

CALIFORNIA K-12 HIGH-SPEED NETWORK

The Network Architecture Is Sound, but Opportunities Exist to Increase Its Use

Audit Highlights . . .

Our review of the California K-12 High-Speed Network (High-Speed Network) found that:

- The State most likely spent less on the building and operation of the High-Speed Network by expanding the existing infrastructure used by the University of California and other higher education institutions than it would have spent for a separate network with comparable services.*
- A study conducted by our technical consultant in 2005 found that the High-Speed Network has adequate bandwidth for potential growth but is not overbuilt. Furthermore, our technical consultant found no compelling technical or financial reason to abandon the existing High-Speed Network.*
- Because of the lack of specific performance measures in state law and because the Imperial County Office of Education (ICOE), which currently administers the project, is in the early stages of developing a suitable plan for measuring the success of the High-Speed Network, it is difficult to determine whether the network accomplishes the Legislature's goals.*

continued on next page . . .

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The Department of Education's response as of January 2007

The California K-12 High-Speed Network (High-Speed Network) connects the vast majority of kindergarten through 12th grade (K-12) schools, school districts, and county offices of education statewide to each other, to California's universities and community colleges, and to various Internet service providers that provide access to the commodity Internet. The Joint Legislative Audit Committee (audit committee) requested the Bureau of State Audits (bureau) to determine whether the State is efficiently using its resources by supporting the maintenance of the High-Speed Network. Specifically, the audit committee asked the bureau to determine the roles and responsibilities of the various entities involved since the inception of the High-Speed Network project, to identify the network's funding sources and determine whether there are any limitations or restrictions on the use of this funding or on the disposition of unused funds, and to review the methods used to allocate the costs of the High-Speed Network to determine if they are reasonable. In addition, the audit committee instructed the bureau to review the cost, usage, and, to the extent possible, benefits of the High-Speed Network and to determine whether these costs and benefits are comparable to those of other Internet service providers. The audit committee also directed the bureau to examine any information the State, consortium, or other entity has used to determine whether the benefits of the network outweigh its costs. Further, the bureau was asked to evaluate the reasonableness of any options or plans the State or consortium of county offices of education considered to maximize the use of the High-Speed Network. Moreover, the audit committee requested that the bureau determine the ownership rights to purchases made or services related to the High-Speed Network, including but not limited to intellectual property rights and how the State may exercise those rights. Finally, the bureau was asked to review and evaluate the laws, rules, and regulations significant to the objectives stated above.

Finding #1: From the beginning, state law has provided limited guidance and oversight for the High-Speed Network project.

Between fiscal years 2000–01 and 2003–04, the budget control language that appropriated more than \$93 million to the University of California (UC) for the High-Speed Network stated only that the purpose of the funding was for “expanding the Internet connectivity and network infrastructure

☑ *As of June 30, 2005, the Corporation for Education Network Initiatives in California (CENIC), the nonprofit that built and currently operates the network, held \$13.6 million in High-Speed Network funds and it expects to receive an additional \$3.6 million related to telecommunication discounts in fiscal year 2005–06. These funds are being used to keep the network operating in fiscal year 2005–06 or are held for future equipment replacement.*

☑ *Opportunities exist for ICOE to strengthen its agreements with CENIC to better protect the State's interests. Specifically, its agreements lack detailed service-level agreements, do not ensure that it retains ownership of tangible nonshared assets, and do not ensure that interest earned on advance payments made to CENIC or funds held by CENIC on its behalf accrue to the benefit of the High-Speed Network.*

for K-12.” This budget control language did not impose any more specific requirements or controls on the expenditure of these funds, nor did the Legislature enact legislation to further define the parameters of this project or what was meant by “Internet connectivity and network infrastructure for K-12.” Therefore, it is difficult to determine if the Legislature got what it sought in appropriating the funds.

In the Budget Act of 2004, the Legislature effectively transferred the responsibility for managing the Internet connectivity and infrastructure for K-12 educational institutions from UC to the California Department of Education (Education). Although the Legislature shifted control of this project from UC to Education and ultimately to the Imperial County Office of Education (ICOE), it still has not enacted legislation that clearly prescribes the goals to be accomplished using these funds. Until legislation is enacted, Education cannot be certain that the design and use of the High-Speed Network are achieving the Legislature’s desired outcomes.

We recommended that to ensure that the High-Speed Network meets its expectations, the Legislature should consider enacting legislation that prescribes the specific goals and outcomes it wants from the High-Speed Network project.

