Year 2000 Fact Sheet:  
Campus Basics

**Background**

Duke University has been relying for years on central computer systems to process its student records, employee payroll and benefits, and to keep track of financial records and purchases. The university operates its own telephone and paging system. The entire campus is connected by a sophisticated fiber-optic communications network. Duke has its own power distribution system but relies on Duke Power Co. to provide the electricity. The university uses water provided by the city and produces its own steam for heat and hot water.

**Y2K Status**

Duke is spending about $42 million to install up-to-date replacements for the central administrative computer systems that have long processed its student records, employee payroll and benefits, and university finance and purchasing, and that modernization will also help reduce the impact of Y2K.

The old “legacy” systems, a set of large mainframes that traditionally ran in the middle of the night and produced printouts, are being replaced with much more flexible tools that individual administrators can much more easily communicate with using their desktop PCs. While the old computers use COBOL software programs that were not designed to process date-related information from the next century, their replacement hardware and software will do so automatically.

That does not mean that Duke’s central administrative computers will be unaffected by Y2K-related dating problems. Installing new “PeopleSoft” hardware and software to process student records, and new “SAP” software systems for the larger task of payroll and purchase processing, is a multi-year job that will not be finished by 2000.

So Duke has also been modifying those legacy systems that cannot be replaced before next January. In those cases, programmers have been busily altering old codes to comply with the 21st century. The term computer administrators use for these fixes is “remediation.”
One clever remediation technique, called “windowing,” avoids the time consuming task of completely changing the software codes to accommodate four-digit dates in lieu of the old and inadequate COBOL software’s two. Programmers can leave the two-digit dates in place as long as they add new logic instructions that specify that low numbers always refer to the next century. That means that “03,” for example, always refers to 2003 and not 1903. This admitted shortcut will give Duke enough time to replace and fully test the balance of its old legacy systems with software that processes four digit dates.

Duke’s records and payroll software has been completely modified for Y2K, and the systems had been successfully tested by early August, according to Neal Paris, the Y2K compliance officer for the university’s main campus.

In addition, Duke has an extensive telephone system with 24,000 lines and 27,000 telephone sets, a paging system with 5,500 pagers, 1,300 cellular phones and 650 two-way radios plus a central voice mail answering service. The university’s telephone system, which operates independently of outside phone company networks, has also been upgraded to be Y2K compliant, Paris said. That includes both basic switching and central voice mail answering services. One remaining telephone service, Duke’s paging system, has been replaced with Y2K-ready systems.

DukeNet, the university’s advanced fiber-optic cable, telephone and computer network, has several miles of cable linking campus buildings and a similar medical center network. The routers, switches and other electronic equipment linking the system have been tested and are Y2K-compliant.

Duke relies on the Duke Power Co. to provide the campus’s electricity and Duke officials have been assured of a stable power supply on Jan. 1. If there are problems, Duke Hospital and Durham Regional Hospital have top priority for restoration. The hospitals also have backup power supplies and the Duke medical center has 32 generators to provide electricity to critical functions.

“"We always think in terms of 'What would happen if?,’” said Robert Guerry, director of the medical center Department of Engineering and Operations. “We create redundant systems as part of our standard disaster plan. Y2K is a bit different because we don't know for sure what will happen. But nonetheless, we intend to be prepared. We even have backup plans if some of the generators fail to work."

Duke officials also have high confidence in the university’s water supply, which comes from the Durham City Water Plant. Duke officials toured the plant in August and “the information we obtained gave us even more assurance that water should not be an area of concern,” said Don Rust, assistant director medical center engineering and operations. Durham has the ability to supply water from either of two plants or reservoirs and has a redundant feed to Duke. Water trucks are being lined up in case everything else failed.

The university’s steam plant provides heat and hot water to the entire Duke community and sterilization to the medical center. As long as water is available, officials expect the steam plant to function because it can burn coal, natural gas or fuel oil.

The university’s Y2K web site is located at <http://www.oit.duke.edu/docs/y2k/y2k.html>.

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