

**North Carolina Local E-Government Utilization Project
External Evaluation Report**

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North Carolina Local E-Government Utilization Program (LEG-UP) Project Final Evaluation

Executive Summary

This project, involving some 55 rural local governments in North Carolina, was planned and administered by the e-North Carolina Authority (e-NC Authority). The University of North Carolina at Chapel Hill (UNC-CH), Center for Public Technology was a partner organization, responsible for providing training, and some technical assistance to participating local governments. The project began in January 2003 and ended September 30, 2005. There were two phases (and cohorts). Phase I local governments were selected in early spring 2003 and developed their projects for completion by April 2004. Phase II local governments were selected in early spring 2004 and were to complete their projects by April 2005. In the spring of 2005 the e-NC Authority requested and was given a six month no-cost extension, through September 2005.

The major objectives of the project were to help make local government more efficient in the provision of services, increase the IT capacity of local governments in North Carolina, to improve services provided to the public by making it more convenient for citizens to obtain information from, and conduct transactions with local government, stimulate local economic development, and build collaborative and mentoring relationships between local governments selected for LEG-UP and other local governments nearby.

By any reasonable set of measures, the North Carolina LEG-UP project was highly successful in carrying out the planned activities. The large majority of the 27 milestones identified at the start of the project were met either on time, or at least within 60 days. The six month extension was needed to allow some of the local governments that had experienced delays in completing their projects to do so. In some cases the reasons for the delays were beyond the control of the participating governments because of severe weather. The training sessions early in each phase received excellent evaluations from attending local government staff. The quality of assistance and problem-solving provided to local governments by staff of UNC-CH Center for Public Technology and the e-NC Authority were also highly rated.

Based upon a critical assessment of the quality and features of each local government's web site 'before' and 'after' the LEG-UP project, there was a notable improvement in ease of access and navigation, professional appearance, transactional applications, and other features in all but a handful of cases.

By the project's end, nineteen of the Phase I local governments had successfully completed their projects with the applications fully operational. Seven of the local governments had not yet completed their projects, but five of these were part of a single

collaborative project. All five were very small municipalities with small staffs and limited IT capacity. Of the 29 Phase II local governments, 22 had successfully completed their projects and their applications were fully operational. One had withdrawn, and six were still working on completing their projects.

The impacts of LEG-UP were assessed using information gained from a survey of LEG-UP project directors and a sample survey of citizens in selected LEG-UP jurisdictions, as well as information gained from interviews of local officials and site visits. Of the six types of impacts gauged, there was evidence that four were substantial – increases in local government efficiency, increases in local government IT capacity, improvements in the quality of services, and time and/or cost savings to citizens – in those areas where the projects and applications were successfully completed and put into operation.

There was only some limited anecdotal evidence about increases in local economic development attributable to LEG-UP. We believe that it is too soon for any measurable economic development to occur at the time of this evaluation. But we expect future gains in economic activity that otherwise would not have occurred, due to enhanced local government IT capacity that improved the efficiency of local government and the convenience and quality of services provided to businesses.

The intended impact of LEG-UP local governments entering into mentoring relationships with nearby non-LEG-UP local governments (and probably having a lower IT capacity) was not generally realized. We believe this was due to most LEG-UP local governments needing to focus their efforts on completing their own projects during the grant period. A number of the participating LEG-UP local governments commented they wish to assist neighboring local governments improve their e-government services, and our judgment is that this will occur in the future in a number of cases.

The critical factors we have identified for successful completion of the projects and substantial positive impacts include: (1) a minimal threshold of local government IT capacity at the start of the project, including at least one skilled and experienced IT person on staff for the duration of the project; (2) a county or city manager, or elected official, committed to the project and committed to providing sufficient resources to see the project to completion; (3) for those local governments that need a vendor to develop their software, a choice of vendor that will meet its contractual responsibilities. This may mean more careful screening by the administering organization and/or additional training for local governments becoming ‘smart’ consumers of vendor services. Finally, (4) it may be wise to avoid collaborative projects with a large number of local government partners, particularly if they have not previously worked together successfully.

North Carolina Local E-Government Utilization Program (LEG-UP) Project Final Evaluation

I. Introduction

The North Carolina LEG-UP project began in February 2003 and ended September 30, 2005. The project was designed and administered by the E-North Carolina Authority, in conjunction with the University of North Carolina at Chapel Hill Center for Public Technology.

The principal purposes of this program were (1) to develop, test, and train over 50 local governments in North Carolina the application of web-based IT metric tools, which can help local governments select and implement new IT that will improve the delivery of local government services to citizens; (2) assist local governments in North Carolina to develop broadband-based effective, affordable, and sustainable web sites as platforms for local e-government and regional collaborations; and (3) assist local governments in North Carolina to obtain and deliver interactive, transactional applications that meet the needs and further the goals of their communities.

The program worked by training local government staff in various IT skills and competencies, providing funding for local governments to purchase the necessary hardware and software (and in some cases the services of vendors), to be able to deliver effective e-government services. Following the training the E-NC Authority and the UNC Center for Public technology were to provide technical assistance to local governments in their implementation of their chosen projects. Local governments were selected competitively in two phases. The selection of Phase I local governments was conducted in February 2003 and training began in March 2003. Phase I ended one year later in the spring of 2004. Phase II local governments were selected in March 2004.

This report serves as the final, external evaluation of the North Carolina LEG-UP project. As stipulated in the project proposal, the evaluation consists of a process evaluation and an impact, or outcomes, evaluation. The process evaluation focuses on the development and implementation of the local government websites and other transactional application features listed in the local governments' proposals to the e-NC Authority, and the extent to which the key milestones were accomplished on schedule by the e-NC Authority and the various local governments. The impact evaluation will attempt to answer the question of, "What difference has the project made to local government performance and to end users of e-government services?"

Various data and evaluation tools were used for the evaluation, including: (1) the quarterly reports submitted by the e-NC Authority to TOPS; (2) "before" and "after" assessments of the quality of local government websites; (3) a questionnaire sent to local government IT directors near the end of the project in late spring 2005; (4) a sample

survey of citizens in selected LEG-UP local government project areas; and (5) case studies based upon on-site visits at two of the LEG-UP local governments. Earlier plans for the external evaluation of this project had included a pretest sample survey of citizens in selected LEG-UP project areas, but this survey proved to be infeasible because of problems related to low rates of return. The TOPS project manager was informed about these problems at the time and permission was granted to alter the evaluation plan.

This report is organized as follows. Following the introduction, results of the process evaluation is reported. The next section discusses the results of the impact evaluation. The report concludes with appendices that provide more detail on various dimensions of the evaluation.

II. LEG-UP Process Evaluation

A. An Assessment of Completion of Milestones

The project began in January 2003 and finished on September 30, 2005. The original date for the completion of the project was April 2005. In the spring of 2005 the E-NC Authority asked for, and was granted a six month extension to allow more time for a small number of local governments to complete their projects (discussed more below). This section of the report documents the extent to which the 27 milestones listed in the work plan of the original proposal to TOPS were completed and implemented according to schedule. It also includes an assessment of the extent to which each of the local governments completed the particular projects that they proposed to the E-NC Authority. In the cases of non-completion or long delays, we provide our best assessment of the reasons.

January 2003-June 2003

The first two quarters of the project focused on the development of training materials and decision models, selection of Phase I local governments, collection of data on baseline IT capacity for Phase I local governments, and implementation of training for the selected local governments. These elements were implemented smoothly and on-time, with the exception of one local government training session, which was delayed by one month. The training was delayed to combine two related types of training on a single date. This decision was based upon an understanding that some of the local governments, which were starting with relatively low IT capacity, would be better able to absorb the materials when they were integrated.

Thirty two local governments were selected for Phase I: six counties, nine municipalities, and six county-city collaborations that involved six counties and eleven municipalities. The local governments selected were not necessarily those with the highest level of IT capacity, as the e-NC project staff wished to use the selected project to test whether the starting level of capacity made a significant difference in meeting the goals of the project. Of the 32 local governments selected, all but one decided to commit to the project. Subsequently four local governments withdrew from the program. Of these, two cities were asked to withdraw during the third quarter after failing to meet several deadlines for submitting a web site development work plan. A county that was a tentative partner in a county-city collaboration voluntarily withdrew after the city was asked to withdraw, citing that the project was not a wise course of action at the time. One additional county also withdrew during the third quarter upon advice from staff of the UNC-CH Center for Public Technology due to key IT staff having just been hired and who were not yet “up to speed”. This county was encouraged by the e-NC Authority project team to apply for Phase II. All but one of the remaining 28 local governments met the deadline for submitting their work plans on time. The exception was given an extension of one week and that deadline was met.

