

KENTUCKY EDUCATION NETWORK

Project Plan

7/19/2006
Version 7.0

Prepared For:

**Education Cabinet
Council on Postsecondary Education
Kentucky Department of Education
Education Professional Standards Board**

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5.0	9/29/06	1. Modified KDE Project Mgr. Definition 2. Updated Budget Information	KAR
6.0	10/2/06	1. Modified Pg.4, Removed "... some locations may not be complete until the first half of the next biennium" 2. Modified Pg. 4, Added Sec. Fox's retirement announcement and the appointment of Laura E. Owens to assume leadership role.	
7.0	12/6/06	1. Pg. 4; Added Deputy Comm. Kevin Noland assuming Comm. Wilhoit's role on the Executive Committee. 2. Modified Pg.7 Program Manager Column to remove TBD from all rows except those agencies that have a Program Manager in place to date.	KAR
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Project Plan

1. Purpose

Vision

In direct support of Governor Fletcher's Educational Vision, the Education Cabinet seeks to continue to build on the successes and lessons of the first 14 years of KERA, seven years of postsecondary reform and the research and technology improvements during that time by implementing a seamless education-centric network that equitably supports lifelong learning for all Kentuckians.

Key features of KEN include:

- Equity in terms of cost, geographic availability, access, and support for all learning styles
- Immediate availability
- Support of audio and video-intensive learning and research opportunities
- Scalable and adaptable network design that easily supports future growth
- 24 x 7 network availability and support

This proposal will create the Kentucky Education Network (KEN), a high-speed education-centric telecommunications network. The purpose of KEN is to facilitate the development, deployment, and operation of a set of seamless P-20 applications. It will support advanced research and education applications in order to further Kentucky's educational agenda. It will connect every college, university, and K-12 school district in the state to enhance the learning experience of students' at all educational levels, regardless of geographic location.

Plans for future growth of the network include the agencies of the Education Cabinet and their statewide locations. This includes Kentucky Educational Television (KET), the Department of Workforce Investment, Kentucky Adult Education, the Department for Libraries and Archives, the Commission on the Deaf and Hard of Hearing, the Kentucky Environmental Education Council, the Center for School Safety, and the Kentucky Higher Education Assistance Authority.

2. Project Summary Description

A seamless P-20 educational network is a requisite foundation for many of the innovative initiatives envisioned by Governor Fletcher, Secretary Virginia Fox, Commissioner Gene Wilhoit, President Tom Layzell, Phil Rogers and other educational leaders in Kentucky. Secretary Fox retired effective August 31, 2006. Laura Owens has been appointed the Secretary of Education and will therefore assume the leadership role on this project.

Kevin Noland assumed the position of Acting Commissioner of the Kentucky Department of Education effective November 1, 2006. Commissioner Noland will therefore assume the appointment on the KEN Executive Committee left vacant by Commissioner Wilhoit.

- Maximize student achievement and college readiness of all students.

The Commonwealth must take advantage of every opportunity to provide and support expanded learning opportunities for all participants in the P-20 educational environment. As more focus is placed on the successful transition of students from the high school to post secondary environment, systems must be positioned to support students that simultaneously participate in multiple educational levels. More and more students are simultaneously enrolled in high school and post secondary institutions (University and community and technical colleges). Information about their enrollment, status and progress must be simultaneously available to all parties. Pertinent student data must be moved between organizations on both a scheduled and ad hoc basis.

The power and functionality provided by Internet 2 offers a wealth of learning opportunities for P-12 students. The Kentucky Board of Education is currently considering enhancements to graduation requirements in several content areas including science. There is a potential requirement for applied learning and lab-based science experiences which could be enhanced with the rich educational features Internet 2.

Educators must also be able to operate in multiple environments simultaneously. Systematic and embedded professional development for P-12 educators will occur throughout the year. Some of the PD will be provided by Higher Education instructors, other PD will be provided by peers within or outside of the local district. These adult learning experiences must be recognized in P-12 management systems as well as those of the affected Higher Education institution and the Education Professional Standards Board. PD will no longer be relegated to a two or three week course each summer. Higher Education instructors must be able to assist local educators in reviewing the educational requirements of their students and creating need-specific professional development.

