facilities;
- design and engineering; and
- project management

**Note:** The term “special construction” does not include Network Equipment necessary to light fiber, nor the services necessary to maintain the fiber. Charges for Network Equipment and fiber maintenance are eligible for Category One support as separate services, but not as special construction.

All options can include special construction or one-time E-rate eligible non-recurring costs as well as E-rate eligible recurring circuit costs. Based on the bids and both a short term and long-term cost effectiveness analysis, Lake Hamilton School District will determine which, if any, of the lit service, leased dark fiber, Leased Dark fiber (IRU), district self-provisioned fiber construction or some combination of solutions is acceptable.

### **Special Construction and Non-recurring Cost**

Respondents providing lit fiber proposals which require an upfront payment may include a special construction cost or non-recurring cost. This upfront payment is considered **special construction** if any new fiber is being installed. If new fiber installation is not necessary, the payment is considered a **non-recurring cost** and must be entered on the pricing sheet accordingly.

New fiber special construction charges for lit service, leased dark, leased dark fiber (IRU), or self-provisioned network projects as defined by the E-Rate Second Modernization order include construction, design, engineering and project management. The applicant requests that the respondents consider allowing Lake Hamilton School District to pay the non-discount share (share of special construction costs that are the responsibility of the applicant) to be paid in equal annual installments over the four years from Funding Year 2020 to Funding Year 2024 inclusive. Responses must include agreement or non-agreement of this request.

The amount of special construction capital requested will be reviewed based on the cost of historical fiber builds in the region. Respondents should consider other business that may be generated by building fiber



into the region and request only the special construction capital allocable to Lake Hamilton School District's service.

### **E-rate Modernization Order Note**

Special construction and service eligibility for reimbursement have changed starting funding year 2016. See the Federal Communications Commission E-rate modernization order 2 (WC Docket No. 13-184) (<https://www.fcc.gov/document/fcc-releases-order-modernizing-e-rate-21st-century-connectivity>) for more information.

An applicant may not receive E-rate support for recurring charges for leased lit fiber or leased dark fiber until the fiber is lit. Additionally an applicant may not receive E-rate support for special construction related to leased lit fiber or leased dark fiber if the fiber is not lit by the end of the funding year (i.e., June 30). Similarly, applicants may only receive E-rate support for a self-provisioned network if the network is constructed and is in use within the funding year.

All E-rate applications including Special Construction are subject to detailed questioning during PIA review where the cost of proposed special construction will be reviewed based on the cost of historical fiber builds in the region. Additionally, certain information on necessary special construction is needed to accurately fill out the Form 471. Respondents are **required** to fill out the special construction table included with the pricing sheet for each project type. Additionally, respondents are encouraged (but not required) to submit the following additional information that will likely be requested during PIA review.

Information that can be included now, but will be requested later for chosen solution:

- Special construction cost breakdown worksheet
- Any cost allocation worksheets, if applicable (see documentation prepared by the State E-rate Coordinators' Alliance [SECA] in attached PDF)
- Route map of all build segments in kmz format
- Explanation of alternative routes that were explored and why the chosen route is most cost-effective
- Explanation of special materials and procedures required that may have increased construction costs. Such as:
  - Historical preservation or environmental issues
  - Bridge, waterway, railway, or highway crossings
  - Directional boring through hard rock or under paved surfaces
  - An excessive number of hand holes, marker posts, or other OSP materials
  - Expensive pole attachment fees or make-ready costs

If respondents do not submit this information above with their bid, and their solution is chosen, they must be prepared to promptly provide that information and any additional information not described in this RFP when requested. Please note that vendors may assist applicants with preparing funding requests or responding to PIA questions and may speak directly with PIA reviewers.

Vendors proposing Special Construction need to either include with their proposal, or be prepared to provide if awarded, detailed information on the special construction. Specifically:



- For all combined aerial segments
  - An average cost per foot for the eligible fiber cable
  - An average cost per foot for labor to install eligible fiber cable
  - An average cost per foot for the eligible fiber plant materials (attachment hardware, slack storage, and other materials)
  - An average cost per foot for labor to install fiber plant materials
- For all combined buried segments
  - An average cost per foot for the eligible fiber cable
  - An average cost per foot for labor to install eligible fiber cable
  - An average cost per foot for the eligible fiber plant materials (conduit, hand holes, manholes, trace wire and grounding rods, etc.)
  - An average cost per foot for labor to install fiber plant materials (trenching, backfill, restoration, ground rods, etc.)
- For all combined directionally bored segments
  - An average cost per foot for the eligible fiber cable
  - An average cost per foot for labor to install eligible fiber cable
  - An average cost per foot for the eligible fiber plant materials (conduit, hand holes, manholes, trace wire and grounding rods, etc.)
  - An average cost per foot for labor to install fiber plant materials (directional boring, backfill, restoration, ground rods, etc.)

The winning service provider assumes full responsibility to ensure appropriate incremental costs are allocated out of the Special Construction charges to the district in accordance with FCC rules and orders. If, after the issuance of the Funding Commitment Decision Letter, USAC or the FCC determines that the winning service provider did NOT appropriately cost-allocate those charges associated with the additional strands, Lake Hamilton School District will not be responsible for reimbursing the winning vendor and the winning vendor will assume fiscal responsibility for all costs deemed ineligible by USAC. For examples of cost allocation, please see documentation prepared by the State E-rate Coordinators' Alliance (SECA) attached.