July 2003-December 2003

During the second half of the first year, the project remained mostly on target, but with several notable exceptions. Some local governments were delayed by local personnel problems, and others were delayed by severe weather. Of those affected by personnel problems, several of the smallest local governments with only one IT staff member needed a larger amount of hands-on technical assistance and training than the e-NC Authority project team had anticipated. The e-NC Authority and the UNC-CH Center for Public Technology project team were responsive to the needs of these local governments and arranged to deliver extra on-site training and assistance, but some milestones were delayed in being met. The problem of a small and inexperienced IT staff in some Phase I local governments was compounded in some cases by turnover in their IT director. Stability of qualified IT staff appears to be a critical success factor.

During September 2003 Hurricane Isabel damaged the IT infrastructure in eastern North Carolina where there were seven Phase I local governments. Severe weather damages coupled with the shift of local governments' efforts to disaster relief resulted in some minor delays – up to two months – of some of these local governments in meeting deadlines.

A third set of issues that emerged during this period, causing delays, were difficulties in gaining high speed line connections incompatibility of pre-existing IT technology such as LANs, and the requirements for newer computers that would provide links to the internet. Again, the project team at e-NC Authority and the UNC-CH Center for Public technology responded quickly with assistance to minimize the delays in implementing the affected local government projects, but the problems highlight the importance of preparing local governments in advance to be able to better plan for compatible infrastructure, networks and hardware in order to introduce new IT technology.

January 2004-June 2004

During the first two quarters of 2004, local governments were selected for Phase II and their projects were launched, and Phase I local governments were scheduled to have completed the implementation of their respective projects. Of the Phase I projects, approximately one-half were completed, while one-third had the interactive web site component completed and the transactional application in the process of becoming operational. Five of the projects, however, were stalled. Reasons were: chronic lack of knowledge and skills among local personnel; a high level of complexity of the project, often involving having to overcome incompatibility in systems across multiple departments; and problems with vendors under contract to several of the local governments.

Applications for Phase II were submitted by forty four local governments. Twenty eight – eight municipalities and 20 counties were selected. Four of the counties

selected were intending to work closely in collaboration with municipalities. Several of the training events for Phase II participants were moved ahead of their original schedule in order to expedite website development.

July-December 2004

The third and fourth quarter of 2004 were devoted to the Phase II local governments developing their projects and the completion of all but one of the Phase I projects. The one exception was the collaborative project of one county and five of its municipalities. While many of the Phase II projects were on schedule, a number were delayed by several independent factors. These included severe weather in the western part of the state that resulted in serious flooding damage. The subsequent disaster relief efforts diverted the attention of a number of the local governments in the western mountains away from the development of their e-government projects. Another factor was key staff turnover, including the loss of the project “champion”, often the IT director. This continues to be a particular problem in the smallest municipalities and counties, where there is not much depth in expertise and capacity.

All Phase I local governments, with the exception noted above, successfully completed their projects and were fully operational. The exceptional case stemmed largely from problems with the original vendor. The contract with this vendor was cancelled after repeated non-compliance and a contract with a new vendor was signed.

Finally, the external evaluation was hampered by unanticipated difficulties with the administration of a telephone-based survey of citizens in selected LEG-UP project areas. After successful pre-testing of the survey instrument, additional staff was hired to conduct telephone surveys of a random sample of households with listed phone numbers. The response rate in the first two areas proved to be very low, in part because of the recently enacted “do not call policy”, and a decision was made to discontinue the survey. This resulted in not having a “baseline” of data on the utilization and valuation of local e-government services among citizens in Phase II areas. After consulting with TOPS staff in Washington, D.C., the project team and the external evaluator decided to redesign the administration of the instrument so that the questionnaire would be sent out with utility bills to a random sample of households in selected LEG-UP local government areas. But because of the cycle of the project, the reconsideration of this survey meant that the instrument would be used only as an “after”, or posttest measure of the LEG-UP project’s impact.

January-June 2005

During the first two quarters of 2005, marking two years since the project began, a decision was made by the e-NC Authority to ask TOPS for a six month no-cost extension of the project to September 30. The reason for the extension was to allow some of the local governments that had been slowed by severe weather or vendor problems, to complete and put into operation their projects.

In the case of the one Phase I collaborative county-municipality that had not completed its project on schedule, the e-NC Authority and UNC-CH Center for Public Technology team devoted considerable time and effort to providing customized technical assistance, consultation, and monitoring of vendor performance to ensure that the project would be successfully completed by the end of the extended grant period.

Of the 26 Phase II local governments, eleven were experiencing problems and/or significant implementation delays as of February 2005, the original date for completion of Phase II projects. Of these, two were delayed by serious and extensive flooding; two local governments had problems of non-compliance by original vendors and had had to switch to another vendor; three were hampered by incompatible software or hardware and turnover of key staff; and another three local government projects were, in hindsight, too complex and ambitious for the length of time of the budgeted. The one remaining local government that was far from meeting the deadline for completion was due to a decision to change the transactional application rather late in the Phase II period.

By the end of the second quarter of 2005, eleven of the 29 Phase II local governments had completed their projects and were completely operational. Many of the remainder were nearly complete, or complete but had minor bugs to be worked out before becoming operational. Of the Phase I local government projects, all were fully operational except for the large single county- five town collaboration, and one other county's that was near completion.

July – September 2005

With the extension granted by TOPS, a number of the local governments whose projects had not been operational became so by the end of the grant period. Of the Phase I local governments, the large county-5 municipality collaboration had still not completed their project, nor had the one other county. But of the 29 Phase II local governments, 22 of the projects were complete and their transactional applications were fully operational. One local government withdrew as it could not recover from setbacks and delays caused by the severe flooding. Of the six remaining Phase II local governments, one was near completion, with a self-reported anticipated date for full operation of October 31. The progress of three others was not known because of their failure to submit final progress reports by the end of September. Two other local governments still had some serious problems to be resolved before their projects could be judged to be complete.

B. Comments from Local Government Project Directors

LEG-UP project directors were given the opportunity in a questionnaire sent to them at the conclusion of the project (October 2005) to make comments asked about the overall experience of participating in the LEG-UP project, including the management of the project by the e-NC Authority and UNC-CH Center for Public Technology staff. The following comments were sent back:

- “Positive experience and a much needed boost to our E-gov effort.”

- “On behalf of _____, we certainly appreciate the professionalism and efficiency of this project and the LEG-UP [e-NC Authority and UNC-CH] staff.”
- “Great people to work with on the LEG-UP team. Very professional and helpful staff. Several went above and beyond the call of duty to ensure we were able to pull this off with little to few problems. Our original project was not implemented, however the LEG-UP staff made every effort to accommodate our changes, ensuring success rather than failure . . .”
- “The LEG-UP project has greatly helped _____ to improve our web services, and in helping our public.”
- “Glad that our county had the opportunity to participate in the LEG-UP project. Project allowed the county to progress quicker in online-application use than we would have without the project . . . departments are [now] thinking about what they can use as an on-line application. For myself and others who participated in this project I would like to say, ‘Thank you’ for letting us be part of the project, as it has been a valuable learning experience.”
- “The project has been a great success and the e-NC Authority was very helpful during the process.”
- “Appreciate the opportunity to participate in the program.”
- “Thanks to everyone who was part of this process in helping _____ grow!”
- “LEG-UP has been a catalyst for doing what we knew we had wanted to do. The project gave us the resources, the support, the enthusiasm, and information on best practice.”

C. Critical Assessment of Local Government Web Sites

As part of the evaluation of the LEG-UP Project, the web sites of selected local governments participating in the project were assessed prior to the start of the project and then again in the summer 2005 by professional staff from the UNC-CH Center for Public Technology. The pretest and posttest assessments were conducted by the same individual.

The assessment covers features of the web site design – including its ease of navigation, professional appearance, whether it has: an index or search function, a privacy statement, contact information, a feedback form, and the types of interactive features – and then it looks at the transactional services offered, if any. The ease of navigation was measured on a 1 to 5 scale (5 being the best), and the professional appearance was also measured on the same 1 to 5 scale (5 being the best).

There were nine Phase I county governments and eight Phase II municipalities included in the assessment. We describe the results separately.

