

July 14, 2011

MIN YAO  
Assistant Vice Chancellor  
Administrative Computing and Telecommunications  
0928

***Subject: Next Generation Network Recharges  
Audit & Management Advisory Services Project 2011-07***

The final audit report for Next Generation Network Recharges, Audit Report 2011-07, is attached. We would like to thank all members of the department for their cooperation and assistance during the audit.

UC wide policy requires that all draft audit reports, both printed (copied on tan paper for ease of identification) and electronic, be destroyed after the final report is issued. Because draft reports can contain sensitive information, please either return these documents to AMAS personnel or destroy them at this time.

Stephanie Burke  
Assistant Vice Chancellor  
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Attachment

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**AUDIT & MANAGEMENT ADVISORY SERVICES**



University of California  
**San Diego**

**Next Generation Network Recharges**

**July 2011**

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Project Number: 2011-07

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**I. Background**

Audit & Management Advisory Services has completed a review of the UCSD Next Generation Network (NGN) recharges as a component of the annual FY 2010/11 audit plan. This report summarizes the results of our review.

The UCSD NGN was designed to address the evolving requirements of the UCSD user community for state-of-the-art technology in the form of an enhanced data and voice network to support campus needs and growth. The NGN funding model was developed over three and half years of detailed analysis, projections, and technical and financial study through the combined efforts of Administrative Computing & Telecommunications (ACT), Academic Computing Services (now Academic Computing and Media Services) the Academic Senate, departmental administrators, and others. The impetus for developing the NGN funding model was to ensure sufficient funding to sustain the campus network, to equitably balance its financial impact on departments and funding sources, and to establish a stable, simple, and predictable charging mechanism which recognizes the unification of voice and data technologies.

The NGN funding model is based on a service center recharge mechanism that allocates NGN costs to benefiting departments by means of flat monthly access charges on a per Communication User basis. Under this system, a "Communication User" is defined by an employee's title code. Most University employees are classified as Communication Users since they are expected to make use of the telephone and/or data network as part of their daily activity. However some employee title codes, such as Gardener, which generally would not be expected to use the network to a significant extent, are excluded from the NGN recharge billings. The NGN recharge billing rates also take into account an employee's work location. Employees working at off-campus locations are charged at lower NGN rates because they generally receive a smaller set of services. In 2001, PricewaterhouseCoopers completed an assessment for the proposed NGN model and concluded that the NGN allocation model complied with applicable statutes and regulations. NGN recharge rates have also been evaluated annually by the Recharge Rate Review Committee, and found to be in compliance with campus policy.

The Administrative Computing and Telecommunications Policy Committee (ACTPC) advises the Vice Chancellor – External and Business Affairs on the development of UCSD's ACT implementation efforts and directions. The ACTPC promotes and sustains ACT's responsiveness to the campus community in terms of manifested needs for access to core data systems maintained on UCSD's mainframe computer; equity of access to core data systems; development of ad hoc reporting systems; and enhancement of the telecommunications data, voice, and video networks. ACTPC also reviews and approves implementation policies, including rebate policy, upgrade priority planning policy, Communication User policy, and policy defining high bandwidth/excessive service.

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The NGN Advisory Committee also advises the Vice Chancellor – External and Business Affairs and the interim associate Vice Chancellor – Academic Information Technology. This committee develops recommendations on high-level policies governing the operational and financial support for NGN. It also periodically reviews the utilization of the network, financing of the network, and major changes to the network configuration and support.

A Communication User Committee consisting of representatives from all Vice Chancellor areas conducts regular reviews of the access needs and benefits of all title codes and determines what title codes should be classified as communication users. For the NGN2 period, there were approximately 26,000 Communication Users.

UCSD implemented the first phase of NGN effective July 1, 2001 with rates fixed for five years. Initially the monthly NGN user fees were supplemented by additional financial support from each Vice Chancellor area. NGN2, the second phase of NGN, began July 1, 2006 and extended to June 30, 2011. Under NGN2, recharge rates were increased due to the elimination of the Vice Chancellor subsidies. Additional wireless services, staff, equipment, and building backbone nodes needed for network security and domestic long distance services were also incorporated into the network during the NGN2 phase.