## **GENERAL NOTES**

**Existing Conditions** – Lake Hamilton currently has some existing conduit in place that could be used by the vendor for this project. Specifics regarding size, type and locations will be available no later than the day of the first walk-through

**Fiber** - All dark or self-provisioned network solutions must comprise of single mode fiber end to end.

**Description of Proposal** - Respondent will provide a description of their proposal for all services and solutions. Description will include an overview of the proposal, any deviations from the requested architecture, design or requirements, assumptions made, other detail Lake Hamilton School District may find useful or necessary (or could differentiate the solution from a competing proposal).

**Network Diagram** - For each response, respondents must include a network diagram displaying the



paths to be used to serve the specified site. For self-provisioned network responses, respondents must include identification of aerial vs. buried fiber segments, detailed drawings showing fiber and hand-hole/manhole locations, and any other pertinent details.

**References** - For each response, respondent must provide 3 references from current or recent customers (preferably K-12) with projects equivalent to the size of Lake Hamilton School District. If respondent responds to more than one option (e.g. lit fiber service as well as leased dark fiber), provide 3 references for each.

**Payment Plan** - In addition to allowing vendor to separate Special Construction charges from the monthly recurring cost so that the Special Construction charges can be paid up-front, USAC allows vendors to extend a payment plan to applicants to allow them to pay their share over a period of up to four years. Lake Hamilton School District requests that the vendor allows Lake Hamilton School District to make monthly payments for their share of the Special Construction charges over a period of 4 years. If vendor agrees to allow Lake Hamilton School District to pay their share of Special Construction charges over time, vendor should include the monthly charge (to include all interest and carrying charges, if any).

#### **Required Notice to Proceed and Funding Availability**

Lake Hamilton School District will follow the purchasing policies of the Lake Hamilton School District Board and requirements and procedures of the FCC's E-rate program as administered by the Universal Service Administrative Company to be eligible for all available funding. The implementation of any associated contracts resulting from this competitive bid process will be dependent on the district's issuance of a written Notice to Proceed. E-rate funding notification alone will not signify Notice to Proceed. The district will have the right to allow the contract to expire without implementation if appropriate funding does not come available

**Ability to Accept No Bid** - The Lake Hamilton School District has the right to reject any and all proposals.

**All responding vendors must be a registered vendor with USAC and have a USAC issued Service Provider Identification Number-SPIN. Responding vendors who do not have a USAC issue SPIN must demonstrate reasonable efforts to obtain a SPIN before the service start date.**



## **SCORING RUBRIC**

<b>Weight 100 Points</b>	<b>Criteria</b>
25	E-rate eligible recurring and one-time circuit costs
10	Timing: adherence to district preferred rollout timeframe
10	Ability to support requirements as laid out in the RFP
10	Proposed contract terms and conditions
10	Service Reliability
10	Provider references
10	Risk for district
15	Past Experience



## **SERVICE LEVEL AGREEMENTS**

Respondent will provide a description of the proposed services and service levels provided with the lit fiber and dark fiber responses. The respondent will provide a proposed Service Level Agreement (SLA) with the RFP response. The proposal must include a description of the following services and how these services will be measured.

- Fiber Network Availability: the provider will make all reasonable efforts to ensure 99.99% network availability of each circuit.
- Lit proposals only: Frame/packet loss Commitment
- Lit proposals only: Network Latency Commitment
- Lit proposals only: Network Jitter Commitment
- There is no right of provider to limit or throttle the capacity of the circuit at any time for any reason

In addition to the required services, the proposal may include, but is not to be limited to the following services:

- Network Operations Center: Solution will provide customer support functions including problem tracking, resolution and escalation support management on a 24x7x365 basis. Customer has the right and is encouraged to call concerning any problems that may arise relative to its connection with Vendor provided services.
- Trouble Reporting and Response: Upon interruption, degradation or loss of service, Customer may contact Vendor by defined method with a response based on trouble level. Upon contact from the Customer, the Vendor support team will initiate an immediate response to resolve any Customer issue. Customer will receive rapid feedback on trouble resolution, including potential resolution time.
- Escalation: In the event that service has not been restored in a timely manner, or the Customer does not feel that adequate attention has been allocated, the Customer can escalate the trouble resolution by request. A list of escalation contacts will be provided when implementation schedule is completed.
- Resolution: The Customer will be notified immediately once the problem is resolved and will be asked for verbal closure of the incident.
- Trouble Reporting, Escalation and Resolution: A detail trouble reporting, escalation and resolution plan will be provided to the district.
- Measurement: Vendor stated commitment is to respond to any outage within two (2) hours and a four (4) hour restoration of service. Time starts from the time the Customer contacts Vendor and identifies the problem. Credits for Outages of shortage will be identified.
- Reports: Upon request, an incident report will be made available to the Customer within five (5) working days of resolution of the trouble.
- Link Performance per segment: The service will maintain the proposed Link Performance throughout the term of the contract.
- Historical uptime: Provide aggregate uptime statistics for your proposed service in the geographic area encompassing the Lake Hamilton School District.



## **LEASED LIT SERVICE**

The Lake Hamilton School District must have dedicated Lit Transport Bandwidth throughput (upload and download) of 10G with Service Level Agreement (SLA) guarantees to all specified sites. The solution must be scalable from 25G. **All respondents must be capable of providing telecommunication services under the Universal Service Support Mechanism.**

With respect to portions on Lake Hamilton School District property, service providers will abide by all applicable NEC, state and local codes. All cable entering a building must be indoor-rated, transitioned to an indoor-rated cable, or contained in an acceptable conduit that allows it to meet all codes; and all applicable grounding and bonding codes must be met.