Table 1
Assessment of Phase I County Websites

<u>Local Government</u>	<u>Pretest</u>		<u>Posttest</u>	
	Navigational Ease	Appearance	Navigational Ease	Appearance
Alleghany Co.	2	2	3	3
Brunswick Co.	4	5	5	5
Caswell Co.	2	3	3	4
Columbus Co.	3	2		Did not work
Duplin Co.	2	3	5	5
Edgecombe Co.	2	2	4	5
Macon Co.	4	5	5	5
Montgomery Co.	No web site		Did not work	
Rutherford Co.	3	2	4	5

Of the nine Phase I counties, eight had operating websites just prior to the start of the LEG-UP project. Six of these were classified as ‘informational’ and two as ‘interactional’. The results of the posttest assessment classified four as ‘interactional’, three as ‘transactional’. Two of the web sites were not working at the time of they were assessed in the summer of 2005. At the pretest, three of the web sites had an index or search function, and seven had such functions at the posttest. None of the counties had a privacy statement in the pretest; three in the posttest assessment. Contact information had been provided by five of the county web sites in the pretest, and all seven counties that had operating websites had contact information at the posttest. Only two county web sites provided feedback forms in 2003, while six had them in the summer of 2005. The measure of overall ease of navigation increased from an average of 2.8 to 4.1 and the average measure of professional appearance increased from 3.0 to 4.6. In terms of transactional services offered, none of the nine counties offered any prior to Leg-UP, and five of the nine had transactional services at the end of the project.

Table 2
Assessment of Phase II Municipality Web Sites

<u>Local Government</u>	<u>Pretest</u>		<u>Posttest</u>	
	Navigational Ease	Appearance	Navigational Ease	Appearance
Benson	4	4	4	4
Boiling Springs	5	5	4	4

Drexel		No web site	5	5
Fletcher	3	3	4	4
Franklin	3	3	3	3
Lucama	3	2	4	4
Randleman	4	5	2	2

Of the eight Phase II municipalities whose web sites were assessed, six had been classified as ‘informational’ and one as interactive just prior to the selection for the LEG-UP project. One had no operating web site at all. By the summer of 2005, two of the web sites were classified as interactive and six as ‘transactional’, the most advanced. Only one of the municipalities had an index or search function at the beginning of LEG-UP, while four had such a function at the end. None of the municipalities’ web sites contained a privacy statement in early 2004, and only one of the eight had included a privacy statement by summer 2005. All but one of the web sites had started with contact information and that one had added it by project’s end. One of the eight web sites had a feedback form at the start of the project, and five at the end. Finally, none of the eight municipalities’ web sites offered any transactional services prior to LEG-UP, while six had transactional applications operational by summer 2005.

D. Overall Findings

The North Carolina LEG-UP project, designed and administered by the e-North Carolina Authority, was successfully implemented. The large majority of the milestones scheduled at the start of the project were met either on time or within 60 days. It was necessary, however, to extend the project and grant period by six months in order to give some of the local governments more time to complete and implement their projects. One major reason for the need for the extension was severe flooding caused by hurricanes and storms in the fall of 2004 that stopped ‘business as usual’ in much of western North Carolina.

As of September 30, 2005, the end of the grant period, nineteen of the Phase I local governments had completed and implemented their planned projects and were fully operational. Seven Phase I local governments had not completed their projects, but five of these were the municipalities within the large county/city collaborative project. With the county having completed its project, there is a good chance that progress for the constituent municipalities can be accelerated. Four of the local governments that originally were selected withdrew.

Of the Phase II local governments, 22 had completed and implemented their projects, and were fully operational. Six were not yet operational, and one withdrew within the last six months. Of the six that were not yet fully operational, two seemed to be very close to completion. The remaining four had not submitted final progress reports and attempts to reach them have been unsuccessful.

The e-NC Authority and UNC-CH Center of Public Technology have continued to provide ‘hands-on’ assistance to those who had not completed their projects. In general, both organizations have received high marks from the LEG-UP local governments in terms of their responsiveness to local problems and their provision of on-site technical assistance. The e-NC Authority perhaps underestimated the extent of the low capacity of some of the local governments early in the project, but ended up devoting allocating significantly more staff time than originally budgeted to help the struggling local governments ‘get up to speed’.

Critical Success Factors and Lessons Learned

We can identify several factors that led to the successful development and implementation of the local government projects. First, having at least *one experienced and skilled IT staff person for the duration of the project* was almost a necessity. The most successful local governments had more than one. Without such a person, several of the local governments had a difficult time getting started, or even deciding what projects to undertake and which would be feasible. Some of the smallest local governments saw its one staff person with the required skills leave during the project, and there was no one to take over. The services provided by the e-NC Authority and the UNC-CH Center for Public Technology can *not* serve as a substitute for a minimal level of starting IT capacity.

Second, having a high level appointed, such as the county or city manager or elected official in local government *committed to the project*, while not a necessity, seems to have made a difference. Several of the local governments that suffered problems experienced turnover in administration or the fiscal situation changed significantly. Building capacity takes resources, and the magnitude of the grants provided by LEG-UP was not sufficiently large to add new staff.

Third, choosing a *vendor that will meet its contractual obligations* is a necessity for those local governments that had little choice to work with a vendor because of inadequate in-house capacity. This may be easier said than done, but perhaps better screening of vendors by E-NC Authority staff might have avoided some of the problems and delays.

Fourth, it may be wise to *avoid too complicated collaborative projects* involving a large number of local governments. While there is merit in encouraging collaborative arrangements, there are inevitable transaction costs that can slow progress down and lead to failure to meet milestones. Sponsoring organization might consider selecting only those collaborative projects in which the partners have worked together successfully in the past, or can submit a realistic management plan for the implementation of the project.

III. Impact Evaluation Results

The hypothesized impacts of the LEG-UP project were to:

- Increase efficiency in the production and dissemination of information from local governments;
- Improve the capacity of local governments to provide needed services;
- Better meet the informational needs of citizens;
- Save time and out-of-pocket costs of citizens conducting business with their local governments;
- Stimulate local economic development;
- Promote collaboration and mentoring relationships between participating local governments and other local governments nearby.

Several methods and sources of evidence were utilized to estimate the extent to which the intended impacts were realized. These methods included a survey of LEG-UP project directors, a survey of citizens in selected LEG-UP counties or cities, and site visits and interviews at several participating jurisdictions.

Not all of the hypothesized impacts listed above are measurable at this time. Particularly, there has not been sufficient time to be able to detect an increase in the rate of local economic development due to LEG-UP. Moreover, it would be difficult at any time to attribute an increase in local economic development to the LEG-UP project, since there are many simultaneous influences on local economic development.

Comment [d1]: Not sure what this means. If there will be one what?

There are also two additional caveats. One is some of the measures of impact are based upon perceptions of actors – project directors, county or city managers, and citizens – rather than actual observed behavior or outcomes, which would be preferred. The other qualifier is the inability to measure some of the ‘before’ conditions, i.e., just prior to the start of the LEG-UP projects. This dilemma limits our ability to measure *change* in attitudes or behaviors that might be attributed to LEG-UP.

A. Did LEG-UP Increase the Efficiency of Local Governments’ Information Provision?

The answer to this question is a qualified ‘yes’. The survey of LEG-UP project directors revealed that the applications implemented resulted in significant reduction of staff time and costs in doing paper work, answering phone calls, postage, producing maps, and waiting on clients in offices, while being able to provide higher quality products and services. The reduction in staff time has led to additional services not previously produced, an increase in staff capacity through in-house training, and to publicity of new e-government services to increase public utilization.

On site visits to several participating local governments, the external evaluator was told by a number of staff about an increase in staff morale throughout many

departments, because they knew they were doing something “cutting edge”. This increase in morale, in turn, has led to increased dedication and effort.

The qualification is that the increases in efficiency were not realized by local governments that had not yet completed their projects and made them operational. In at least two cases the local government’s web site was not even operational.

B. Has LEG-UP Improved the *Capacity* of Local Governments to Provide Needed Services?

Again, the answer is a qualified, ‘yes’. In most of the participating local governments, evidence from the LEG-UP project directors survey indicates, in order to implement the applications developed in the LEG-UP project, existing staff require additional training in web site management, GIS, and other software. However, there were positive spillovers, as other departments not directly affected by the particular LEG-UP applications initiated new e-government applications that also led to the upgrading of staff skills throughout local government.

Comment [d2]: Unclear of the point being made here.