Legislative Action: Legislation enacted.

Legislation (Assembly Bill 1228) was enacted on September 28, 2006, that requires the Superintendent of Public Instruction (Superintendent) to, among other things, establish a High-Speed Network advisory board. The legislation requires the advisory board to meet quarterly and to recommend policy direction and broad operational guidance to the Superintendent and the Lead Education Agency responsible for administering the High-Speed Network on behalf of the Superintendent. The advisory board, in consultation with the Lead Education Agency, shall develop recommendations for measuring the success of the network, improving network oversight and monitoring, strengthening accountability, and optimizing the use of the High-Speed Network and its ability to improve education. The advisory board shall report its recommendations to the Legislature, the governor, the Department of Finance, the Legislative Analyst’s Office, and the Office of the Secretary for Education by March 1, 2007. It is the Legislature’s intent that the report identifies and recommends specific annual performance measures that should be established to assess the effectiveness of the network.

Finding #2: The current agreement between ICOE and the Corporation for Education Network Initiatives in California (CENIC) could be strengthened to better protect the State's interests.

UC contracted with CENIC to carry out the High-Speed Network project. After its selection as the lead agency in 2004, ICOE entered into agreements with CENIC under terms that were substantially similar to UC's agreement. The first was executed December 1, 2004, and the second was executed June 24, 2005, and became effective July 1, 2005, after the first agreement expired. Both agreements continue to lack service-level agreements. A service-level agreement describes the specific level of service a vendor is required to provide and typically provides a penalty if that level is not provided. The lack of a service-level agreement makes it difficult to monitor CENIC's performance. Additionally, the agreements fail to contain provisions that fully address the issue of the State's ownership of assets and that require CENIC to limit the use of interest earned on advance payments it receives related to the High-Speed Network.

We recommended that to ensure that the High-Speed Network is appropriately managed, Education should ensure that ICOE does the following:

- Develops a comprehensive and extensive set of service-level agreements based upon applications to be delivered via the High-Speed Network project.
- Requests that CENIC provide a master service-level agreement for its review.
- Includes the appropriate service-level agreements in its ongoing contracts with CENIC and other service providers for the High-Speed Network, using industry standards.

To ensure adequate protection of the State's interest in tangible, nonshared assets, we also recommended that Education should direct ICOE to transfer ownership of those types of assets to the State, to the extent that ICOE is able to bargain for the provision.

Finally, we recommended that to ensure that the interest earned on advance payments made to CENIC are used to benefit the High-Speed Network, Education should direct ICOE to amend its agreement with CENIC to stipulate the allowable use of the interest earned.

Education's Action: Corrective action taken.

Legislation (Assembly Bill 1228) was enacted on September 28, 2006, that requires the Lead Education Agency to enter into appropriate contracts for the provision of high-speed, high-bandwidth Internet connectivity, provided such contracts secure the necessary terms and conditions to adequately protect the interests of the State. The terms and conditions are to include, but are not limited to, all of the following:

- (a) Development of comprehensive service level agreements.
- (b) Protection of any ownership rights of intellectual property of the State that result due to its participation in the High-Speed Network.
- (c) Appropriate protection of state assets acquired due to its participation in the High-Speed Network.
- (d) Assurance that appropriate fee structures are in place.
- (e) Assurance that any interest earned on funds of the State for this purpose are used solely to the benefit of the project.

Education stated that ICOE has not entered into any agreements with service providers, and that, if and when it does, those agreements will include the appropriate service-level agreement terms. Education also stated that ICOE and CENIC have reached agreement on both a master-service level agreement and a service-level agreement for the services CENIC delivers to the High-Speed Network. Our review of the first amendment to the master agreement executed by ICOE and CENIC on January 30, 2007, found that the amendment does contain these provisions. Additionally, the amendment contains language that will require CENIC to transfer ownership of tangible non-shared assets to the State if CENIC ceases to serve K-12 entities. Finally, Education reported that fiscal year 2006–07 budget control language requires “any interest earned on state monies is used for operating the CalREN serving the UC, CSU, CCC, and K-12 segments. Any segment-specific cash reserves held by CENIC for an individual segment shall be held separately and accrue interest to that segment.” The amended agreement between ICOE and CENIC stipulates that interest earned be used in accordance with this budget control language.

Finding #3: CENIC’s charges for commodity Internet use could have been lower.