Termination point for all options shall be the designated demarcation point within the buildings. Vendor provided services shall terminate in an appropriate vendor-provided patch panel or LIU, and LC patch cables of an appropriate length to reach Lake Hamilton School District equipment shall be provided as part of the proposal. Unless otherwise stated in this document, hand-off protocol shall be TCP/IP Ethernet.

Vendor shall make all reasonable efforts to ensure 99.99% network availability on each circuit. Vendor shall provide the full bandwidth to each location, and at no time shall the vendor limit or throttle the capacity of the circuit at any time, for any reason. Additionally, the vendor shall provide a sample Service level Agreement that outlines the vendor's guarantees regarding network functionality and availability, to include but not limited to:

- Network availability commitment
- Maximum acceptable frame/packet loss commitment
- Maximum network latency commitment
- Maximum network jitter commitment
- Maximum time to respond to outage (commencing from the time Lake Hamilton School District notifies vendor of the outage)
- Maximum time to restore service
- How quality of service will be measured for credit to Lake Hamilton School District
- How outage will be measured for credit to Lake Hamilton School District
- How credit for reduced quality of service and outages will be credited to Lake Hamilton School District

### **Leased Lit Service Pricing**

The "Lit Pricing Sheet" worksheet includes pricing for symmetrical service from the hub to each eligible entity location 10G. This should include vendor-maintained equipment necessary at each end point to provide a 10 Gbps Layer-3 connection to the hub, as well as a 10 Gbps connection to the district-owned core router at the end point. At the hub, the vendor-maintained Layer-3 switch needs to have enough 10 Gbps ports to connect all end points, as well as enough 10 Gbps, 40 Gbps



or 100GBps ports to connect to the district hub core switch without creating a network bottleneck.

School District is requesting pricing for contracts of various lengths (12, 36, 60 & 120 months). Twelve, thirty-six- and sixty-month contracts shall be written to allow for at least two 1-year extensions.

Vendors should make copies of the Leased Lit Service Pricing sheet and submit a separate pricing sheet for each requested term.

Prices should be all- inclusive. All-inclusive in this case means, including all **special construction or non-recurring costs (NRC)** (see description in later section) required by the vendor to commence service and all **monthly recurring costs (MRC)** should be included in the requisite columns of the pricing sheets. No increased pricing will be allowed during the term of the quoted special construction/NRC and MRC rate in each pricing cell of the spreadsheet.

**Each lit service response must also include description of proposal, SLA, timeline, network diagram, demarcation, and references.**

#### **Excess Strands for Applicant's Future Use**

If the service provider installs additional strands for the applicant's exclusive future use in a leased dark fiber or leased lit fiber special construction project, and if the applicant can show documentation that buying a cable containing the number of strands placed in the fiber system for the applicant's future use is more cost effective than buying a fiber cable with the number of strands the applicant plans to place into service the first year, no cost allocation of the excess strands is required and no other special construction charges would need to be cost allocated.

If the service provider installs excess strands for the applicant's exclusive future use in a leased dark fiber or leased lit fiber special construction project where the excess strands will remain dormant until they are lit for the applicant in the future, and if the applicant cannot show that it is not more cost effective than buying the exact number of fiber strands being lit in the first year, the applicant must cost allocate the costs associated with the excess strands only. No other special construction charges would need to be cost allocated.

#### **Excess Strands for Service Provider's Future Use**

For lit services special construction and leased dark fiber special construction, if the service provider wishes to place extra strands in the build for its own use, the E-rate applicant must cost allocate the cost of the service provider-owned extra strands, as well as all incremental costs of those extra strands from the special construction E-rate funding request. It is not a pro-rata share, but an incremental cost calculation that must be backed by detailed documentation.



## **LEASED DARK FIBER**

The term Leased Dark Fiber is construed to include Dark Fiber Indefeasible Right of Use (IRU).

Lake Hamilton School District is requesting 6 strands from the network operations center to each entity described under SERVICE LOCATIONS and will be lighting 6 strands the first year. Fiber should be single mode capable of supporting up to 25 Gbps, and dB loss across each link must allow for acceptable data transmission using existing district modulating equipment. Acceptable dB loss must be maintained for the duration of the lease.

All respondents must be capable of providing telecommunication services under the Universal Service Support Mechanism.

### **Leased Dark Fiber Pricing**

Each respondent is required to complete the pricing matrix appended as the “Leased Dark Fiber” worksheet in the spreadsheet accompanying this RFP. Lake Hamilton School District is requesting pricing for contracts of various lengths (12, 36, 60 & 120 months). Twelve, thirty-six- and sixty-month contracts shall be written to allow for up to two 1-year extensions.

Vendors should make copies of the Leased Dark Service Pricing sheet and submit a separate pricing sheet for each requested term.

Respondents are encouraged to separate special construction charges as defined by E-rate eligibility rules. Preference will be given to proposals that offer pricing with most of the costs being paid up-front and minimal MRC and annual maintenance costs.

Each leased dark fiber response must also include description of proposal, description of maintenance, SLA, timeline, network diagram, demarcation, and references.

For all options, with respect to portions on Lake Hamilton School District property, service providers will abide by all applicable NEC, state and local codes. All cable entering a building must be indoor-rated, transitioned to an indoor-rated cable, or contained in an acceptable conduit that allows it to meet all codes; and all applicable grounding and bonding codes must be met.