Indirect evidence of an increase in local government capacity comes from perceptions of citizens. One county manager in a rural and politically conservative area talked about the chronic difficulty he had getting approval for his recommended annual budget because of perceptions that the local government was generally inefficacious. The same business people who couldn’t find very many positive things to say about government in general were now avid supporters of increasing the budget for the IT department because of the high value they placed on the convenience and quality of the data and maps they could get on land parcels in the county.

The qualification, again, is that not all participating local governments probably increased their capacity. Indeed, several of the local governments that were still far from completing their projects were in such a situation because of low capacity at the start, and which was compounded in some cases by turnover of key staff.

C. Has the LEG-UP Project Resulted In Better Meeting the Informational Needs of Citizens and Save Time and Out-of-Pocket Costs?

For those local governments that were able to implement and fully put into operation their LEG-UP applications, there is evidence to support a ‘yes’. The evidence comes from the LEG-UP Project directors’ survey and the citizen survey, as well as from some anecdotes gained from interviews on site visits.

Project directors perceived a high degree of satisfaction with the new e-government services for those who were aware of, and utilized their local government’s web site. On a 1-5 scale, with one indicating very high (positive impact) and five indicating very low impact on citizens of LEG-UP applications, project directors on average gave a 1.9 to convenience of access (to the web-based e-government services), 2.1 to the overall quality of the information provided on the web site, and 1.7 to the

degree of time and/or cost savings of the new applications. Citizen utilization of the new e-government services, although still rated high (2.7) was lagging other dimensions, and indicates that either lack of knowledge of the new services, or lack of internet access, was a limiting factor.

The results of the citizen survey are probably more revealing. Of those who had internet access at home, 64.3 percent thought that their county's web site and its applications was either easy or somewhat easy to access, while only 11.8 percent felt it was hard to access. 56 percent of respondents felt their county's website was always or usually up-to-date with its information, while only 6.4 percent felt it was rarely up-to-date. About 45 percent thought the web site and its applications led to some or a lot of time savings while 23.4 percent thought there were little or no time savings (about 30 percent did not know). And over two-thirds of the respondents said that their county's website was either highly or somewhat valuable, and only 4.5 percent said it was not valuable at all (25 percent did not know). The results for respondents in municipalities were similar to those of the LEG-UP counties.

For those who did not have internet access at home, but at some other place, the results were different. Less than one-half felt that access to their county's website was very easy or somewhat easy; only one-third felt that the information on the web site was up-to-date; and only 26 percent thought there was at least some time saved from using the web site. Overall, 53 percent of those without internet access at home (but access elsewhere) felt that the county website was somewhat or highly valuable. The differences between the two groups of respondents was largely a much larger set of 'do not know' answers for those without home access, indicating less knowledge generally about the county web site and the range of e-government services provided.

D. Has LEG-UP Led to Increased Local Economic Development?

It is difficult to be able attribute a change in local economic growth or development to LEG-UP (or most other local government programs). First, if there were such an impact, it would take longer to occur. This evaluation is occurring only a little more than one year from the end of Phase I, and only two or three months after Phase II ended. If economic development were stimulated by the enhanced capacity and efficiency of local government in providing information and in engaging in transactions, this would not be felt by private businesses right away. It would be a longer-term process. Second, if LEG-UP had an effect on local economic growth or development, it would still be 'swamped' by effects of changes in macroeconomic and local market conditions.

There is, however, some anecdotal evidence that supports there has been a positive effect on local economic development from improvements in local e-government capacity, that occurred both prior to and during the LEG-UP project. The case of Macon County, highlighted and described in much more detail in Appendix D, is a good example of how improvements in local e-government capacity have led to increased business support of local government, how that, in turn has led to both enhanced revenues to

support further improvements in e-government services, and how Macon County now has a reputation in the greater southeastern U.S. for being on the cutting edge of technology. That has probably led to new economic activity that would not have occurred anyway.

E. Has LEG-UP Promoted Collaboration and Mentoring Relationships Between Participating Local Governments and Others Nearby?

The answer to this question is generally ‘no’, though there are some exceptions. The LEG-UP Project Director’s questionnaire asked about the extent to which they have provided assistance, advice, training, or other support to non-LEG-UP local governments in their respective regions. Only a small number of the respondents reported they had actually given some material assistance, though more said they had offered assistance but the offers were not taken. When collaboration did occur, it was mostly in the form of the county government making a particular service, such as GIS files and mapping, available to municipalities within its county. While this represents a valuable service to the municipalities, it does not necessarily lead to an enhancement in the IT capacity of the other local governments.

The relatively low incidence of spontaneous collaborative efforts and the formation of mentoring relationships is likely due to the LEG-UP local governments being focused on completing and putting into operation their own projects on a timely basis during the project period. Thus one should not conclude that collaboration will not occur in the future. Also, for offers of assistance to be accepted, other local governments need to feel they have a threshold level of IT capacity in order to enter into a relationship with a more advanced local government. Unfortunately, in many of the smaller local governments, there is a woeful level of capacity, and an inability to retain key staff when they have received training and experience.

F. Overall Findings

The intended impacts of the LEG-UP project were realized for four of the six categories. That is, there is evidence that the large majority of local governments that participated in the LEG-UP project had: (1) an increase in efficiency in providing informational and transactional services to the public; (2) an increase in IT capacity; (3) an improvement in the quality of information and services provided to the public; and (4) realized time and/or cost savings to citizens. These beneficial changes likely would not have occurred otherwise at this time. We limit this conclusion, however, to those local governments that did successfully complete their projects and put their applications into operation. A few of the participating local governments were not able to complete their projects and have not yet realized the outcomes listed above.

We can not say that the LEG-UP project to-date has stimulated local economic development that otherwise would not have occurred. While there is some anecdotal evidence in several cases that the perceived business climate has improved as a result of higher e-government capacity and quality of transactional services valued by private businesses, it probably takes a while longer for that to translate into employment and

income growth. While we expect that such changes in economic development outcomes will occur in the next few years in many of the areas where local governments were successful in increasing their e-government capacity, there is evidence to support such a claim so soon after the completion of the LEG-UP project.

The intended impact of the LEG-UP project leading participating local governments to partner with other nearby local governments and to help them increase their e-government capacity *generally* has not occurred to-date, though there are several notable exceptions. This is another impact that will take longer to occur, since most of the participating local governments ‘had their hands full’ completing their own projects within the time limits of the project. We found convincing anecdotal evidence of the sincere interest of some of the local governments with the highest capacity to assist their neighboring counties or towns. For this to be realized, however, the non-participating local governments will probably first need to make some initial investments in their IT staff.

Appendix A

Results of the Survey of LEG-UP Project Directors

Questionnaires were sent to the LEG-UP Project Directors in September 2005 to gain information about their perceptions of the impact of their LEG-UP projects, as well as to ascertain organizational problems that may have occurred in the implementation of the LEG-UP project. Questions about possible impacts included: (1) organizational changes within local government, (2) changes in work procedures, (3) most important impacts within particular departments where applications were developed and implemented, (4) impacts of the applications on local government as a whole, and (5) impacts on other local governments in the region. We also asked questions of the project directors about their perception of what the impacts of the applications were on citizens: how aware citizens were of the improved e-government services, citizens' utilization of the new services, the convenience of the new services, changes in the quality of the content of the information provided on the website, time and/or cost savings for citizens, and changes in citizens' attitudes toward local government overall as a result of the changes in e-government services.

LEG-UP project directors were also asked about the extent of 'buy-in' among stakeholders in the implementation of the applications. If there was resistance, we asked how, and how well, this was managed. We also include open ended comments from the project directors about their perception of the value of their local government's participation in the LEG-UP project.

Thirteen of the county project directors and six of the municipality project directors returned the questionnaire. This section of the report summarizes the results from this survey.

1. Organizational Change in Local Government

There were few organizational changes within local government reported. A number of local governments increased their staffing of their IT department or added IT specialists within particular functional departments. Several local governments said they had created IT departments whereas no such department existed prior to LEG-UP. Increased efficiencies in general did not lead to decreased staff in functional local government departments. Rather the gain in productivity led to assigning new duties and responsibilities for existing staff. Where there was net staff reduction within local government, this occurred through attrition.

A more subtle form of organizational change occurred as a result of local government departments being better connected to one another, which in turn led to increased coordination.

