TRANSFORMING VISION INTO ACTION:

AN EVALUATION OF THE

WIRELESS COMMUNITY NETWORK

CENTER FOR URBAN RESEARCH AND LEARNING

LOYOLA UNIVERSITY CHICAGO

DECEMBER 2006[1]

[1] Funding for this evaluation was provided by the Technology Opportunity Program (TOP), US Department of Commerce; Illinois Department of Commerce and Economic Opportunity; and the Grand Victoria Foundation

TRANSFORMING VISION INTO ACTION:

AN EVALUATION OF THE WIRELESS COMMUNITY NETWORK

Prepared By:

Lenore Johnson, Graduate Fellow

Aparna Sharma, University-Community Research Coordinator[2]

David Van Zytveld, Assistant Director

CENTER FOR URBAN RESEARCH AND LEARNING

LOYOLA UNIVERSITY CHICAGO

DECEMBER 2006

www.luc.edu/curl

[2] Comments and inquiries may be directed to Aparna Sharma, Center for Urban Research and Learning, Loyola University Chicago, 820 N. Michigan Ave., Suite 1000, Chicago, IL 60611 (312-915-7530 or asharma@luc.edu).

ACKNOWLEDGEMENTS

In conducting the evaluation for this innovative project, we had the pleasure of working with very innovative people. The evaluation team at Loyola CURL would like to thank Steve Perkins, Nicole Friedman, Nicholas Woytek, Paul Smith and all the past and current staff at the Center for Neighborhood Technology for their leadership, continued guidance, and vision for this project.

This was an expansive project that wove the collective wisdom and power of many organizations and individuals. In particular, we want to acknowledge the tremendous efforts and dedication of the staff from the Gads Hill Center in Pilsen; the Homan Square Community Center Foundation and Neighborhood Technology Resource Center in North Lawndale; the Northeast Neighborhood Association, School District U-46 and McKinley Elementary School in Elgin, and John A. Logan College in West Frankfort. The organizations represented the pilot sites for the WCN initiative. The countless individuals from these organizations are so clearly committed to serving their community and ensuring equal access to technology is afforded to all. Their time and honesty were integral to this evaluation project.

Finally, here at the Center, special thanks to the CURL staff, most notable are Amy Kerr, our Undergraduate Fellows - Alan Araujo and Meredith Tinkham - and the many Urban Studies students who were part of the project along the way.

TABLE OF CONTENTS

EXECUTIVE SUMMARY 5

INTRODUCTION 10

EVALUATION METHODOLOGY 16

EVALUATION FINDINGS 22

- **FOSTERING EFFECTIVE COMMUNITY ENGAGEMENT** 23
- **ASSESSING AND MOBILIZING RESOURCES** 29
- **STABLE TECHNOLOGY AS THE KEY TO SUCCESS** 34
- **BALANCING EXPECTATIONS IN A PILOT INITIATIVE** 38
- **DEVELOPING FLUENCY THROUGH EDUCATION AND TRAINING** 43
- **RECOGNIZING DIVERSE CONTEXTS – COMMUNITY MODELS** 47
- **ESTABLISHING A CRITICAL MASS** 63
- **INTEGRATING SUSTAINABILITY THROUGHOUT THE PROCESS** 65

CONCLUSION 67

APPENDICES 73

Appendix A: Overall evaluation plan for the WCN

Appendix B: Evaluation measures

Appendix C: Full results for the end-user survey

Appendix D: West Frankfort log for resident usage of the computers

EXECUTIVE SUMMARY

This initiative, the Wireless Community Network, piloted a new, next-generation community-based strategy for addressing the lack of access to technology in low-income and underserved communities. The Center for Neighborhood Technology (CNT) led the development of four community-based wireless networks that served as a new infrastructure to deliver high-speed, low-cost, household-based internet access to four under-served communities in Illinois. The WCN project was developed in collaboration with anchor institutions located in four communities - Pilsen and North Lawndale, two low-income neighborhoods in the City of Chicago; Elgin, a moderate income city northwest of Chicago; and West Frankfort, a small, remote, low-income, former coal-mining town in Southern Illinois.

These partnerships with anchor institutions allowed community partner institutions the freedom to use their imaginations about how the community network might best serve their clients, while at the same time serving a new goal: Understanding how, at what cost, and under what conditions the community network model can gain scale, achieve sustainability, and be replicated elsewhere.