Termination point for all options shall be the designated demarcation point within the buildings. Vendor provided services shall terminate in an appropriate vendor-provided patch panel or LIU, and LC patch cables of an appropriate length to reach Lake Hamilton School District equipment shall be provided as part of the proposal.

The Lake Hamilton School District requires on-going maintenance of the fiber on all Leased Dark Fiber or Leased Dark Fiber (IRU) solution. Maintenance responses are required as follows:

- All dark fiber responses (lease and leased dark fiber (IRU)) require maintenance as part of



the response, even if maintenance is subcontracted out to a third party. In the case of the third-party maintenance, the respondent must hold and manage the subcontract and is ultimately responsible for the SLA. For a leased dark fiber and leased dark fiber (IRU) solution, it is assumed that the Fiber Network is part of a more comprehensive fiber infrastructure of the service provider. The respondent will include only the portion of maintenance that is required to support the Lake Hamilton School District fiber segments versus overall network maintenance. If the fiber serves multiple customers, the cost of maintenance should be shared among all the recipients.

- If maintenance cannot be quoted for entire time span of the IRU, please include alternate time span quote as well as explanation for the shorter time span.
- As part of the maintenance contract for an IRU, the fiber owner (not the district) must claim responsibility for repairs in the event of a catastrophic cut or relocate.
- As part of the maintenance contract for an IRU describe the process for relocates including assumption of costs.

Respondent shall maintain the applicable fiber seven days per week, twenty-four hours per day. Upon notification from the district of a malfunction relating to the applicable fiber, respondent shall respond to such malfunction within two (2) hours and thereafter proceed to correct the malfunction with reasonable diligence.

When pricing maintenance, the respondent should include an overview of fiber maintenance practices including:

- Routine maintenance and inspection,
- Scheduled maintenance windows and scheduling practices for planned outages,
- Marker and handhole inspection and repair,
- Handling of unscheduled outages and customer problem reports
- What service level agreement is included, and what alternative service levels may be available at additional cost,
- What agreements are in place with applicable utilities and utility contractors for emergency restoration,
- Repair of fiber breaks,
- Post repair testing,
- Mean time to repair,
- Replacement of damaged fiber,
- Replacement of fiber which no longer meets specifications,
- Policies for customer notification regarding maintenance,
- Process for changing procedures, including customer notification practices,
- Process for moves adds and changes,
- Process for responding to locate requests.



Vendor shall make all reasonable efforts to ensure 99.99% network availability on each circuit. Additionally, the vendor shall provide a sample Service level Agreement that outlines the vendor's guarantees regarding network functionality and availability, to include but not limited to:

- Leased fiber availability commitment
- Maximum acceptable dB loss per circuit (in the event that this level is exceeded, vendor is responsible for whatever repairs are necessary to reduce the dB loss to acceptable levels)
- Maximum time to respond to outage (commencing from the time Lake Hamilton School District notifies vendor of the outage or issue)
- Maximum time to restore service
- How quality of service (dB loss) will be measured for credit to Lake Hamilton School District
- How outage will be measured for credit to Lake Hamilton School District
- How credit for reduced quality of service and outages will be credited to Lake Hamilton School District

#### **Excess Strands for Applicant's Future Use**

If the service provider installs additional strands for the applicant's exclusive future use in a leased dark fiber or leased lit fiber special construction project, and if the applicant can show documentation that buying a cable containing the number of strands placed in the fiber system for the applicant's future use is more cost effective than buying a fiber cable with the number of strands the applicant plans to place into service the first year, no cost allocation of the excess strands is required and no other special construction charges would need to be cost allocated.

If the service provider installs excess strands for the applicant's exclusive future use in a leased dark fiber or leased lit fiber special construction project where the excess strands will remain dormant until they are lit for the applicant in the future, and if the applicant cannot show that it is not more cost effective than buying the exact number of fiber strands being lit in the first year, the applicant must cost allocate the costs associated with the excess strands only. No other special construction charges would need to be cost allocated.

#### **Excess Strands for Service Provider's Future Use**

For lit services special construction and leased dark fiber special construction, if the service provider wishes to place extra strands in the build for its own use, the E-rate applicant must cost allocate the cost of the service provider-owned extra strands, as well as all incremental costs of those extra strands from the special construction E-rate funding request. It is not a pro-rata share, but an incremental cost calculation that must be backed by detailed documentation.



## **SELF PROVISIONED NETWORK**

Lake Hamilton School District requests that respondents propose design and pricing for a self-provisioned network that may include a new build of fiber between the hub and each eligible entity location. However, the district will accept bids for any type of cost-effective district owned network. If you are bidding the fiber option: Six (6) strands (3 pair) of single-mode new build fiber are requested, and 6 strands at each location will be lit during the first year. In accordance with USAC rules, the cost of any strands not lit during the funding year must be allocated out as ineligible charges and as such, vendor will be responsible for cost allocating out any extra strands of fiber to each location. Vendor should use the guidance in documentation prepared by the State E-rate Coordinators' Alliance [SECA] in attached PDF). Note that the cost allocation should only reflect the difference in price for the cable required and the cable installed, plus any additional splices or terminations required for the fiber not being lit in the first year. It is possible that the fiber count being lit the first year is the same cost or more expensive than the strand count being installed, in which case the cost allocation may be minimal or non-existent. Please refer to the SECA documents included with this RFP to accurately allocate costs.