2. Changes in Procedures of Local Government

The most significant impacts of LEG-UP on local government were in how staff did their jobs. A large number of project directors reported fewer phone calls, fewer walk-ins by citizens to functional department offices, less time devoted to data entry and mailing out forms. Staff did not spend as much time manually collecting revenues from the payment of utility bills, fees, and taxes that were now deposited electronically. The time savings for staff led to the designation of an IT specialist within many functional departments, whose responsibilities include maintaining the content of the website for the particular department within a decentralized IT system, and to increasing citizen awareness of the new e-government capacity and services.

3. Other Impacts on Local Government Functional Departments

In addition to time and cost savings, several project directors noted a decrease in mistakes in producing and processing data, and an increase in the overall accuracy of data available to the public. A large number of project directors mentioned that staff were able to update information available to the public more frequently, and thus there was a notable increase in timeliness of advertising public events.

The increase in local government's IT capacity, in part made possible through the LEG-UP project, resulted in not only greater intranet connectivity, but also greater connectivity between local government departments and state and federal government agencies. This resulted in faster local government responses to problems caused by severe flooding in western North Carolina, for example, by fostering closer coordination and data flow between local emergency agencies and FEMA. Other project directors mentioned faster responses to citizen requests that required some federal government data.

About one-third of project directors mentioned the benefits of having decentralized management of web sites brought about by the increased staff capacity in IT. This has increased morale in many functional agencies, and at the same time freed up time for staff in IT departments to focus on the design and development of more long-term and more complex systems changes.

4. Impacts on other Local Governments

The North Carolina LEG-UP project had the explicit objective of LEG-UP local governments serving as mentors, and providing technical assistance and training, to other nearby local governments. To-date this has not yet occurred to the extent hoped. Only six of the LEG-UP project directors mentioned any impacts on other local governments, and only two of those had been involved in direct assistance to particular local governments in the development of their e-government services. The other four mentioned either: (1) having the effect of 'raising the bar' and setting a standard for other local governments to follow, by expanding a sense of 'what is possible' for similar local governments; or (2) by increasing the ease of communicating with other local

governments (mostly with municipalities within the same county), and thus provide additional efficiencies through economies of scale, for example, by sharing GIS data produced by the county government.

We can only speculate about why there was not a greater incidence of mentoring by LEG-UP local governments. It may be that the large majority of the local governments participated in LEG-UP were focused on developing and implementing their own projects and needed to wait to complete them before being in a position of helping other local governments.

5. Impacts on Citizens

The project directors were asked about their perceptions of the impacts on their clients of the activities or applications implemented under LEG-UP, in terms of clients' awareness of e-government services, utilization of services, convenience of accessing services, the quality of services, time or cost savings from use of the services, and changes in clients' attitudes towards their local government. Categories of responses were one to five, with one indicating 'very high' (positive) and five indicating very low.

Table A-1
Project Directors' Perceptions of Magnitude
of Impacts on Clients, Averages

Awareness of e-government services	2.2
Utilization of e-government services	2.7
Convenience of accessing e-government services	1.9
Quality of e-government services	2.1
Time/cost savings from utilizing e-government services	1.7
Change in attitudes towards local government	2.3

The results suggest that those citizens who were aware of, and were using, the new e-government services, were highly satisfied with the services, and felt there was a notable improvement in accessing information or performing transactions, and that there were significant time and or cost savings in being able to access the local government's web site and conducting transactions remotely. On the other hand, the utilization, and to a lesser extent awareness, of the new e-government services were perceived to be the relatively weak links. This may be mostly a short-term problem, since the services had only been recently become operational, and many citizens had not yet had the chance to visit the new web sites and conduct transactions. On the other hand, it may convey that local governments might need to focus more on helping the public become aware of the e-government services and perhaps on offering additional training on how to use the new services.

6. Management of Change Within Local Government

The LEG-UP projects all introduced changes to how certain local government services were to be provided to clients. This often directly affected staff, in terms of changes in their duties or responsibilities, how they performed their duties, as well as changes in the skill sets required to perform their jobs effectively. With such changes we might expect some resistance to the changes “of doing business”. We asked the project directors to indicate the extent of buy-in to the changes introduced by the LEG-UP project activities, and to the extent there was resistance, how this was managed.

Of the twenty respondents, twelve indicated there was a high level of ‘buy-in’ in implementation of new services among all stakeholders, six indicated there was high ‘buy-in’ among most stakeholders, but some resisted, and only one said that many stakeholders resisted (one said ‘did not know’). Many directors mentioned that resistance was avoided by inviting input from staff and for providing in-house staff training on new software. When there was resistance it often stemmed from lack of confidence in learning new, web-based procedures and needing to adapt to a more “paper-less” work environment. Project directors in these local governments consistently mentioned additional staff training as the best way to manage any staff resistance, since it was evident to almost all staff that the changes introduced by LEG-UP did lead to an improved level of local government services.

Appendix B

LEG-UP Citizens' Survey Results

A sample survey of residents of selected LEG-UP counties and municipalities was administered during May-June 2005. The purpose of this survey was to help gauge the impact of the LEG-UP project on the citizens' awareness and use of local government websites and applications.

1. Methodology

Of the total of 55 LEG-UP local governments, 16 were selected for this survey: three counties from Phase I, seven counties from Phase II, three municipalities from Phase I and two municipalities from Phase II. The particular local governments were chosen to get geographical representation as well as to include get variation in the degree of their information technology (IT) capacity, based upon assessments made by project staff at the time of selection for the LEG-Up project. Within each local government a total of 200 households were randomly selected from a sampling frame of all customers receiving local government utility billings. The questionnaire was inserted in the utility bill sent by conventional mail. The person instructed to fill out the questionnaire was the person in whose name the bill was sent.

The total number of questionnaires sent out was 200 per area, or 3,200. The number of returned questionnaires was 840. Of these, there were 735 usable responses, after eliminating respondents who were not residents of the LEG-UP areas (e.g. second home owners), and those that were not correctly filled out. The effective response rate was 23.0 percent.

Questions were included to identify: the county or municipality; whether the resident had internet access from home; the type of home internet connection; whether they used the internet at some other location besides the home; awareness of their local government's web site; the frequency with which the web site is visited, how it is used; the ease of access and use of the web site; any time savings from using the web site; for what kind of information or applications the web site is used; and various demographic and socioeconomic characteristics of the respondent.

The results of the survey are reported overall (all respondents), for only respondents in LEG-UP counties, for only respondents in LEG-UP municipalities, for counties and municipalities by Phase (I or II), and for counties and municipalities by level of IT capacity based upon an appraisal prior to the start of the LEG-UP grant.

The original research design for the LEG-UP evaluation called for administering this sample survey questionnaire at or near the beginning of Phase II in the spring 2004, and then repeat it in spring 2005 to get 'before' and 'after' snapshots. Because of difficulties first in identifying an appropriate sampling frame and sampling design to yield a representative sample of residents, and then of getting a sufficiently high enough

response rate, the 'before', or pretest was not administered. Thus we are unable to measure change over the Phase II period and associate such changes with the LEG-UP projects in their respective geographic areas. Nevertheless, having the post-test measures provides us with valuable information about the residents' use and valuation of their local government's e-government services, and how the use and valuation vary.

2. Characteristics of the Full Sample

Overall, 81.5 percent of the respondents reported having a computer or laptop at home. Of these 92.22 percent said that had internet access at home. Nearly sixty percent of respondents said they used the internet outside the home.

The majority of respondents did not have high-speed internet access at home. For those who did have an internet connection from home, 58.0 percent were connected by a modem, 24.8 percent by ISDN, and 15.2 percent by DSL.

Of those who use the internet at their place of residence, the most frequent use is for email (95.7 percent). Checking news, weather, or sports was the second most common use (81.6 percent). On-line shopping was the third most common use (64.7 percent). When residents were asked whether they used the internet to obtain information from government organizations (all levels of government), 58.8 percent indicated they did.

The age distribution of the respondents was somewhat skewed to the high end: only 4.7 percent were below the age of 30; 32.9 percent were between the ages of 30 and 49; 43.7 percent were between 50 and 69, while 18.7 percent were 70 or above.

The percentage of respondents who were female was 52.0. The percentage employed at the time of the survey was 56.1 percent. The respondents were overwhelmingly white, non-Hispanic (88.1 percent). African-Americans comprised 6.5 percent of the respondents, while the remainder was split among Asian-American, native-American, other, and "no answer."

The educational attainment of the respondents showed 5.0 percent had not completed high school, another 16.1 percent had completed high school but had not attended college, 33.9 percent had attended some college but not received a bachelor's degree; 23.0 percent had received a bachelor's degree, and 21.1 percent had post-baccalaureate education.