CENIC provides connections to Internet service providers, enabling High-Speed Network users to access the commodity Internet. Although the annual fees it charges for this access are lower than state negotiated pricing, it could further reduce the amount it charges users by consistently using funds left over from prior-year fees to offset the next year’s cost of providing the service.

CENIC’s commodity Internet service, which became effective during fiscal year 2002–03, has generated a surplus each year; as of June 30, 2005, this surplus was \$2.1 million. The commodity Internet service model approved by its board in June 2001 specifically states that the fixed rate charged per unit of commodity Internet usage should be set to enable CENIC to recover the entire cost of providing the services, should be reviewed semiannually, and should be adjusted downward if cost recovery is projected to be excessive. CENIC did use a portion of its fiscal year 2002–03 surplus revenues to reduce its per-unit rate in fiscal year 2003–04 by 38 percent. For fiscal year 2004–05, however, although CENIC reduced its per-unit rate by a further 25 percent compared to its fiscal year 2003–04 per-unit rate, it did not use the surplus revenues to do so. It achieved its reduction by reducing its estimated annual costs and increasing the minimum usage commitments for commodity Internet service for certain users. We believe that further reductions would have been possible if CENIC had also used a portion of the surplus.

We recommended that to ensure that CENIC’s per-unit rate for access to the commodity Internet is closer to its actual cost to provide the service, Education should require ICOE to amend its agreement with CENIC to stipulate that to the extent possible, CENIC should use its surplus Internet service program revenues from each year to offset the per-unit rate that it sets the following year. ICOE should also stipulate in its agreement that if CENIC is unable to apply the surplus revenue due to a change in its financial position, that CENIC should provide ICOE with documentation to support its inability to do so.

Education’s Action: Corrective action taken.

Education reported that ICOE is currently a participating member of CENIC’s Business Advisory Council and board. Additionally, K-12 representatives are participating members of CENIC’s audit and finance committees. Education believes that this participation on behalf of K-12 provides equal input (compared with other public segments participating in CENIC) into CENIC’s decisions regarding rates and the use of surplus revenues. Finally, the first amendment to the master

agreement executed by ICOE and CENIC indicates that for fiscal year 2006–07 CENIC now recovers the fixed portion of commodity Internet costs using a flat rate contribution by the participating entities. Consequently, CENIC was able to reduce its per-unit rate for the entities' actual usage of the commodity Internet from \$95 to \$29, a reduction of almost 70 percent.

Finding #4: CENIC has a portion of the High-Speed Network's funds in its consolidated equipment replacement account.

During its September 12, 2002 meeting, CENIC's board approved the following three action items related to the High-Speed Network funds held by CENIC for equipment replacement: (1) the creation of a consolidated designated equipment replacement account as part of its CalREN account, the transfer of \$5.7 million in High-Speed Network funds from an account designated solely for the High-Speed Network into this new account, and the transfer of future High-Speed Network equipment replacement funds into this new account; (2) the transfer of \$970,000 of the interest income in an account designated solely for the High-Speed Network into the consolidated designated equipment replacement account; and (3) the transfer of \$6 million from the consolidated designated equipment replacement account into a one-year certificate of deposit with a bank, the borrowing of \$6 million from the same bank, and the use of the certificate of deposit as collateral against the loan. According to CENIC's accounting records, on June 30, 2004, an additional \$1.5 million was placed into the consolidated designated equipment replacement reserve account using state appropriations for the High-Speed Network.

The board's decision to include the High-Speed Network's equipment replacement funds into a consolidated account appears inconsistent with CENIC's agreement with UC, which requires CENIC to set up and use a separate financial account for the High-Speed Network funds and to not use that account to hold or disperse any other funds. The purpose of establishing a separate financial account for the High-Speed Network funds is to ensure that these funds are being used to benefit the project. The transfer of these funds to CENIC's consolidated account makes it difficult to identify those funds belonging to the High-Speed Network.

Further, CENIC could not provide us with a technology refresh plan. An effective technology refresh plan establishes the points along the service life of a product or system at which it is optimal to change system components. Without a technology refresh plan, we do not believe CENIC can support its assertion that it needs the full \$7.2 million, or that only \$4.9 million represents funds for the replacement of equipment specific to the High-Speed Network.

Finally, although CENIC is holding \$7.2 million in High-Speed Network funds for equipment replacement, any interest earned on this money does not accrue to the benefit of the High-Speed Network. Specifically, its agreement with ICOE does not contain a provision that limits the use of any interest earned on state appropriations to the High-Speed Network. By including this provision in its agreement, ICOE can ensure that the project benefits directly from any interest earnings.