Selected respondent and/or subcontractor are required to have appropriate insurance coverage for any potential liability in the case of a self-provisioned network contract. (Minimum 1-million-dollar liability coverage)

Respondents are requested to provide a proposal for a Lake Hamilton School District self-provisioned network based on a special construction project. New eligible network special construction charges as defined by the order include construction, design, engineering and project management. Project management should include all necessary paperwork and permits including but not limited to rights of way, easements, and pole attachments. The Lake Hamilton School District desires a fully "turn-key" project so respondents should provide explanation for Lake Hamilton School District's involvement in the process including ownership and sourcing of permits, etc.

### ***Self-Provisioned Network Construction Price Proposal***

Each respondent is required to complete the pricing matrix appended as the "Self-provisioned Network" worksheet in the spreadsheet accompanying to this RFP. Preference will be given to proposals that offer pricing with most of the costs being paid up-front. The solution should include all costs related to the deployment of the proposed circuit, such that there are no additional costs that are expected to be incurred by the district.

Project management should include all necessary paperwork and permits including but not limited to rights of way, easements, and pole attachments. Lake Hamilton School District desires a fully "turn-key" project so respondents should provide explanation for Lake Hamilton School District's involvement in the process including ownership and sourcing of permits, etc. Specific construction details are outlined in the SPECIFICATIONS FOR SELF-PROVISIONED NETWORK section of this document.



### **Self-Provisioned Network Project Management:**

Selected respondent and its subcontractors will provide all project management to accomplish the installation of all project work as outlined herein.

The respondent will provide engineer(s), certified on selected fiber system specifications and procedures to manage all phases of project as outlined in this proposal. This includes ordering and managing the bill of materials, directing and managing cable placement and restoration, directing and managing splicing crews if necessary and providing detailed documentation at the end of the project.

Selected respondent and its subcontractors will develop a project management plan, which will include a milestone chart. The milestone chart will outline any critical path events and then track these with the appropriate agency/organization whether; selected respondent, subcontractor or the district.

Each self-provisioned fiber build response must also include description of proposal, timeline, network diagram, demarcation, and references.

Self-provisioned fiber construction responses are not required to include a maintenance response.

### **Excess Strands for Applicant's Future Use**

If the applicant installs the exact number of fiber strands that they will light in the first year, and no extra fibers are installed, all fiber strands and special construction charges are eligible, and no cost allocation is required.

If the applicant installs more fiber strands than it will light in the first year, E-rate will pay for the number of strands being lit in the first year, but not the additional strands. No cost allocation is required for the special construction charges. E-rate applicants can only receive E-rate funding for self-provisioned fibers that are lit within the funding year. If they request excess strands that will remain dormant until the applicant lights the excess strands for their exclusive future use, then they would need to cost allocate the cost of the unlit stands in the applicable funding year. However, if the applicant can show documentation that buying a cable containing the number of strands placed in the fiber system for the applicant's future use is more cost effective then buying a fiber cable with the number of strands the applicant plans to place into service the first year, no cost allocation for excess strands by the applicant is required.

### **Excess Strands for Service Provider's Future Use**

For self-provisioned networks, service providers are restricted from adding additional fiber strands for their own use. By USAC rules, Lake Hamilton School District must own the entire self-provisioned network end-to-end, to include fiber cable, conduit(s), and hand holes/manholes.



## **Material Requirements**

Material will comply with those standards as established by UL or NEMA and shall be commercial grade. All materials will be new and free from defects.

Selected contractor and its subcontractors will provide all material management to ensure that the project remains on track according to the project milestones.

All due caution will be exercised in transporting and off-loading all materials to prevent any damage during shipping or placement. Any damage to any materials after their initial receipt and inspection by the respondent will be the sole responsibility of the respondent, who will replace such damaged hand holes at no additional expense to the district.

Buried conduit shall be HDPE SDR-11 or better, and each conduit shall be equipped with a pull tape or rope.

The exact requirements for location and type of conduit within the building shall be verified with building owner.

All Hand Holes shall be 24" x 36" x 18"D Hubbell Quazite Box Part# PG2436BA18 with traffic rated cover BDHD 24" x 36" x 3"/HW communications Part# PG2436HA0012 or comparable enclosures.

Large-radius sweeps shall be provided where required for offset or change in direction of conduit. Bend radius rating of the cable must be adhered to for all conduit bends, pull boxes, and hand holes.

Fiber must be Single Mode with the following specifications:

- TU -T G.652.C/D compliant
- Maximum Attenuation @ 1310nm 0.34 dB/km
- Maximum Attenuation @ 1385nm 0.31 dB/km Maximum Attenuation @ 1550nm 0.22 dB/km

Connector Types should be LC unless otherwise specified by the district.

LC – LC Jumpers will need to be provided for each end of a fiber run to connect to district network equipment (Various lengths outlined no later than the day of the first walkthrough)

Any warranties associated with the fiber and any other outside plant materials must revert to the district as the fiber owner upon completion of construction.

## **Specifications:**

### *Aerial Installations*

- Aerial installations shall be constructed and installed in accordance with industry-standard



practice. Vendor is responsible for acquisition of rights to install Lake Hamilton School District fiber on existing poles. Vendor is responsible for aerial load calculations and determination of suitability of existing available poles, and must adhere to pole owners' requirements for clearances, spans, grounding, guys and attachments. Any costs associated with these modifications to existing poles are the responsibility of the vendor and shall be included in the calculation of cost of construction.