The frequency distributions above indicate that the respondents are underrepresented among African-Americans and among those below the age of 30 compared to the overall population of the LEG-UP areas.

3. Awareness of Local Government Websites and E-Government Services

Our first substantive question is how aware are citizens of the existence of e-government services. For county residents who reported they have internet access at home, 56.4 said they were aware of their county government's web site. For those who use the internet outside the home, the percentage increases to 63.7. However, for those who only use the internet at home, the percentage who were aware of their county government's website dropped to 30.5. The pattern is similar for residents of the LEG-UP municipalities. For those who reported having internet access at home, the percentage aware of their city or town's website was 57.7. The percentage increases slightly to 57.9 for those who use the internet outside the home. But for those who only use the internet at home the percentage of awareness of e-government services drops to 45.3.

The overall level of awareness by residents of their local government's web sites and e-government services for those with internet access is reasonably high. It is not clear why the level of awareness is higher for residents in LEG-UP counties than in LEG-UP municipalities. It may be that county governments have done a better job of publicizing their website and services, or it may be due to a difference in the characteristics of county versus town/city residents. Unfortunately our sample size does not allow us to control for all possible factors. That the awareness level drops significantly for those residents who *only* use the internet at home suggests that efforts to just increase connectivity at the place of residence may not be sufficient to increase the awareness and thus use of e-government services.

4. Use of Local Government Web Sites and E-Government Services

Citizens were asked how often they visited their local government web sites and what they used them for. Of the county residents respondents, more than 18 percent said they visited their county government web sites four or more times per week, about 40 percent said 1 to 4 times per week, while slightly more than 40 percent said they did not visit their county website at all. Respondents from municipalities were quite similar: 18 percent said they visited their town's website four or more times per week, 46 percent said between 1 and 3 times per week, while 36 percent reported no visits.

The most frequent uses of county government web sites were: (1) information on land/property records (48.5 percent of respondents); (2) information about scheduled public events (36.3 percent); information for contacting county government staff (33.0 percent); and information for contacting elected officials (24.4 percent). For the town web sites, the most frequent uses were: (1) information about scheduled public events (52 percent); (2) information for contacting town government staff (31 percent); (3) information for contacting elected officials (25 percent); and (4) information about land/property records (14 percent). The difference in frequency of using the web to get information on land/property records between county and town government websites probably reflects the greater incidence of real estate transactions in counties where there is more developable land, rather than the qualities of the websites. For both the sample of

county and town residents, obtaining information posted on the websites was much more frequent than doing transactions such as paying bills or fees, or applying for permits or licenses.

5. How Easy Is It To Access and Use of Local Government Web Sites?

No matter how valuable the information on the web might be, the web site first needs to be easy to access and navigate for citizens to take advantage of the information. When asked about how easy it is to access and use their local government's web site, over 64 percent of county residents said they found it either 'very easy' or 'somewhat easy', while only about 12 percent said they found it either 'somewhat difficult' or 'very difficult'. The remainder reported 'don't know', largely because they did not use the local government website. Respondents from towns reported even higher ease of access and use: 80 percent said 'very easy' or 'somewhat easy', while only four percent said 'somewhat difficult' or 'very difficult'.

6. How Up-to-Date Is the Information on Local Government Web Sites?

In general, respondents felt that the information they found on both the county and town web sites was timely and accurate: over 56 percent of respondents from the counties said they found information posted to be always or usually up-to-date, while only 6.4 percent said the information was rarely up-to-date; timeliness of information on the town websites was cited as even better: over 66 percent reported always or usually up-to-date information, and only 4.2 percent felt the information was rarely up-to-date.

7. How Much Time is Saved by Using Local Government Web Sites?

One of the purposes of providing e-government services is to help citizens save time getting information or transacting business with local government. Fourteen percent of respondents said their county government web site saved them 'a lot of time', 32 percent said using the county web site saved 'some time', while 23 percent said their county web site saved them 'little or no time'. The remainder, including those that do not use the website, said 'don't know'. The responses were similar for residents of the towns: 10.5 percent said 'a lot of time' was saved, 42 percent said 'some time' saved, and 25 percent reported 'little or no time' saved, with 22 percent saying 'don't know'.

8. In General, How Valuable is Your Local Government Web Site?

As a summary question, we asked our sample of citizens, how valuable is their local government web site. The responses were highly favorable. Over 23 percent of respondents rated found their county's website as 'highly valuable' to them and over 44 percent felt their county's website as 'somewhat valuable'. Only 4.5 percent said the county website was not valuable at all. Again, residents of towns had similar responses: 21.1 percent rated their town's web site as 'highly valuable', 47.4 percent said 'somewhat valuable', and 9.5 percent felt their town's web site was 'not valuable at all'.

9. Are There Differences Between Phase I and Phase II Local Governments?

When the citizen surveys were administered in late spring 2005, Phase I local governments had been working on their project for over two years, while Phase II government had been working on theirs for just over one year. We would thus expect that the websites in Phase I local governments would be rated higher by citizens than those from Phase II.

A higher percentage of respondents from Phase I counties were knowledgeable of their county's website compared to Phase II (61.5 percent compared to 54.0 percent). Over 22 percent from Phase I visited their county's web site 4 or more times per week compared to about 16 percent for Phase II. On the other hand, there was little difference between Phase I and Phase II counties in terms of ease of access and use, perception of timeliness of the information, and amount of time savings. In terms of the perceived overall value of the local government's web site, 25 percent of Phase I citizens respondents said that the web site was highly valuable compared to 15.5 percent among respondents in Phase II areas. However, there was little difference between Phase I and Phase II respondents in the percent that said the web site was either highly valuable or somewhat valuable.

In the case of the towns there was a more definitive difference between Phase I and Phase II. Over 72 percent of respondents in Phase I towns were knowledgeable of their towns' websites, while the same figure in Phase II towns was only 47 percent. A higher percentage visited their town's web site four or more times per week in Phase I (22 percent) than in Phase II (just over 13 percent). There were only small differences in the percentage of respondents who felt town's web site was either very easy or somewhat easy to use (82 percent for Phase I versus 78 percent for Phase II), the timeliness of the information, and the amount of time savings. But in the summary question about how valuable their local government web site was, 74 percent of respondents in Phase I towns said 'highly valuable' or 'somewhat valuable', compared to just over 62 percent in Phase II towns. There were no significant differences between Phase I and Phase II in how respondents used their local government web sites.

10. Does Level of Prior IT Capacity of Local Government Matter?

Of interest to policymakers is whether projects like LEG-UP are more likely to achieve intended outcomes when local governments start with a higher IT capacity. To assess this, one of the researchers on this project assessed the website and general IT capacity of each LEG-UP local government just after selections for Phase I and Phase II were made, respectively.

The differences in prior IT capacity showed up mostly in the frequency of use (27.5 percent four times or more per week in high capacity counties compared to 11.3 in low capacity counties; 38 percent did not visit the web site at all in high capacity versus nearly 44 percent in low capacity counties) and amount of saving of time (18 percent said

'lots of time' saved in high capacity counties compared to 11 percent in low capacity counties. Differences in ease of access and use and the perceived timeliness of the information were not substantial between respondents in high and low capacity counties. A slightly higher percentage of respondents from high capacity areas rated their local government's web site as highly valuable (20.0 percent) compared to respondents in low capacity areas (16.7 percent). But there was virtually no difference between high and low capacity areas in the percentage of respondents who rated their local government's web site as either highly valuable or somewhat valuable.

11. Summary

The results of the citizen survey indicate there is a high level of knowledge of the existence of the local government website among those who have internet access at their homes (57.7 percent for county residents, 56.4 percent for town residents. When residents have access to the internet at home *and* outside the home, then awareness and use of the local government websites increase substantially. This is reflected in the sharp differences in use between those who are employed and those not working. Many people access and use local government web sites from their place of work.

Level of education makes a big difference in having access to the internet at home. Age does not matter that much except for those 70 or older, and there are no significant differences between males and females. We can not say much about differences by race because of small numbers for non-whites.

Of those that use their local government's web site, the modal frequency of use is between 1 and 3 times per week. Most users find accessing and using it to be easy, find the information posted to be mostly up-to-date, and find using the website to save them at least some time in finding information or doing business with local government. Almost all those who use their local government web site find it to be at least somewhat valuable.