To ensure that High-Speed Network equipment replacement funds are used to benefit the K-12 education community, we recommended that Education should direct ICOE to request that CENIC reestablish a reserve for equipment replacement that is in an account solely for the High-Speed Network. Further, CENIC should consult with ICOE on the development of a technology refresh plan, which ICOE should use to establish its own equipment replacement funds for the High-Speed Network. Finally, ICOE should amend its agreement with CENIC to stipulate that interest earned on the funds held in the High-Speed Network's equipment replacement account accrues to the benefit of the High-Speed Network.

Education's Action: Corrective action taken.

Our review of ICOE's amended master agreement with CENIC found that it requires K-12 equipment replacement funds to be segregated into a separate account. Additionally, ICOE and CENIC developed a 2006–2009 technology refresh plan in January 2007 to address the appropriate use of the funds for the replacement of equipment specific to the High-Speed Network. Education stated that upon the advisory board's approval, and contingent upon available funding, the implementation of the plan will occur over two years and modifications will be made as necessary in response to industry changes. Finally, Education reported that the fiscal year 2006–07 budget control language requires that "any interest earned on state monies is used for operating the CalREN serving the UC, CSU, CCC, and K-12 segments. Any segment-specific cash reserves held by CENIC for an individual segment shall be held separately and accrue interest to that segment." The amended agreement between ICOE and CENIC stipulates the use of interest earned, including interest earned on funds held in an equipment replacement account, in accordance with this budget control language.

Finding #5: ICOE's agreement does not require CENIC to increase the amount that it holds on behalf of ICOE by any interest earned on funds related to E-rate or California Teleconnect Fund discounts.

In accordance with their contract executed on December 6, 2004, ICOE and CENIC plan to use unspent E-rate and California Teleconnect Fund discounts to continue the operation of the High-Speed Network in fiscal year 2005–06. The contract states, "To the extent that program revenue balances generated by E-rate and California Teleconnect fund discounts from fiscal year 2002–03, or prior fiscal years exist, such balances will be held by CENIC to help meet cash flow needs." The contract further stipulates, "Such funds will be held in trust by CENIC for the benefit of the High-Speed Network and will not be expended without advance consultation with ICOE." Finally, ICOE and CENIC agreed that any E-rate and California Teleconnect Fund discounts for fiscal year 2004–05 circuit expenditures received in that year shall be held by CENIC and applied against the network circuits, backbone fees, and related costs in fiscal year 2005–06.

E-rate—or, more precisely, the Schools and Libraries Universal Service Support Mechanism—is a federal program that provides discounts to assist most schools and libraries in the United States to obtain affordable telecommunications and Internet access. Eligible schools can receive discounts ranging from 20 percent to 90 percent. All customers eligible to receive E-rate discounts for telecommunication services can also receive discounts from the California Public Utilities Commission, via the California Teleconnect Fund program. The discounts are 50 percent and must be applied after deducting the E-rate discount.

As of December 2005, according to CENIC's estimate, a total of \$10 million was available for use toward the fiscal year 2005–06 High-Speed Network operational costs. However, ICOE's agreement does not require CENIC to increase the amount that it holds on behalf of ICOE by any interest earned on the funds. Until ICOE modifies its agreement with CENIC, the State will continue to lose the ability to use interest earnings to reduce High-Speed Network costs.

We recommended that to ensure that any interest earnings received for E-rate and California Teleconnect Fund discounts accrue to the benefit of the High-Speed Network, Education should direct ICOE to amend its agreement and require CENIC to credit any interest earnings to the High-Speed Network project. Additionally, ICOE should require CENIC to provide a detailed accounting of E-rate and California Teleconnect Fund discounts so that it can verify that it received the appropriate amount of interest.

Education's Action: Corrective action taken.

Education reported that the fiscal year 2006–07 budget control language requires that “any interest earned on state monies be used for operating the CalREN serving the UC, CSU, CCC, and K-12 segments. Any segment-specific cash reserves held by CENIC for an individual segment shall be held separately and accrue interest to that segment.” The amended agreement between ICOE and CENIC stipulates the use of interest earned, including interest earned on E-rate and California Teleconnect Fund discounts, in accordance with this budget control language.