- Should there be any applicable acquisition or one-time pole attachment fees applied, the vendor should include them in the calculation of cost of construction. Additionally, if there are any monthly recurring or annual recurring pole attachment fees, vendor shall make note of these recurring costs in their proposal and shall include the first year of any such recurring fees in the calculation of cost of construction. Within the pricing sheet(s) the vendor shall also note these recurring fees so that the district can be prepared to cover these costs in future years.
- Vendor shall make all transitions to and from aerial according to established standards and shall follow any applicable grounding/bonding requirements. All aerial runs shall be equipped with aerial service loops adequate to effect possible future repairs and shall ensure that said service loops are properly secured using Opti-Loop® or similar storage devices.

#### *Buried Installations*

- Buried installations shall be constructed and installed in accordance with industry-standard practice. Vendor is responsible locating existing utilities prior to trenching operations. When trenching across existing utilities that are above the level of fiber installation, vendor shall hand-dig or hydro-vac as necessary in order to avoid damage to existing utilities.
- Except where otherwise specified, the cable shall be placed to a minimum depth of 24" (measured to the top of the conduit) along roadways and 18" (measured to the top of the conduit) on private property.
- Greater cable depth will be required where cable crosses existing sub-surface pipes, cables, or other structures: at foreign object crossings, the cable will be placed to maintain a minimum of 10" clearance (measured to the top of the conduit) from the object or the minimum clearance required by the object's owner, whichever is greater.
- Sidewalks and driveways should not be cut or broken during installation unless necessary. Any sidewalks or driveways that ARE cut or broken during installation shall be returned to their pre-construction condition as part of restoration.

#### *Bored Installations*

- Directional bores shall be constructed and installed in accordance with industry-standard practice. Vendor is responsible for acquisition of rights to install Lake Hamilton School District fiber. Vendor must adhere to requirements for clearances, and alignments as specified by relevant authorities in each area bored. All existing utilities will be physically located using hydro-vac (pot-holing) prior to any directional boring.



- All boring should be at 48 inches or deeper if needed to avoid obstacles. **In no cases should conduit be bored above existing utilities.** At any foreign object crossings, the cable will be placed to maintain a minimum of 12" clearance from the object or the minimum clearance required by the object's owner, whichever is greater.
- Vendors shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the Work as drawn. All work performed on public right-of-way or railroad right-of-way shall be done in accordance with requirements and regulations of the authority having jurisdiction.

#### *Survey*

- Comply with all ordinances and regulations. Where required, secure permits before placing or excavating on private property, crossing streams, pushing pipe or boring under streets and railways. Pre-survey shall be done prior to each job.
- Respondent will locate underground lines of third parties in cable route area

#### *Permits and Traffic Control*

- The respondent must adhere to all applicable laws, rules and requirements and must apply for permits to place infrastructure per specification per county or city ordinance applicable to where the infrastructure is being placed.
- All traffic control, in accordance with local, state, county, or permitting agency laws, regulations, and requirements, will be the respondent's responsibility. The respondent's construction schedule will take into consideration enough time for the development and approval of a traffic control plan.

#### *Tracer Wire Installation*

- Tracer wire shall be placed with all conduit installed unless armored or traceable cable is used. The respondent will provide the tracer wire and shall install, splice and test (for continuity) the tracer wire. If the tracer wire is broken during installation, the wire should be repaired and tested for continuity after repair.

#### *Highway and Bored Crossing*

- All crossings of state or federal highways shall be bored, trenched, or plowed as approved by the appropriate local authority. Respondent shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the Work as drawn.

#### *Hand Holes*

- Hand holes will be placed in accordance with industry standard. Special attention and planning must be exercised to ensure accessibility by other groups after construction has



been completed.

- All hand holes unless otherwise stipulated by the drawings will be buried with 12" to 18" of cover at final grade.
- Immediately after placement, the soil around and over the hand hole will be tamped and compacted. Should any washouts occur, the respondent will be responsible for correcting the problem immediately without additional cost to the district.
- A minimum of 50' coil of cable (service loop) shall be left in each hand hole. Service loops in buildings will be at least 10'.

#### Building Entrances

- Several locations have existing 2" conduit mounted to the building and terminating at an access box into the attic. These are available for vendor use, where feasible, and the locations where these exist will be available not later than the day of the first walk-through.
- Where underground cable needs to enter a building that does not already have a pathway into the building, the vendor shall use 2" Schedule 40 PVC UV rated pipe to be attached to the outside of the exterior wall of the building. The Schedule 40 pipe will extend down at least 12 inches below grade, and up to the height necessary such that a Plastic or Metallic service box (minimum 12"x12"x6", but large enough so as not to exceed cable manufacturer recommendation for bend radius) connected to the top will allow fiber-optic cable passing through the back of the service box to enter the building above the suspended ceiling (see diagram on next page). Conduit from underground will enter this PVC pipe at the bottom, providing a pathway from the underground conduit into the building. The PVC pipe, and any service box, will be mechanically secured to the exterior wall. The opening through the exterior wall shall be core drilled, sleeved if appropriate, and sealed after fiber-optic cable is installed. See diagram labeled BUILDING PENETRATION ILLUSTRATION.
- Aerial cables may be transitioned to underground at the property line or may be run to the building aerially. Aerial cables running directly to the building shall be secured to the building using the messenger cable. A drip loop of cable will remain outside, and the fiber cable will penetrate the building at an appropriate height to enter above any suspended ceiling. Any penetrations to the exterior wall will be properly sealed by vendor.
- When fiber-optic cable enters buildings, vendors must comply with all fire codes and other applicable codes. If outdoor cable will run 50 feet or more inside the building, it must meet indoor cable rating. This can be accomplished by using an indoor/outdoor rated cable and removing the outdoor jacket at or near the building entrance point to expose the indoor rated sheath for the remainder of the run inside the building. Alternatively, this can be accomplished by fusion splicing an indoor rated cable where the fiber enters the building. However, Lake Hamilton prefers to have no splicing of any kind. Vendors may propose any other solution that meets NEC and local codes. Vendor will specify in their proposal how they intend to meet the indoor cable rating at any locations where this will be an issue.