Unfortunately we do not have 'pretest' data with which to compare these outcomes, so attribution of these relatively high outcome measures to the LEG-UP projects is difficult to assert. Yet knowledge of the state of many of the LEG-UP local governments' web sites and general IT capacity prior to the start of LEG-UP participation strongly suggests that LEG-UP has led to significant increases in awareness, use and value of e-government services in the majority of LEG-UP communities.

Appendix C

Macon County Case Study

Macon County is nestled in the foothills of the Smoky Mountains of western North Carolina. It is about 75 minutes driving time to Asheville, the largest city in this part of the state, and a little more than two hours driving from Atlanta to the south. The county is predominantly rural, with a total population in 2004 of 31,400. The two incorporated cities, Franklin and Highlands, have populations of only 3,600 and 900, respectively. Between 2000 and 2003 the county grew by 4.6 percent, making it the 25th fastest growing county in the state out of 100.

Figure 1: Macon County



Economic Context

The economic base of the county historically had been focused in agriculture and forestry, and textiles, but what has been driving the local economy recently is real estate investment for retirees, second-home building, and tourism. Several software and IT companies have recently located in the county, and now represents an emerging cluster.

The per capita personal income of Macon County equal to \$23,755 (2003) was 75 percent of the U.S. average. This represents a significant relative gain for Macon County since 1971 when its per capita personal income was only 60 percent of the U.S. average. Average earnings per job, a measure of the quality of jobs, was \$25,392 in 2003, and 60 percent of the average earnings per job for the U.S., and slightly less than the 63 percent figure in 1971. So while relative average personal income for *residents* of the county has grown, the average wage and salary for *jobs* located in the county has not. This is indicative of a regional economy in need of a larger number of higher quality jobs for its residents, to sustain future economic health.

The principle assets of the county include its many natural amenities of its location in the mountains and its outdoor recreational opportunities, and its relative proximity to the major metropolitan area of Atlanta. But it also has several important knowledge assets for a rural area of its size. Western Carolina University (WCU), though located in adjacent Jackson County, is a major economic development actor in the region. As a member of the University of North Carolina system, it is designated as a regional

university and has adopted an explicit economic development mission. With a total student body of about 8,400, WCU trains students at both the undergraduate and graduate (masters) levels in a number of professional fields where there is expected to be growing regional demand. It also has initiated several research centers in applied science and engineering that are linked to the emerging telecommunications and materials sectors in the region.

Southwestern Community College, with its main branch also in adjacent Jackson County, also has a significant presence in Macon County, including the location of its Business and Industry Training Center and the Small Business Center. While it has had a branch campus in Franklin for a number of years, Southwestern is in the process of completing a new, 31 acre campus with an initial \$4.9 million, 27,600 square foot facility in Macon County. Southwestern has been an actor in economic development since its inception in the early 1960s. In 1999, however, it became involved in IT infrastructure by initiating the formation of Appalachian Access, a grassroots initiative to lower the cost of access and increasing the availability of high-speed telecommunications services in the region. In 2003 Southwestern Community College partnered with Drake Enterprises, a local software company in Franklin, and with the Eastern Band of Cherokees, to form BalsamWest Fiber Net. BalsamWest, in turn, invested \$10 million in the building of a high-speed fiber optic network for Jackson, Macon and nearby Swain counties, with plans to extend the network to an additional three counties to the west.

Local Government

The Macon County government is directed by a county manager who reports to a five-person Board of County Commissioners elected for four year terms. The total operating budget of the county in FY 2005-2006 is \$39.2 million. The largest departments under the county manager, by expenditures, are: Social Services (\$3.4 million), Health Administration (\$2.9 million), Sheriff (\$2.6 million), and Emergency Medical (\$2.1 million). The Information Technology (IT) Department, with a budget of \$558,600, and a staff of eleven, is relatively large for a county of this size, and reflects the priority the county manager and the county commissioners have placed on the development of IT capacity for sustainable economic development and health for the county.

The LEG-UP Project Applications

For a number of years the current county manager, Sam Greenwood has been a strong advocate for the county investing in its IT capacity by building the size and quality of its staff. Macon County already had a well-deserved reputation in western North Carolina for being “out in front” in promoting the adoption of technology within local government and for its efforts to help grow a knowledge-based economy.

With an already fully functional website, the county’s Phase 1 LEG-UP proposal application called for the development of several new and major capabilities and transactional applications. These were a (1) Comparable (Real Estate) Sales Search Tool,

(2) the integration of tax data with the county's GIS, and (3) an automated data delivery system for the general public.

The targeted audiences for the comparable sales search tool were present and prospective property owners, appraisers, realtors, surveyors, and bankers, as well as county staff in several departments that conduct research using tax records and property valuation. The objective of the application was to allow interested individuals to conduct research on the tax valuation of a piece of property and to compare it to other properties on similar characteristics defined by the user. The county staff, based in the IT department, began work on this application in April 2003 and it became operational at the end of Phase 1 (April 2004). The principal impact of the application was a significant reduction in time spent by county staff in doing the research and delivering the data as requested by members of the public. By streamlining the process of data delivery, county staff in the Tax Department have been freed up to meet the other responsibilities of the department. Staff in other departments including Planning, armed with the same tools, have been able to conduct their own internal research using more sophisticated query and data search procedures than previously available. After completing the application, the IT staff in Macon County were involved in providing technical assistance to help the neighboring counties of Jackson and Cherokee, and the town of Franklin (a LEG-UP Phase 2 local government) develop a similar capacity.

The objective for the integration of tax and geo-coded data, the second area of application, was to synthesize data on the basis of individual land parcels from a number of departments, and then to provide the capacity for members of the public and county staff to make queries and to produce spatial representations, i.e., maps, of the data. The targeted clients for this application were similar to those for the first application: land owners (current and prospective), realtors, appraisers, surveyors, lawyers, county staff, as well as state Department of Transportation officials, FEMA, and others. This application was begun soon after the start of LEG-UP and became operational before the end of Phase 1. The major impacts of the application were a significant reduction in "foot traffic" to county offices to request data. Paper map printing by county staff has been almost entirely eliminated, as has the printing of deeds (all deed images are available online). The cost of mailing documents has also been virtually eliminated. And because the data on the system are always updated nightly, they are always current. The time it takes for county staff to answer questions involving multiple variables simultaneously, for example, "how many parcels are in flood plains with improvements, worth over \$200,000, and built within the last ten years," has literally gone from days to one or two minutes. This represents real cost savings and hence productivity gains for the county government by either being able to reduce staff through attrition or to free up staff to work on additional projects. The county staff has subsequently worked with the Town of Franklin to help them integrate GIS with other municipal data, and has communicated with the GIS staff in Highlands and several adjacent counties about providing technical assistance to them as well.

The third application from the LEG-UP project was for the county to provide up-to-date data to the public in all web applications. It was an initiative driven by citizens' most

frequent question, “How current are the data we get?” The intended direct users of this application were county staff across a wide variety of departments. The objective was to achieve the standard of up-dating all data every 24 hours, using an automated system. Once this was accomplished, the county’s core website could accommodate additional on-line applications, for example a one-stop permitting system. Similar to the first two applications, work on this one, led by the IT department staff, commenced in 2002 and was completed in 2003 before the end of Phase 1. The impacts of this capacity have been experienced by citizens in the increased timeliness, and thus accuracy, of the data requested, by citizens in the reduction of time to apply for permits, and by county government staff in the expansion of the availability of web-based tools and internal and inter-departmental access to data via web interface. An indirect impact, cited by several county officials, has been a notable increase in citizens’ view of the efficacy and usefulness of county government departments.

Other Notable Outcomes from LEG-UP

The LEG-UP project, by providing the impetus to develop the application tools described above, has had a number of indirect outcomes in the county and surrounding areas. The marketing of the specific tools, through professional associations and the general news media, has increased interest and demand for a large range of additional information provided by county government. The traffic on the county’s web site has increased by more than 30 percent just in the last year (October 2004 to October 2005). The increased awareness of the information available on the web site and its functionality has, in turn, led to an increase demand for high speed internet access by citizens and business owners in the county. As mentioned above, BalsamWest has already invested a substantial amount of capital in the last few years for laying fiber optic cable in the county. Other local businesses have started or expressed interest in laying additional cable and providing the infrastructure for wireless connectivity. Local retailers, including Walmart, have recently begun stocking broadband equipment.

The county IT staff has involved software vendors in the region in the development of some of the new applications, and this has had an effect of stimulating interest by this small but growing sector of the local economy in developing new products for larger markets.