- Acquire data communications capabilities.

The actual capacity required will vary based upon the number of students within each district and the sophistication of the use of instructional technology within each district. For planning purposes, approximately 40% of the P-12 districts are estimated to require large network capacity (100 Mbps) with the remainder of the districts placing medium demands on the network (10 Mbps). 122 Education Cabinet sites are estimated to need medium network capacity (10 Mbps). Upgrades for postsecondary locations from their current bandwidth to the next level (10 Mbps, 45 Mbps, 100 Mbps, 1 GB) will be provided.

During fiscal year 2006-07, approximately half of the P-12 education districts will be upgraded. During fiscal year 2007-08, the remainder of the K-12 education districts will be upgraded as will as some postsecondary sites and other Education Cabinet locations.

Add on-line assessments of all types – formative, diagnostic, summative, and end of course -- in support of the Governor's and the Kentucky Board of Education's requirements for early and continuous diagnosis, intervention and accountability with a heavy focus in the content areas of math and reading but also including technology and science.

3. Systems Involved

To be determined by the KEN Application Subcommittee and the KEN Network Subcommittee.

4. Impact on Other Systems

To be determined by the KEN Application Subcommittee and the KEN Network Subcommittee.

5. Risks

Identification and analysis of project risks are required for effective risk management. Project risk management is not limited to the identification and aggregation of risks, and it cannot be repeated too often that the point of risk assessment is to be better able to mitigate and manage the project risks. Inadequate or untimely characterization of risks has a number of consequences, all of them detrimental to the project:

- Performance, scope, quality, or technological risks.

These include the risks that the project when complete fails to perform as intended or fails to meet the mission or business requirements that generated the justification for the project. Performance risks can also lead to schedule and cost risks if technological problems increase the duration and cost of the project.

- Environment, safety, and health risks.

These include the risks that the project may have a detrimental effect on the environment or that hidden hazards may be uncovered during project execution. Serious incidents can have a severe impact on schedule and costs.

- Schedule risk.

This is the risk that the project takes longer than scheduled. Schedule risk may also lead to cost risks, as longer projects always cost more, and to performance risk, if the project is completed too late to perform its intended mission fully. Even if cost increases are not severe, delays in project completion reduce the value of the project to the owner.

- Cost risk.

This is the risk that the project costs more than budgeted. Cost risk may lead to performance risk if cost overruns lead to reductions in scope or quality to try to stay within the baseline budget. Cost risk may also lead to schedule risk if the schedule is extended because not enough funds are available to accomplish the project on time.

- Loss of support.

Loss of public or stakeholder support for the project's goals and objectives may ultimately lead to a reduction of scope and to funding cuts, and thus contribute to poor project performance.

Although the above types of risks may be encountered in an almost infinite variety of forms and intensity, it is most useful to consider two varieties:

- Incremental risks.

These include risks that are not significant in themselves but that can accumulate to constitute a major risk. For example, a cost overrun in one subcontract may not in itself constitute a risk to the project budget, but if a number of subcontracts overrun due to random causes or a common cause affecting them all, then there may be a serious risk to the project budget. While individually such risks may not be serious, the problem lies in the combination of a number of them and in the lack of recognition that the cumulative effect is a significant project risk. An obvious example of an incremental risk in construction is weather-related delays, which are not usually major problems in themselves, but a long run of inclement weather that impedes progress on the project may create a serious challenge to the schedule and budget.

- Catastrophic risks.

These include risks that are individually major threats to the project performance, ES&H, cost, or schedule. Their likelihood can be very low but their impact can be very large. Examples of such risks are dependence on critical technologies that might or might not prove to work, scale-up of bench-level technologies to full-scale operations, discovery of waste products or contamination that are not expected or not adequately characterized, and dependence on single suppliers or sources of critical equipment.