A similar NGN recharge methodology was applied for NGN3, the third phase of the NGN, which begins July 1, 2011 and extends to June 30, 2016. Significant changes under NGN3 will include continuing wireless services enhancement for a wide variety of wireless devices, security tools migration, bandwidth improvement, cloud computing support, high-level access authentication, unlimited international long-distance calling for ten of the most frequently called foreign countries, slight increases to recharge rates for general cost increases, and communication user reclassifications for postdoctoral students and certain title codes.

NGN costs include capital improvements, Internet connectivity costs, and annual operations and maintenance. The initial NGN capital improvements and Internet connectivity costs were funded internally from other funding sources at that time only. Annual NGN2 operating costs were generally recovered from users.

ACT Finance Team automated the monthly NGN Communication User fees billing process and recharges are billed directly to departments' indexes based on the employee's title code and payroll allocation percentages for on-campus, off-campus, and Medical Center users. Monthly recharge fee entries are made for graduate students, undergraduate students living in residence halls, and computer labs which are based on the number of users provided by the departments or Vice Chancellor areas every month or quarter.

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**II. Audit Objective, Scope, and Procedures**

The objectives of our audit were to evaluate the reasonableness of the NGN recharge methodology, the effectiveness of recharge practices, and compliance with University policies.

In order to achieve our objectives, we performed the following procedures:

- Reviewed campus policy (PPM 300-40 Accounting Procedures) and BLINK guideline for Service Enterprise Activities Policy;
- Reviewed ACT Telecommunications Strategic Plan (March 2010), Accomplishments for 2010, Plans & Goals for 2011 Report, and Instructions for NGN Month End Billing;
- Interviewed the ACT Finance Administration & Helpdesk Director and Manager to gain an understanding of NGN recharge methodology;
- Reviewed NGN Federal rebate worksheets, journal entries, and surplus transfers (FY2009/10) prepared by General Accounting staff;
- Validated approvals for NGN2 and NGN3 recharge rates from the Recharge Rate Review Committee and General Accounting;
- Evaluated NGN2 and NGN3 recharge rate assumptions and methodology;
- Reviewed NGN reserve balances for compliance with PPM 300-40;
- Analyzed NGN recharge revenues and expenditures trends for FY2000/01 through FY2009/10 for the main fund groups (66085A and 76917A);
- Conducted detailed transaction testing for selected expenditures from NGN cost pools of salary and benefits; equipment and maintenance; other costs; and depreciation schedules;
- Validated NGN recharge billings for a sample of 30 randomly selected Communications Users (10 each from September 2010, December 2010, and March 2011) and verified with payroll distribution percentages on the Distribution of Payroll Expenditure reports; and
- Reconciled NGN recharge revenues, expenses, and reserves to IFIS fund balances for FY2009/10.

**III. Conclusion**

Based on our review, we concluded that the NGN recharge methodology was reasonable and was consistent with ACT's major business lines and relevant technologies supporting campus needs and growth. We also concluded that the recharge rates were accurately calculated and charged based on defined Communication Users' title codes and location codes. The recharge costs were well documented and accurately reported. NGN labor

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costs were based on the budgeted salary distributions for the employees working on the NGN associated tasks. The NGN non-personnel costs were charged based on expenses of approved NGN project plans, and were adequately supported by documentation.

NGN recharge processes and financial monitoring systems in use were generally effective and efficient, and provided the necessary oversight and reconciliation to ensure proper recharge rates and transfers to reserve accounts. The NGN recharge practices were in compliance with campus policy PPM 300-40.

**IV. Supporting Comments**

NGN Recharge Methodology

The original NGN financial model was based on the average number of projected communication users, revenues and expenses over a five-year period.

NGN2 cost pools included the following main categories: voice, ACT data, wireless, backbone wiring, domestic calling, equipment and maintenance. Estimated costs were calculated based on the salary and benefits; equipment and maintenance; connectivity; and supplies. Average communication users were projected and applied to the recharge groups by on campus, off campus, Medical Center, labs, and students.