The public data offered by the county through its website is provided at no cost in a self-service environment. Training was provided by county staff to assist the public to learn how to access data and to use the new applications from home or work, while a public access area with ten new work stations were added in the county Land Records office.

The full integration of GIS with land and other data gave the impetus of the county to add USGS 20 foot contour, topographic quads, and elevation maps to the system, and then to join NC-ONEMAP, where GIS data covering the entire state can be viewed from a single portal.

County staff in a number of departments became more skilled in the use of web for making and answering simple and complex queries, in transferring, managing, and integrating data, and, in turn, teaching other colleagues how to use the new tools. This kind of professional growth and development can be vitally important for the morale of many public employees who might otherwise be tempted to leave for often better paying and better supported jobs in the private sector.

Finally, Macon County has become a model for the ease and quality of its web applications for public use in the western part of the state. A number of IT directors and city and county managers, having communicated with Macon County IT staff, and visited and their web page, now seem poised to try to gain the support of their own elected officials to gain the staff to replicate Macon County's success.

Critical Success Factors

Several lessons about success factors stand out from information gleaned in Macon County.

- Having highly capable and low-turnover IT staff who have the appropriate technical skills and can work effectively with staff in functional departments.
- Having a county or city manager who recognizes the importance of investing in the local government's IT capacity for long-term economic well-being, and being able to make that case to elected officials and to the general public.
- The manager giving sufficient autonomy and free rein to IT and functional department staff so that their creativity can be unleashed in designing applications. At the same time, promoting buy-in among all staff for changes in how the staff 'does business.'
- Involving local vendors and providers in the development of products and IT infrastructure.
- Aggressive and targeted marketing the availability and usefulness of the new tools to citizens, professionals, and business people.

Site visit made on November 10, 2005. Interviews with Andy Muncie, Network Administrator in the IT Department; Sam Greenwood, County Manager; Richard Lightner, Tax Administrator.

Appendix D

City of Havelock Case Study

Havelock is a small city located in Craven County, in eastern North Carolina only about 12 miles from the Atlantic Coast. In 2004 it had a population of 22,000 in a county with a population of 91,600. Although Havelock is an incorporated city, the population density is low and many residents live in areas that would be described as rural in nature.

Havelock is perhaps best known as the site of the Cherry Point Marine Corps Air Station. The marine facility, with a deployment of about 9,900 military personnel and about 5,600 civilian employees, is by far the largest employer in the city and dominates Havelock's economic base. In Craven County, retail is the second largest sector (after government) and health and social services is third. The manufacturing sector is rather small, most notably in food products, lumber and wood products, and industrial machinery. There is little or no R&D activity within either the city or the surrounding county.

The Cherry Point base also leaves its mark on the city's demographic and social profile. Its median age of 23 is well below the state average. Incomes are low relative to the state: the median household income is \$35,350 (year 2000), and the median housing value in the city is \$84,300. White, non-Hispanics comprise two-thirds of the population, while Blacks are disproportionately represented at 18.5 percent. The Hispanic population (all races) is 9.0 percent of the population. For the population 25 years or more, 90 percent have completed high school (or have a GED), but only 15.3 percent hold a bachelor's degree. The population of the city is highly dependent upon fluctuations in the level of deployment at the Marine Corps base. In recent years population has grown, but at a very slow rate. The health of the local economy is likewise affected by changes in the level of deployment at the base, as much of the civilian economy is focused on providing services to military personnel and their families.

Havelock is not located close to any metro area or sizable city. The closest city with a population of at least 50,000 is Jacksonville, 35 miles to the southeast, while the closest city with a population of at least 200,000 is Raleigh, 135 miles to the west. Havelock is, however, only 13 miles to the coast with its beaches.

Figure 1: Havelock, North Carolina



The closest institution of higher education – Coastal Carolina Community College – is 34 miles away in Jacksonville. The closest 4-year college, East Carolina University, is in Greenville, more than 50 miles away.

Havelock is an incorporated city with a commission-manager form of government. The five member Board of Commissioners, elected to four year terms, includes the mayor. The Board appoints the city manager. The city has 111 full- and part-time employees (2005-06) with an annual operating budget (general fund) of \$6,126,000. The largest departments (by number of employees) are Police (27), Streets and Highways (10), and Fire (9).

The LEG-UP Project

The impetus for the LEG-UP application grew out of requests from a number of constituents within the community asking for enhanced e-government services. A resolution was adopted by the Board of Commissioners at a planning retreat held in 2002 that stated: “the City shall provide a transactional e-government presence within three years.” The city’s newly formed (in 2002) IT department was assigned this mission. Bob Maxbauer who had been an IS Manager, became the IT Director. Later in the year an additional employee was hired to work in IT and funding was budgeted to start moving all municipal applications to SQL in preparation for full integration with an interactive and transactional website. As well, wireless point-to-point and point-to-multipoint infrastructure was planned and installed by the city for remote access. A gigabit copper/fiber backbone also was installed for interdepartmental connectivity.

The rationale for these initiatives, all conceived before the LEG-UP Project was announced, was to enhance the community as a “place to do business”. This included helping to bolster the case for attracting an additional squadron to the MCAS, retaining the existing deployment under the Base Realignment and Closure (BRAC) process, to diversify the business and economic base, and to make information and services interactively accessible to businesses and residents located in the more remote parts of the city.

The subsequent grant opportunity afforded by the LEG-UP project was propitious and allowed the city to accomplish its goals more effectively and sooner. The City of Havelock’s application included the development of four transactional applications: (1) utility billing; (2) on-line employment applications; (3) animal control; and (4) an events calendar (infonet). We will describe the first and fourth of these applications here.

The utility billing application was already in the planning stage prior to the beginning of the Leg-Up project. The city had signed a contract with a vendor, HMS, to develop a suitable “engine”. After the LEG-UP project began, the same vendor was contracted to develop an e-government module design. This application became operational in March 2004, just over one year after the start of LEG-UP.

As a measure of success and utilization, of the 4100 utility paying customers in the service area, about 20 percent were being paid over the web one year after the application became operational. The IT director has cited continuous improvement in this application since March 2004. An unanticipated new fiber optic cable has subsequently been installed in a trench dug up for a natural gas transmission line that is further extending high speed access to customers.

The most important impacts to-date of this application have been an increase in productivity and cost savings within the Water and Sewer department, and the corresponding time savings and convenience for citizens. Other city departments have benefited indirectly by having the new interactive capabilities developed specifically for this application on the intranet site for more general use. The IT director mentioned there was a “buzz” and boost in morale among municipal employees when the Human Resources department started displaying photos of employees on occasions of their birthdays or employment anniversaries.

The idea of an events calendar was in response to citizens’ feeling they were not well enough informed about meetings and other community events with a static posting. The calendar was planned after the start of LEG-UP and was developed completely internally rather than with a contractor. The events calendar became operational in March 2004. It was designed so that it could be easily refined and enhanced over time, and so that staff across all departments could add or delete events on the calendar.

The department that perhaps has benefited the most has been the Recreation Department, which previously did not have an efficient way to promote and announce schedules of for teams in sponsored leagues. Up until now there has not been a systematic way to measure the use of the events calendar, but there is a strong feeling among staff that participation has generally increased for events listed on the calendar. The members of the Board of Commissioners have cited their increased awareness of municipal events by browsing the calendar. The one barrier mentioned that may be inhibiting utilization of the calendar is limited awareness of its existence. Here, an improved marketing strategy might improve utilization.

The initiatives supported by the LEG-UP Project have received the consistent support of the Board of Commissioners and the former and current City Manager, James Freeman. The city manager and Board of Commissioners proudly point to the cost savings for the city from the new transactional applications of having, “101 staff doing the work of 140.”

The spillover benefits to other cities or counties from Havelock’s LEG-UP project have been minimal. No other LEG-UP cities or counties asked for mentoring. Discussions were held with the city of Roanoke Rapids about providing some technical assistance, but nothing substantive has yet occurred. Again, with Havelock willing to assist other local governments, the problem may be one of adequate marketing of mentorship opportunities.

There is no doubt that the e-government capacity of Havelock has grown from low to high over a span of only two years, as the city went from a static, front-page website to one with a number of transactions accessible from a large number of remote locations.

The site visit conducted on March 28, 2005. Interviews were held with Robert Maxbauer, the LEG-UP Project director and City of Havelock IT Director, and with James Freeman, City Manager. Phone interviews with several functional department directors were subsequently conducted.