The major steps in determining the appropriate risk management strategies include the following:

- Development of risk awareness,
- Project risk identification,
- Qualitative risk assessment

6. Special Considerations

The Education Cabinet will form a project steering committee, composed of senior executives from each agency. This will insure that the research and instruction applications unique to education remain the primary focus. The steering committee will drive the design and capabilities of the network. Once all the education partners are on a single network, we will explore additional enhancements to continually expand capacity to service emerging educational and research needs.

7. Pilot Installation

The pilot installation will be divided into four phases.

Phase 1: Rack Install

Phase 2: Bellsouth Circuit Install

Phase 3: Wan Link Install

Phase 4: DMZ Install

The link below will take you to a web based calendar that will be updated with the appropriate schedules for each of these phases by K-12 district.

http://www.my.calendars.net/ken_circuit_imp

Please see Appendix A for a list of potential pilot sites.

8. Contingency Plans

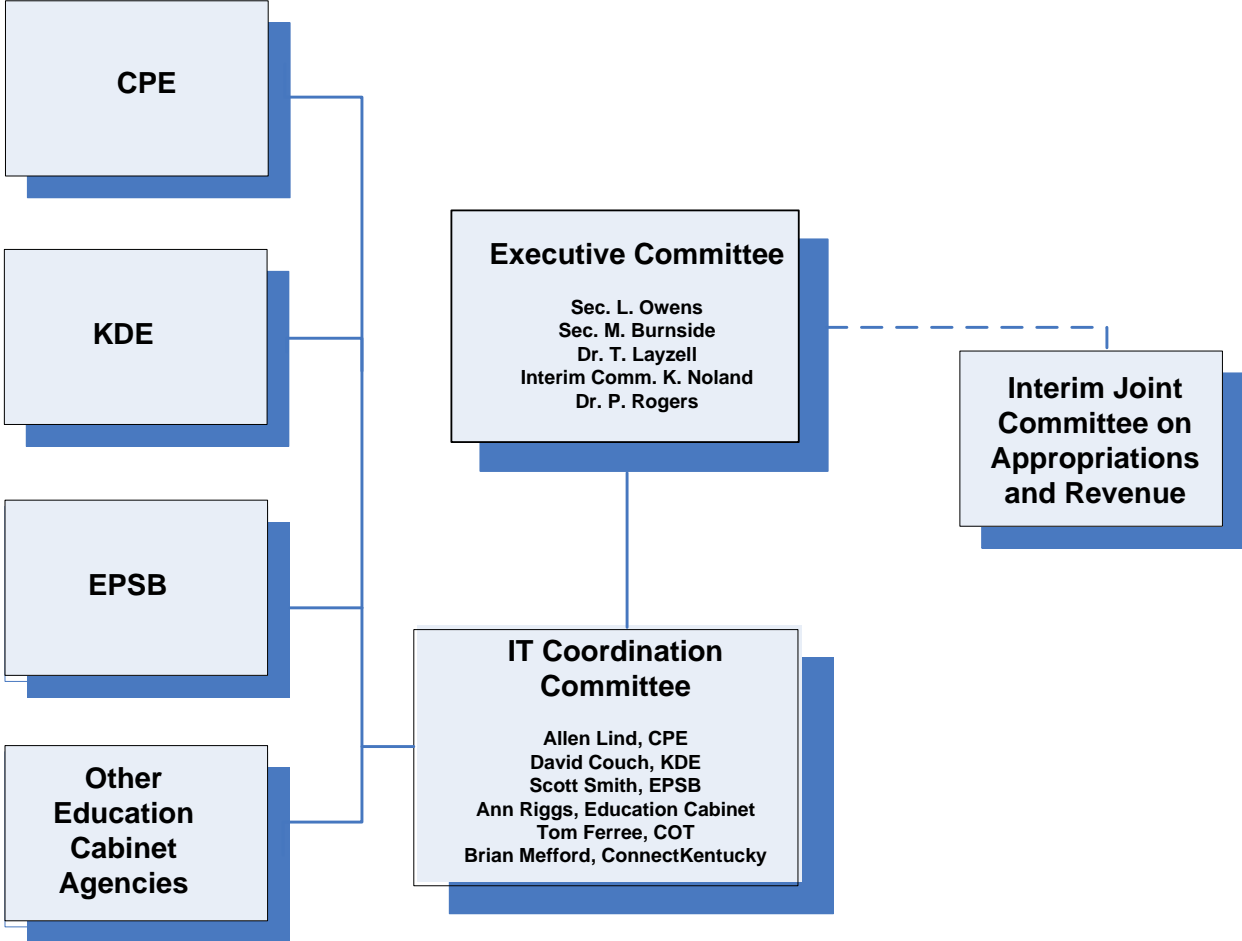
To be determined

9. KEN Governance and Operating Structure

Agency	Executive Leadership	IT Coordinating Committee	Program Manager
Education Cabinet	Laura E. Owens Secretary	K. Ann Riggs, CIO & Director of Division of Technology Services	
Council on Postsecondary Education	Dr. Tom Layzell, President	Allen Lind, VP of Information Technology & CEO of KYVU/KYVL	
KY Department of Education	Kevin Noland, Interim Commissioner	David Couch Assoc. Commissioner Office of Education Technology	Terry Orr Project Manager
Education Professional Standards Board	Dr. Phil Rogers Executive Director	Scott Smith Information Technology Branch Manager	
Finance Cabinet	Mike Burnside, Secretary	Tom Ferree Executive Director Office of Enterprise Policy & Management Commonwealth Office of Technology	

Kentucky Education Network

7/26/2007



Ken Subcommittees
9/20/2006

**IT Coordination
Committee**
Allen Lind, CPE
David Couch, KDE
Scott Smith, EPSB
Ann Riggs, Education Cabinet
Tom Ferree, COT
Brian Mefford, ConnectKentucky

Network Subcommittee
Tim Sizemore
Chairperson

**Application
Subcommittee**
Miko Pattie
Chairperson

10. Primary Roles and Responsibilities