### *Splicing (Lake Hamilton prefers to have no splicing of any fiber)*

- All fiber-optic splicing must be accomplished using fusion splices. Barrel connectors, mechanical splices, or other means of splicing the cables will not be considered.
- All fusion-splices must be contained in an appropriately sized splice-enclosure with splice-tray organizer and shall be able to accommodate splices of all strands of the largest cable entering the manhole. Splice enclosures must be water-proof and properly sealed to preclude water intrusion if immersed. Splice enclosures must be able to be opened and resealed for repairs and additional splicing in the future.
- Only the necessary strands will be fusion spliced (i.e. in a mid-span tap for a school, only the specified number of strands from each direction will be spliced to an appropriate cable for servicing each school – remaining strands will remain unspliced in the enclosure trays).
- Fiber to fiber fusion splicing of optical fibers at each point including head ends is required.
- Individual splice loss will be 0.10 dB for single-mode unless after 3 attempts these values cannot be achieved, then the fibers will be re-spliced until a splice loss within 0.05 dB of the lowest previous attempts is achieved. Splice loss acceptance testing will be based on the fusion splicer's splice loss estimator.

### *Testing Cable*

- Respondent assumes responsibility for the cable after testing. This responsibility covers all fibers in the cable.
- The respondent shall supply all tools, test equipment, consumables, and incidentals necessary to perform quality testing.
- The cable ends shall be sealed upon completion of testing.
- Selected respondent will perform end-to-end insertion loss testing of single-mode fibers at 1310 nm and 1550 nm from one direction for each terminated fiber span in accordance with TIA/EIA-526-7 (OFSTP 7). For spans greater than 300 feet, each tested span must test to a value less than or equal to the value determined by calculating a link loss budget.

### *Restoration*

- All work sites will be restored to as near their original undisturbed condition as possible, all cleanup will be to the satisfaction of the district.
- Work site restoration will include the placement of seed, mulch, sod, water, gravel, soil, sand, and all other materials as warranted. Backfill material will consist of clean fill. Backfilling, tamping, and compaction will be performed to the satisfaction of the district.
- Excess material will be disposed of properly.
- Debris from clearing operations will be properly disposed of by the respondent/subcontractors. Trees, stumps or any foreign debris will be removed, stacked, or



disposed of by the respondent as per requirements by the district.

- Road shoulders and roadbeds will be dressed up at the end of each day. No payment for installation will be permitted until cleanup has been completed to the satisfaction of the district.
- Site clean-up will include the restoration of all concrete, asphalt, or other paving materials to the satisfaction of the other interested permitting agencies, and/or the district.

#### *Documentation*

- As Built Drawing will include:
  - Fiber Cable Route
    - Drawings, site drawings, and electronically stored consolidated field notes for the entire route must be included in the documentation. The method of installation will dictate the additional types of documentation that should be provided. For example, documentation of underground installation should include conduit design, conduit detailing, manhole detailing, preparation of all forms and documentation for approval of conduit construction and/or installation, verification of as-built and computerized maps.
    - Optical Fiber Assignments at Patch Panels
    - Installed cable length
    - Date of Installation
- Fiber Optic details will include:
  - Manufacturer
  - Cable Type Diameter
  - Jacket Type: Single Mode
  - Fiber core and cladding diameter Fiber attenuation per Kilometer Fiber bandwidth and dispersion Index of refraction
- OTDR documentation will include:
  - Each span shall be tested bi-directionally from endpoint to endpoint. Each span's traces shall be recorded and mapped.
    - Reel acceptance
    - Individual fiber traces for complete fiber length
    - Paper and computer disk records of all traces.
    - Losses of individual splices
    - Anomalies
    - Wavelength tests and measurement direction
    - Manufacturer, model, and serial number of OTDR
    - Date of last calibration
- Power Meter documentation will include:
  - Total link loss of each fiber



