

**STATE OF TENNESSEE
TENNESSEE DEPARTMENT OF TRANSPORTATION**

**REQUEST FOR INFORMATION
FOR THE
CONTINUALLY OPERATED REFERENCE STATION NETWORK (CORS)
RFI # 40100-21620**

**Questions and Comments Response
May 13, 2020**

Question	Response
1. What is the estimated funding source, or budget for this project?	The State will address this question as part of any future solicitation but is unable to provide the requested information at this time.
2. Is this a new requirement, or is there a vendor currently providing these services? If so, what is the vendor name, contract number, and contract amount?	TDOT owns and operates the network. No vendors and no contracts.
3. Is there a timeline for a formal solicitation to be reached? If not, what steps are expected to make a decision on a formal solicitation?	The state would like to have a formal solicitation out in the next 3 months.
4. How many existing users are currently subscribed to the TDOT network? Is it possible to break down the subscriptions into existing government (TDOT) users, direct contractors and general public?	There is about 50 users in TDOT and 300 total.
5. Does TDOT currently charge a fee for any subscriptions?	Yes
6. By law, is TDOT allowed to sell subscriptions or charge a maintenance fee to offset costs?	Yes, there are users under contract, and we need to maintain those contracts.
7. Are the current network connections to the TDOT reference stations isolated behind the TDOT firewall/IT infrastructure? In the case of a vendor supplied options, as in 2.2-2.5, is there a requirement by TDOT to maintain network connections behind the TDOT firewall? Will TDOT allow for external connections to be installed at each reference station location?	Yes. As far as external connections, this RFI is intended to provide valuable feedback to the State and assist in making future decisions about this program. Some, or all, of the question being asked is still undetermined and will have to be addressed in the future. Please provide the State with any potential solutions and necessary caveats that should be considered.
8. What are the State plans for NGS2022?	The equipment and software will need to be able to accept any changes we need to make. TDOT will need to broadcast the NGS 2022 adjustment but we are not sure when.

<p>9. What data is supplied to USGS?</p>	<p>Each station’s observation files are sent to NGS. .TPS format.</p>
<p>10. What is the expected availability of VRS data from the system?</p>	<p>24-7</p>
<p>11. What are the current network security protocols and what is required of a contractor to be able to access or utilize the state WAN?</p>	<p>The State will address this question as part of any future solicitation but is unable to provide the requested information at this time.</p>
<p>12. Does the state have a cellular data contract with an existing vendor?</p>	<p>YES Verizon</p>
<p>13. Would a successful vendor have access to the data rates offered to the state for cellular connectivity?</p>	<p>The State will address this question as part of any future solicitation but is unable to provide the requested information at this time.</p>
<p>14. How does the state currently manage coordination of the network and coordinates of individual stations?</p>	<p>The TDOT CORS administrator uses TOPNET to manage the network.</p>
<p>15. Antenna (physical installation / refitting of existing statins and maintenance)</p> <ul style="list-style-type: none"> ● Are leveling mounts installed per NGS requirements? If yes are they re-usable? ● Describe the physical makeup of a typical antenna mount. (pipe, attachment) ● Is the DOT able to provide horizon view pictures surrounding each antenna installation? ● Is an electrician required to be on site to assist with DOT for installations? 	<p>Yes, mounts are installed and yes, they are reusable. We have not had electricians on site for installs.</p> <p>This picture is the standard mount.</p>  <p>Pictures are on the NGS website for most stations.</p> <p>This RFI is intended to provide valuable feedback to the State and assist in making future decisions about this program. Some, or all, of the question being asked is still undetermined and will have to be addressed in the future. Please provide the State with any potential solutions and necessary caveats that should be considered.</p>