- **Executive Committee:**

House Bill 380 included funds for the Kentucky Education Network (KEN). As part of this initiative, HB380 contained language that requires the Secretary of the Education Cabinet, the Commissioner of the Department of Education, the President of the Council on Postsecondary Education, the Secretary of the Finance Cabinet, and the Executive Director of the Education Professional Standards Board to submit a coordinated implementation plan with timelines and regular progress reports to the Interim Joint Committee on Appropriations and Revenue.

- **Information Technology Coordination Committee:**

The Executive Committee has charged the Information Technology Committee (ITC) with coordinating and communicating all activities as it relates to this project. The committee is also charged with organizing two committees: the Network Subcommittee and the Application Subcommittee.

- **Network Subcommittee:**

KEN Network Subcommittee Charge:

- (i) Commence a high-level design. This is intended to resolve major issues such as the choice of WAN technology and equipment, the IP addressing plan, the degree to which routing is used instead of switching and so on.
- (ii) This high level design should then be compared to the constraints. If the constraints are not met an iterative step backwards is required. In the event of the constraints being met the design process can proceed.
- (iii) Determine the performance parameters that best specify each of the design goals. For example application response time, percentage packet loss, latency, and application availability. Identify any design constraints. The most obvious constraint is budget. Other constraints may include implementation timescale, support of legacy equipment, incorporation of specialized departments that require unique network specification and policy.
- (iv) After considering the constraints, set targets for the relevant network performance parameters.
- (v) A specific network design plan can now begin to be formulated. This addresses all technical details and alternatives for the design.
- (vi) Each major aspect of the technical solution should be lab tested. The application response and availability characteristics should be tested in a lab. This will facilitate an iterative refinement of the technical solution.