NGN2 Recharge Rates	FY06/07	FY07/08	FY08/09	FY09/10 (1)	FY10/11 (2)	FY10/11 Projected CU
On Campus	\$70	\$74	\$79	\$85	\$85	9,196
Off Campus	\$29	\$31	\$33	\$36	\$36	745
Med Center	\$22	\$23	\$25	\$27	\$27	2,515
ResNet (3)	\$12	\$18	\$19	\$21	\$21	7,576
Grad Student	\$21	\$22	\$24	\$26	\$26	1,750 (4)
Labs	\$18	\$19	\$20	\$22	\$22	2,265

1. Recharge rates were increased in FY2009/10 as compared to the approved recharge rate that was primarily due to Vice Chancellor assessments reductions.
2. Recharge rates for FY2010/11 remained the same rates as FY2009/10 due to ACT payroll savings from the furlough program which reduced NGN expenses.
3. Recharge rate refers to undergraduate students living in campus residence halls.
4. Recharge rate assumes graduate students are paid at a 30% level by Vice Chancellor's as an element of instruction.

Assumptions for cost projection include merits, retirement, inflation, general liability, number of communication users, leave usage, and salary savings. We reviewed the reasonableness of the budget assumptions, and recalculated projected costs for accuracy.

The ACT Finance Team monitors monthly NGN overall revenues and expenditures and reconciles the NGN budget annually. AMAS reconciled FY2009/10 operating fund balances with the NGN reports and reviewed Federal rebate calculation and recording.

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NGN Oversight and Recharge Rates Approval

Our review noted that the NGN Communication User Committee conducted a web survey to identify title codes that require further discussion and exploration to ensure the proper CU classification for NGN3. Title codes for academic and medical areas were reviewed to ensure these employees make use of voice and data services as part of their employment.

The NGN Advisory Committee reviewed multiple proforma NGN3 proposals with different recharge rates scenarios to ensure proper NGN funding sources. The resulting recommended NGN3 recharge rates were submitted to the campus Recharge Rate Review Committee and General Accounting for review and approval. Annual update of NGN funding revenues and costs were also reviewed by the NGN Advisory Committee.

We validated that the NGN3 recharge rates were reviewed and approved by the campus Recharge Rate Review Committee and General Accounting.

Testing of NGN2 Recharges and Cost Pools

Our detailed testing focused on the operating fund (66085A) and reserve fund (76917A). Fund balances were reconciled with the NGN financial reports that were presented to the NGN Advisory Committee. For the first four years of NGN2 (FY2006/07 thru FY 2009/10), total accumulated revenues and expenditures from the operating fund were \$54,221,560 and \$52,346,588 respectively.

For the NGN recharges, on a sample basis, we validated 30 Communication User charges among three different months to employee's Distribution of Payroll Expenditures reports to ensure proper NGN rates charges and applicable percentages. Recharges for the Graduate Students, ResNet, and Lab were verified thru Journal Voucher Detail Reports. The approved NGN recharge rates were properly calculated and assessed, and recharge fees agreed to the payroll distribution percentages.

For the NGN cost pool, we verified salary charges to the budgeted personnel allocation by index and payroll costs. Non-personnel costs were traced to supporting invoices, purchase orders, or other documentation for selected transactions. No exceptions were noted.

We also reconciled total NGN recharges and expenditures to corresponding fund summaries. Consequently, we concluded that NGN recharges and expenditures were properly captured and reported.

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Continuous Planned Projects Prioritizing and Cost Monitoring

As the campus network infrastructure continues to evolve over time, NGN priorities and allocation methodologies will be reviewed periodically in order to meet budgeted resources and NGN objectives. This will necessitate managing costs effectively while project cost compositions and funding levels change. Continuous monitoring of NGN annual cost estimates, Communication User classifications, recharge rates, surplus, and cost allocations are planned to ensure distributions are equitable and costs incurred in like circumstances are treated in the same manner.