The Evaluation

The Center for Urban Research and Learning (CURL) at Loyola University Chicago acted as evaluator for this initiative and assessed whether the three original goals of the WCN project were met.

1. Was there a technology infrastructure offering wireless internet access to communities?

2. Did the WCN engage these communities with the technology for individual and social change?
3. Could CNT develop the WCN to be a replicable, sustainable business model?

This particular evaluation of the WCN pilot project focused on the *process* of building a community-based wireless network. In doing so, the original research questions were answered by going beyond recording basic quantitative outcomes of the pilot project (e.g., number of residents connected to the network) to capturing the nuances and thick detail of the entire three-year project. Thus, the evaluation team focused on multiple key ingredients at play in implementing such community-based technology initiatives.

The evaluation research team utilized a participatory evaluation approach for this WCN initiative. Using such a collaborative approach that included active participation from the various levels of stakeholders provided a more complete portrait of the project process and outcomes. The evaluation assessed the impact of the WCN initiative on three levels – CNT project leadership, anchor institutions, and end-users. Data were collected from each of these WCN stakeholders via interviews, surveys, and focus groups.

Key Findings

CNT and the partner organizations began the WCN project with an exciting vision for asset building that would foster empowerment and opportunity in the four pilot communities. A solid vision is crucial for an innovative project such as this to move forward, and this vision provided momentum throughout the pilot period. Very specific

elements are, however, necessary in the process of transforming vision into effective strategy and successful outcomes. As with any pilot project, there were many highlights and challenges throughout the project.

This WCN evaluation highlights several key ingredients – stated in brief below – that facilitate the transformation of an innovative vision into action in this pilot project.

Fostering Effective Community Engagement: In order for a community driven project to be successful and sustainable, the residents (end-users, in this case) must be committed to the vision and willing to actively participate in seeing the projected goals become a reality. Their voice must be actively solicited and incorporated into the emerging project strategies.

Assessing and Mobilizing Resources: In transforming vision into effective strategy and action, it is clear that resources are the key to success. The process of building a wireless network demands a great amount of resources, including time, funding, staff and materials. A critical examination of the presence of such resources as well as their limitations and uses, offers further insight into infrastructure needed for such a pilot project.

Stable Technology as the Key to Success: Although community engagement was at the core of this initiative, the overall success and attainment of the projected outcomes depends on one crucial factor – the technology. A stable, reliable technology infrastructure is the backbone for a community wireless network and as a result, challenges with untested and developing technology can affect all other aspects of the project.

Balancing Expectations in a Pilot Initiative: As a pilot initiative, CNT and its partner organizations faced the challenge of creating excitement within each community while also encouraging realistic expectations. Given the selection of a new technology for this pilot project – a mesh wireless network – clear and realistic expectations need to be communicated to all stakeholders.

Developing Fluency through Education and Training: Providing a new technology resource is only one step toward community asset building and engagement. Beyond this resource, residents should have opportunities to develop the tools and skills necessary to utilize this new resource to its fullest potential.

Recognizing Diverse Contexts: The WCN project was set in four communities, each characterized by a unique environment and population. This informed the evolution of the project in each area, and led to the growth of four particular models for the overall effort. Such an initiative must recognize the need to be flexible given the diversity of community contexts (e.g., varying models of community engagement).

Establishing a Critical Mass: For such a project to be viable there is a need to continually outreach to the target community in order to maximize the number of community members and institutions participating in such an initiative.

Integrating Sustainability Throughout the Process: Furthermore, this outreach must be to a diverse group of individuals and institutions in order to ensure the long-term sustainability of the project.

The Center for Neighborhood Technology and its community partners had high expectations for the WCN project. While some aspects were not met, the WCN was an important learning experience and one that charted territory yet to be approached on the

community development front. The knowledge gained throughout the process serves the intended purpose – to fully understand what it means to bridge the digital divide and recognize the challenges and the key ingredients to transform the vision into action.