- (vii) The design is complete when the technical design is fully refined. In some cases the final lab tests may indicate that the fundamental performance targets or constraints are unrealistic and may have to be revised and compromised. It is however an aspiration to tentatively finalize these parameters at the high level design stage.
- (viii) Our objective is to solve a strategic network infrastructure design problem to determine:
- (ix) Number of nodes (usually computers or servers) and their processing speeds
 1. Set of links between nodes and their bandwidths
 2. Formulate and solve a mathematical program for the network infrastructure design problem by minimizing a cost function subject to satisfying quality of service (QoS) as well as robustness requirements.
 3. Simplification—A simple and sustainable network architecture is based on information needs rather than physical layout.
 4. Standardization—Centralized policy definition and management enables dynamic reconfiguration and consistent deployment throughout the enterprise.
 5. Modularity—Geographically distributed network; group together systems or applications
 6. Integration—environments for integration and easy addition of new applications, services, or devices.

- **Application Subcommittee:**

KEN Applications Subcommittee Charge:

- (x) To identify uses for existing and proposed information technologies that will use the Kentucky Education Network and the applications of these technologies to all learning opportunities within the Commonwealth.
- (xi) To assess and prioritize the existing use, need or desire for such applications in learning institutions, along with their supporting administrative systems.
- (xii) To recommend changes to infrastructure, policies or work processes that will facilitate the successful implementation of these applications.
- (xiii) To review the effectiveness of implemented applications in terms of student success, educational achievement and lifelong learning.

See Appendix B for scheduled events.

- **Program Manager:**

The Program Manager will be responsible for maintaining the vision of the KEN project. This individual will also be responsible for coordinating results of findings into a report to be submitted to the ITC Committee for review and presentation to the Executive Committee. The ITC will make a recommendation to the Executive Committee on when, and if, a program manager is needed.

- **Project Manager – KDE:**

The project manager acts as a leader and a process manager to for coordinating planning, preparing & implementation of KEN within the K-12 districts. As a leader, the project manager is responsible for managing and communicating a clear vision of the project's objectives, and motivating the project team to achieve them. As a process manager, the project manager must ensure the appropriate timing, resources, and sequencing of work efforts are applied to create the project deliverables within a given time frame and budget.

Project objectives are rarely static. Over the life of the project, objectives and deliverables may change as new information is gathered by the project team and evaluated by the project sponsor. The project manager must manage these inevitable changes with a well defined scope management plan, provide continuous leadership for the development team, manage the project sponsor relationship effectively, and create a project environment that allows all participants to maintain peak performance.

The work required to manage a work effort is grouped into the following interrelated processes:

- Structure the Project
- Plan the Project
- Assess Change
- Manage Budget
- Control the Project
- Report Project Status
- Conclude the Project

11. Implementation Schedule and Check List

Expand the checklist in the following table to include all activities required by project team members to move this project to production.

Activity	Planned Start Date	Planned Finish Date	Person Responsible	Status
Charter Project	6/19/06	9/30/06	Information Technology Committee	Completed
Assemble Network Subcommittee	6/28/06	7/5/06	Tim Sizemore Chairperson	Completed
Assemble Application Subcommittee	6/28/06	7/26/06	Miko Pattie Chairperson	Completed
KEN Web Site: http://www.ken.ky.gov	6/19/06	9/20/06	Information Technology Committee	Completed
Review Business Requirements	6/19/06	10/31/06	Network Subcommittee/Application Subcommittee	Completed
Develop Communication Plan	6/19/06	6/28/06	Information Technology Committee	Completed
Procurement Requirements	8/31/06	9/15/06	Finance/COT	Completed
Assemble Advisory Council	6/19/06	6/28/06	KDE	Completed
Draft Design	6/28/06	10/31/06	Network Subcommittee	Completed
K-12 District Check List	6/19/06	9/15/06	KDE	Completed
Pilots Identified	6/28/06	10/31/06	Network Subcommittee/Application Subcommittee	Completed
Finance Approval for Pilots	10/17/06	10/17/06	IT Coordinating Committee	Completed
Final Design	10/31/06	12/31/06	Network Subcommittee/Application Subcommittee	Completed
Begin Pilot	1/31/07	2/28/07	Network Subcommittee	Completed
Final Implementation Plan for K-12 Districts	6/28/06	5/31/07	Network Subcommittee	Completed
Peering of KEN & KPEN networks	5/6/07	6/29/07	Network Subcommittee	Completed
Completion of 92 K-12 Districts	7/1/06	6/30/07	KDE	Completed
Finance Approval for remaining KEN Sites.	7/1/07	7/19/07	IT Coordinating Committee	Completed
WFI Site Implementation Plan	7/1/07	6/30/07	Network Subcommittee	Completed
Completion of 174 K-12 Districts	7/1/07	6/30/08		
Celebration	3/1/07	TBD	IT Coordinating Committee/Cabinet Communications Office	In Progress
Professional Development	1/19/07	TBD	Application Subcommittee	In Progress
Measure Success	6/30/07	6/30/07 & 6/30/08	IT Coordinating Committee	In Progress
Full Production		6/30/08		