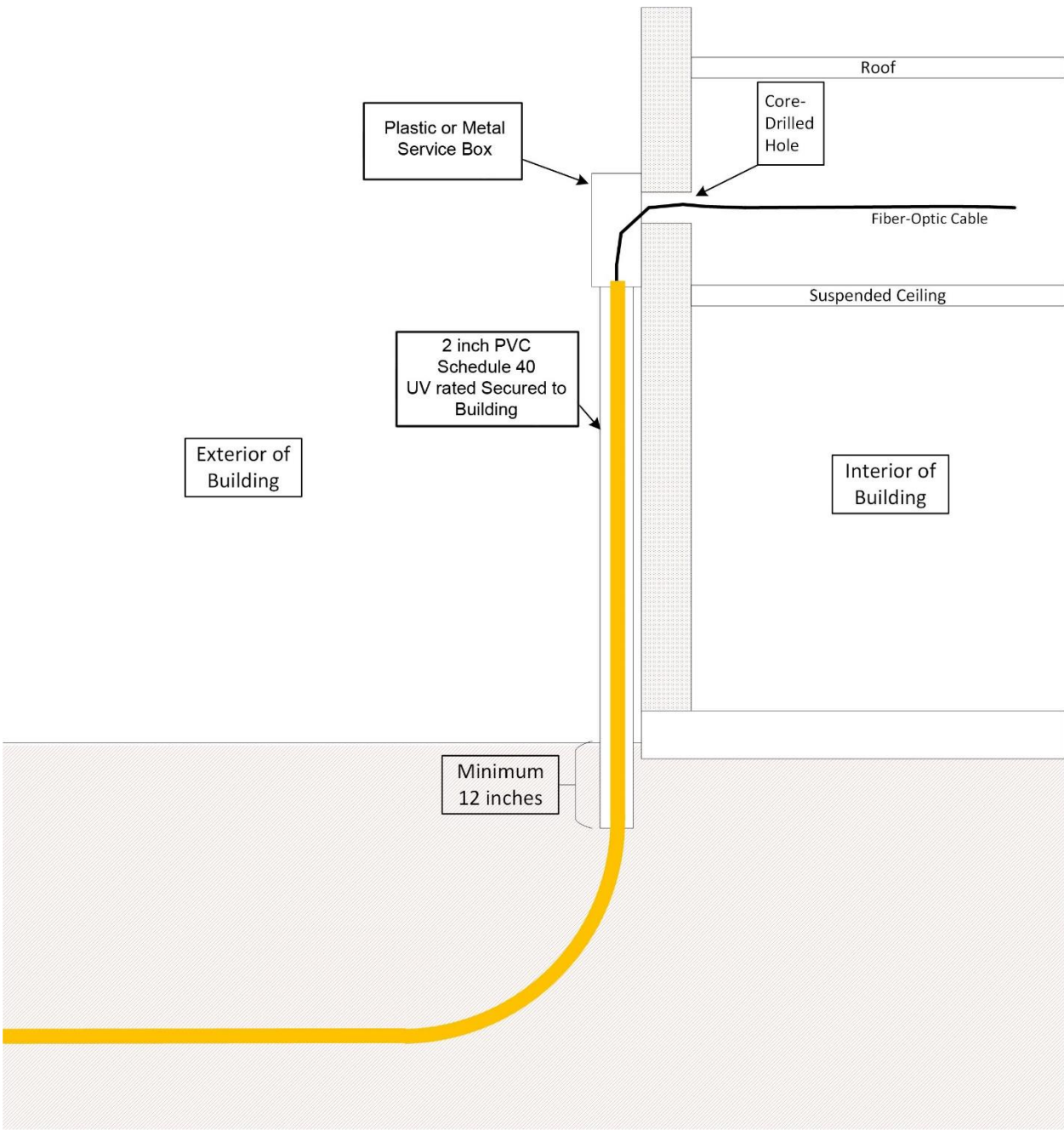
- Wavelengths tested and measurement directions
- Manufacturer, model, and serial number of test equipment
- Date of last calibration

#### REFERENCES, STANDARDS, AND CODES

Specifications in this document are not meant to supersede state law or industry standards. Respondents shall note in their response where their proposal does not follow the requested specification to comply with state law or industry standard. The following standards are based upon the Customer Owned Outside Plant Design Manual (CO-OSP) produced by BICSI, the Telecommunications Distribution Methods Manual (TDMM) also produced by BICSI, ANSI/TIA/EIA and ISO/IEC standards, and NEC codes, among others. It is required that the respondent be thoroughly familiar with the content and intent of these references, standards, and codes and that the respondent be capable of applying the content and intent of these references, standards, and codes to all outside plant communications system designs executed on the behalf of the district. If questions arise as to which reference, standard, or code should apply in a given situation, the more stringent shall prevail. As each of these documents are modified over time, the latest edition and addenda to each of these documents is definitive.



Building Penetration Illustration





**LEASED LIT SERVICE****PRICING SHEETS**

Contract Length \_\_\_\_\_ years

Vendor \_\_\_\_\_

Building	Contract Length	Bandwidth	NRC	Special Construction	MRC	Maintenance
Primary School						
Intermediate School						
Middle School						
Junior High School						
High School						
Technology						
Maintenance/ District Receiving						
Administrative Office						
Bus Shop						
Parent Center						
ISS						



**LEASED DARK FIBER  
PRICING SHEETS**

Contract Length \_\_\_\_\_ years

Vendor \_\_\_\_\_

Building	Contract Length	Strand Count	NRC/Installation cost (if Applicable)	Special Construction	MRC	Maintenance
Primary School		6				
Intermediate School		6				
Middle School		6				
Junior High School		6				
High School		6				
Technology		6				
Maintenance/ District Receiving		6				
Administrative Office		6				
Bus Shop		6				
Parent Center		6				
ISS		6				



**SELF-PROVISIONED NETWORK  
PRICING SHEETS**

Vendor \_\_\_\_\_

Building	Strand Count	Length	Price	Estimated Completion Date
Primary School	6			
Intermediate School	6			
Middle School	6			
Junior High School	6			
High School	6			
Technology	6			
Maintenance/ District Receiving	6			
Administrative Office	6			
Bus Shop	6			
Parent Center	6			
ISS	6			