The amended master agreement requires CENIC to keep detailed records and to work closely with ICOE to monitor and track revenues and interest related to E-rate and California Teleconnect Fund discounts. Further, Education stated that if CENIC holds E-rate and California Teleconnect Fund discounts on behalf of K-12 in the future, periodic audits will be conducted to ensure the appropriate amounts of revenue are received and that, if such funds are retained by CENIC instead of paid over immediately to ICOE, appropriate interest is credited to K-12.

Finding #6: Although ICOE has worked to increase awareness of content it postponed awarding grant funds to develop content hosted on the High-Speed Network.

As lead education agency for the High-Speed Network, ICOE is responsible for technical oversight of the project, financial and administrative services, collaboration and coordination with other agencies and projects, and the advancement of network uses.

ICOE currently provides certain videoconferencing services at no cost to schools in California that are connected to the High-Speed Network. Videoconferencing is a tool that connects two or more locations with interactive voice and video. Additionally, in November 2004, ICOE began operating its own High-Speed Network Web site that includes links and information related to learning resources, such as the UC College Preparatory Initiative, and the California Digital Library. Moreover, ICOE's application coordination committee (application committee) is evaluating some methods related to linking with academic content, from various sources, that are aligned with the California content standards for placement on the High-Speed Network. For example, ICOE plans to identify and work with academic content providers to develop strategies for placing their content on the network.

ICOE created the Advancing Network Uses Grant program to support the development and sharing of applications and learning resources that meet the critical needs of California's schools and that make good use of the benefits of the High-Speed Network. However, ICOE did not award the grant funds of roughly \$650,000 in fiscal year 2005–06 as planned because it was uncertain as to whether the High-Speed Network would receive state funding in fiscal year 2005–06. According to ICOE, should state funds be appropriated in the future, and provided enough funding exists, it will award funds to the winners of that previous grant competition.

Finally, both CENIC and ICOE have made an effort to increase the usage of the High-Speed Network by assisting schools and school districts in connecting their LANs to existing node sites, which is commonly referred to as the last mile connection. However, in June 2005, given the uncertainty of the fiscal year 2005–06 budget, ICOE decided to table the awarding of \$1.1 million in last mile grants. ICOE estimated that it would cost roughly \$10 million to connect the remaining roughly 500 schools and school districts without any connection. It further stated that when funds become available, it would determine how best to proceed with the last mile grant program.

We recommended that to maximize the benefits of the High-Speed Network, Education should ensure that ICOE does the following:

- Continue its efforts to implement statewide videoconferencing.
- Continue the efforts of its application committee to identify academic content and application uses to place on the High-Speed Network.
- Continue with its plans to fund the Advancing Network Uses Grant applicants.
- Proceed with its last mile grant program.

Education's Action: Partial corrective action taken.

Education stated that ICOE has implemented a fully functional statewide videoconferencing system. Education also stated that the application committee continues to assist the High-Speed Network project staff in identifying applications and Web-based resources to support teaching and learning.

Finally, Education stated that the Budget Act of 2006 did not include funding for the Advancing Network Uses Grant and last mile grant program, but it will continue to work with resource providers and to seek ways to cost-effectively connect schools and districts across the State. During fiscal year 2006–07, the High-Speed Network project staff collected up-to-date information on the state of connectivity in California. If resources are available, the project staff will be able to prioritize location for the last mile grant program.

Finding #7: ICOE is in the early stages of developing a suitable plan for evaluating the success of the High-Speed Network.

Although Education requires administrators of certain education technology projects to work with ICOE on the High-Speed Network project, ICOE is in the early stages of developing a method to evaluate the statewide success of the High-Speed Network. According to ICOE, it is working closely with Education to obtain existing data from certain education technology projects and is evaluating these data to determine if they will assist it in tracking the types of applications the K-12 education community is using. Establishing a method to track K-12 network use is key to measuring the success of the High-Speed Network project.

Until ICOE establishes a process to measure the success of the High-Speed Network that includes tracking the type of applications the K-12 education community is using, and the Legislature establishes clear goals for the program, it is difficult to determine whether the network has achieved such goals.

We recommended that Education should ensure that ICOE develops a process to measure the success of the High-Speed Network.

Education's Action: Partial corrective action taken.

Education stated that it and ICOE are collaborating with various stakeholders to assess the impact technology has on education. Specifically, they are coordinating the use of information collected from certain education technology projects and will continue to work toward developing analyses

and reports as well as modifying data collection tools as appropriate. Additionally, ICOE contracted with an evaluator who will assist it with the development of an evaluation framework with specific goals and objectives for the program. Education expects to finalize the framework and present it to the advisory board in February 2007.