12. Budget Information

KENTUCKY EDUCATION NETWORK ROLL-OUT FUNDING PLAN

KENTUCKY EDUCATION NETWORK OPERATING BUDGET

YEAR 1 PLAN ROLL OUT OPTION				Estimated Amt
HB380 FUNDING				\$ 5,300,000
K-12	92	district sites	\$	5,300,000
Total				\$ 5,300,000
Balance Year 1				\$ -

YEAR 2 PLAN ROLL OUT OPTION				Estimated Exp
HB380 FUNDING				\$ 15,300,000
K-12	178	district sites	\$	12,794,688
CPE	col/univ		\$	1,052,371
ATC	55	(1)	\$	200,000
KAE	5	(2)	\$	231,840
DWI	26	sites	\$	1,021,101
Total				\$ 15,300,000
Balance Year 2				\$ -

(1) 55 Area Technology Centers statewide, most are located within LSD, cost to provide hook up between ATC and District

(2) All adult education ctrs scheduled to have broadband, sites above are those not collocated at site w/ existing broadband

KEN CAPITAL BUDGET

PLAN ROLL-OUT OPTION	Estimated Amt
HB380 FUNDING (biennium)	\$ 8,900,000
K-12	\$ 5,300,000
CPE	\$ 2,240,000
EPSB	\$ 112,500
DWI/OTHER	\$ 1,247,500
Total	\$ 8,900,000
Biennium balance	\$ -