<p>16. CORS</p> <ul style="list-style-type: none"> ● Describe the power sources available at each installation. ● Is it possible for a contractor to have access to the facilities housing CORS receivers in the event that a station requires a hardware change? ● Describe the surge suppression strategy for each site including model of suppressors for power, network, antenna cabling. ● Is each station on a UPS? ● What GNSS constellations are required by TDOT? ● How many stations will contribute to NGS CORS? ● Regardless of business model, will TDOT manage the NGS submittals for change of hardware and antenna at the sites? ● Are all CORS hosted in facilities with high speed internet connectivity 	<p>Most of the equipment sits in communications closets or server rooms at these facilities so power of most sorts can be provided.</p> <p>This RFI is intended to provide valuable feedback to the State and assist in making future decisions about this program. Some, or all, of the question being asked is still undetermined and will have to be addressed in the future. Please provide the State with any potential solutions and necessary caveats that should be considered.</p>
<p>17. Software</p> <ul style="list-style-type: none"> ● What is the requirement for data storage? ○ How long will CORS data be required to be stored and available for consumption online ● What levels of availability are required? ● How many servers does TDOT currently utilize in their network to host the current software configuration? ○ Is there a redundant instance, and how is failover done? ● How often does the state update their server operating systems? 	<p>We will continue to share the data with USGS.</p> <p>We currently use 1 server for management and a directory on another server for storage. We have a 3-year policy on data storage.</p> <p>The state will usually upgrade the OS when the vendor quits supporting it.</p>
<p>18. Field Users</p> <ul style="list-style-type: none"> ● How many state users will be utilizing RTK/VRS corrections? ● How many private users will be utilizing VRS corrections? ● Thus far, what has been the peak usage for simultaneous users of VRS data? ● What levels of availability are required by field users? ● What is the percentage of state or government users vs private companies using the field. ● Is there a strong agricultural usage of VRS corrections throughout Tennessee? 	<p>There is about 50 users in TDOT and 300 total.</p> <p>We need to be able to provide data to all users at same time.</p> <p>Yes, farmers do access network, especially during planting and harvesting.</p> <p>Yes, files will need to be provided for Post Processing in several formats.</p> <p>This RFI is intended to provide valuable feedback to the State and assist in making future decisions about this program. Some, or all, of the question</p>

<ul style="list-style-type: none"> ● What are the peak months for agricultural users and how many are simultaneously using the system during peak. ● Is it desired to have access to CORS data files for postprocessing? 	<p>being asked is still undetermined and will have to be addressed in the future. Please provide the State with any potential solutions and necessary caveats that should be considered.</p>
<p>19. Support</p> <ul style="list-style-type: none"> ● Describe the service levels required ○ Availability of real time data output for RTK ○ Availability of postprocessing data and virtual RINEX ○ Availability and completeness of data provided to NGS ■ For all stations ■ For a subset of stations making up the states “golden stations” ● What hours of end-user support are required? 24/7 or normal business hours? 	<p>We currently send the data to USGS to post on their website for Post Processing and we share the data on a server for TDOT users.</p> <p>This RFI is intended to provide valuable feedback to the State and assist in making future decisions about this program. Some, or all, of the question being asked is still undetermined and will have to be addressed in the future. Please provide the State with any potential solutions and necessary caveats that should be considered.</p>
<p>20. Field equipment support</p> <ul style="list-style-type: none"> ● How does the state currently support users of field equipment when they have questions regarding the use of their gear on the TDOT network. 	<p>They contact the CORS network administrator or their equipment provider.</p>
<p>21. Communications:</p> <ul style="list-style-type: none"> ● What system is currently in use for transport of data from each CORS to the state server/software ○ Latency ○ Availability ○ Cost ○ Security 	<p>This RFI is intended to provide valuable feedback to the State and assist in making future decisions about this program. Some, or all, of the question being asked is still undetermined and will have to be addressed in the future. Please provide the State with any potential solutions and necessary caveats that should be considered.</p>
<p>22. User Segment:</p> <ul style="list-style-type: none"> ● Are there any users of the real-time data other than TDOT ● Describe the external users ○ Industry ○ Number of registered users by industry ○ Fees collected if any ○ Expectation of data availability 	<p>Yes, TDOT and external users use the real time data. Surveyors, farmers and other industries use the network. Fee data is on TDOT website.</p>
<p>23. Funding:</p> <ul style="list-style-type: none"> ● If a service agreement is planned, what would be the duration of the agreement? ● Is it possible for the state to enter multi-year agreements? 	<p>The State will address this question as part of any future solicitation but is unable to provide the requested information at this time.</p>
<p>24. If a vendor owned (hardware) option is selected by TDOT, would the existing contracts that TDOT has with the owners of the facilities that the CORS are mounted on allow for privately</p>	<p>Existing and new sites. If the vendor owned option is chosen, we would get the contractor on site to install and or maintain the equipment.</p>

owned equipment and non-state personnel permission to access, install and maintain the equipment on the facility or would new sites need to be located and approved?	
25. Since this is a public network, how will TDOT assure the new system will be 100% public and not optimized for proprietary equipment, corrections, etc.	The State will address this question as part of any future solicitation but is unable to provide the requested information at this time.