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13. APPENDIX A

K-12 Pilot Sites

Reg #	District Name	Node site Location	Address	City, St, Zip	Speed (Mbps)	ATC	County
1	Christian Co.	Christian Co. Board	200 Glass St.	Hopkinsville, Ky 42240	100		
1	Marshall Co.	Marshall Co. High	416 High school Rd.	Benton, Ky 42025	100		
1	Paducah Ind.	Paducah Ind. Board	800 Caldwell St.	Paducah, Ky 42003	100	Paducah ATC	
2	Bowling Green Ind.	11th Street Alt School	877 E. 11th Street	Bowling Green, Ky 42101	100	Warren Co ATC	
2	Daviess Co.	Daviess Co Maint Dept	1621 Southtown Blvd	Owensboro, Ky 42301	100		
2	Ohio Co.	Ohio Co. High school	1400 S Main St.	Hartford, Ky 42347	100	Ohio Co ATC	
2	Owensboro Ind.	Owensboro Board	1335 W 11th St.	Owensboro, Ky 42302	100		
2	Warren Co.	Warren Co Tech ctr	877 Jackson St.	Bowling Green, Ky	100	Warren Co ATC	
4	Bullitt Co.	Bullitt Co. Board	1040 Hwy 44 E.	Shepherdsville, Ky 40165	100	Bullitt Co ATC	
4	Dayton Ind.	Dayton High school	200 Green Devil Ln.	Dayton, Ky 41074	10		
4	Erlanger-Elsmere Ind.	Erlanger-Elmereg Board	500 Graves Ave	Erlanger, Ky 42220	10	JD Patton	Kenton Co
4	Ft. Thomas Ind.	Ft. Thomas Board	28 N Ft. Thomaas Ave.	Ft. Thomas, Ky 41075	100	CE McCormick ATC	Campbell Co
4	Owen Co	Morris Bowling Middle School	1640 HWY 22 Easy	Owenton, KY 40359	10		
4	Pendleton Co.	Pendleton Co. High school	2359 Hwy. 27N	Falmouth, Ky 41040	100		
5	Clark Co.	Clark High school	620 Boone Ave.	Winchester, Ky 40391	100	Clark Co ATC	
5	Fayette Co.	Fayette Co. Board	701 E Main St.	Lexington, Ky 40502	100		
5	Jessamine Co.	E. Jessamine Middle school	881 Wilmore Rd.	Nicholasville, Ky 40356	100		
5	Scott Co.	Scott Co. Board	2168 Frankfort Pk.	Georgetown, Ky 40324	100		
6	Laurel Co.	Laurel Co. GC Garland Admin BLDG	710 N Main St.	London, Ky 40741	100		
6	Madison Co.	Madison Co. Technology Office	702 North Second St	Richmond, Ky 40475	100	Madison Co ATC	
6	Taylor Co.	Taylor Co. High school	300 Ingram Ave.	Campbellsville, Ky 42718	10		
6	Whitley Co.	Whitley Co. Board	300 Main St	Williamsburg, Ky 40769	100		
7	Ashland ind.	Ashland Ind. Board	1420 Central Ave.	Ashland, Ky 41101	100		
7	Carter Co.	Carter Co. Board	228 S Carol Malone	Grayson, Ky 41143	100		
7	Mason Co.	Mason Co. High school	1320 US Hwy 68	Maysville, Ky 41056	100	Mason Co ATC	
7	Morgan Co.	Morgan County Board	460 Prestonsburg, St.	West Liberty, Ky 41472	10	Morgan Co ATC	
7	Rowan Co.	Rowan Co. Board	121 E 2nd St.	Morehead, Ky 40351	100		
8	Floyd Co.	Prestonsburg H.S	825 Blackcat blvd	Prestonsburg, Ky	100	Floyd Co ATC	
8	Lee Co.	Lee Co. Board Office	242 Lee Ave.	Beattyville, Ky 41311	10	Lee Co ATC	
8	Letcher Co.	Letcher Co. Bus Garage	752 Hazard Rd. Suite B	Whitesburg, Ky 41858	100	Letcher Co ATC	
8	Magoffin Co.	Magoffin Co. District Office	109 Gardner Tr.	Salyersville, KY 41465	10		
8	Pike Co.	Pike Co. Central HS	1901 US Hwy 119 N.	Pikeville, Ky 41502	100	Millard ATC	Pike Co
	KDE	COT	101 Cold Harbor	Frankfort, KY 40601	TBD		

14. APPENDIX B

**KEN Application Subcommittee
Business Process 2006-07**

Task	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07
1. Define Subcommittee charge	x	x												
2. Draft evaluation criteria for applications to be considered			x	x										
3. Test validity of evaluation criteria against draft applications matrix			x	x										
4. Finalize evaluation criteria			x	x										
5. Survey P21 education community on applications currently used/will need					x	x								
6. Compile comprehensive applications matrix based on survey responses						x								
7. Survey P21 education community on prioritization of the comprehensive applications matrix							x	x						
8. Modify the comprehensive applications matrix based on priorities from survey responses								x						
9. Evaluate applications using the established evaluation criteria								x						
10. Finalize Subcommittee's applications matrix								x	x					
11. Select Phase 1 applications to be assessed									x	x	x			
12. Assess Phase 1 applications as to costs, usage, enhancements & implementation									x	x	x			
13. Make recommendations for 2008/2010 funding for implementation, enhancements & measurements										x	x			
14. Review progress using measurements as to cost savings, increased usage, teaching quality & learning outcome (Raising Mary)												x	x	x
15. Select Phase 2 applications to be assessed												x	x	x

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