INTRODUCTION

I remember as a kid my folks always used to buy encyclopedias and every year they would buy the upgrade. I have two nephews in my house, nineteen and fourteen, and we don't need encyclopedias. We don't even need dictionaries if we really don't want to because everything we want to find out is usually somewhere online. (North Lawndale End-User)

The Center for Neighborhood Technology's (CNT) vision for the Wireless Community Network (WCN) project is undoubtedly reflected in this comment from a North Lawndale resident and WCN end-user. The internet is an immensely broad resource with a scope beyond any other source of information. Indeed, in the present era of expanding technology, internet access is evolving from a luxury to a necessity. Recognizing access deficits in certain communities, particularly among low-income residents, CNT sought to provide access to the internet to underserved households. Moving such a vision into a tangible set of outcomes is a complex and often challenging process.

This project, the WCN, piloted a new, next-generation community-based strategy for addressing the lack of access to technology in low-income and underserved communities. CNT proposed to build on existing networks by developing four networks that would serve as a new infrastructure to deliver high-speed, low-cost, household-based internet access. The strategy would allow community partner institutions the freedom to use their imaginations about how the community network might best serve their clients,

while at the same time serving a new goal: understanding how, at what cost, and under what conditions the community network model can gain scale, achieve sustainability, and be replicated elsewhere.

As a pilot initiative, there was great potential for the WCN evaluation team to capture the evolution of this ambitious effort over a three-year project period. Thus, the three projected outcomes began as broad goals and more specific outcomes were considered as the project leaders moved forward, adapted to contexts, and responded with important adjustments. In documenting the process of building the network and connecting communities to the internet and each other, these projected outcomes were used as measures to determine both successes and challenges of the WCN project in the four pilot communities.

The three primary goals of the WCN project were:

1. Building a technology infrastructure;
2. Offering wireless internet access to communities;
3. Engaging these communities with the technology for individual and social change.

Alongside these goals, CNT and its community partners aimed to develop a replicable business plan modeled after the WCN project which would allow other groups to follow suit in providing this increasingly important resource to local communities (See report developed by CNT*, Building Community Wireless Networks: A How To Do It Manual*)

Project Design

The WCN project was developed in collaboration with anchor institutions located in four communities - Pilsen and North Lawndale, two low-income neighborhoods in the City of Chicago; Elgin, a moderate income city northwest of Chicago; and West Frankfort, a small, remote, low-income, former coal-mining town in Southern Illinois. As

Figure 1. Map of Illinois Depicting the Locations of the Four WCN Sites

Table 1. About the Anchor Institutions

Community	***Anchor Institutions***
Pilsen	*Gads Hill Center* • A multi-service, family resource organization that has served Pilsen since 1898. • Priority service areas: children's services; teenage services; family services.
North Lawndale	*Homan Square Community Center Foundation* • Owns the Homan Square Community Center Campus and leases to providers such as the Neighborhood Technology Resource Center. • Foundation board is comprised of community residents and some citywide civic leaders. *Neighborhood Technology Resource Center* • Provides training and access to new technologies. • Programmatic focus includes increasing literacy and educational competency among youth, adults, and organizations.
Elgin	*School District U-46* • Covering 90 square miles, School District U-46 serves portions of 11 communities in the northwest suburbs of Chicago in Cook, DuPage and Kane Counties. • School District U-46 serves almost 40,000 children in grades pre-K-12. The District ranks as the second largest in Illinois with 40 elementary schools, 8 middle schools and 5 high schools.
West Frankfort	*John A. Logan College* • Located near the center of the College district, which is most of Williamson and Jackson Counties and parts of Franklin, Perry, and Randolph Counties. • Has one of the largest adult and continuing education programs in the state.

Table 2. About the Communities Served by the WCN[3]

	Pilsen	***North Lawndale***	***Elgin***	***West Frankfort***
Total population	92,472	45,647	94,487	8,196
Median age	27.2 years	27.8 years	30.9 years	40 years
Race	Predominately Hispanic or Latino (62.7%)	Predominately African American (98.1%)	Predominately White (70.5%)	Predominately White (98.5%)
Average household size	3.31	3.25	2.94	2.24
Percent in labor force	49.7%	49.2%	70.6%	52.8%
Percent high school graduate or higher	48.3%	59.2%	73.8%	75.2%
Median annual family income	$28,026	$22,426	$52,605	$25,358
Percent families living below the poverty line	24.7%	33.8%	6.4%	13.9%

[3] Data taken from Census 2000

Proposed Project Outcomes

Planned outcomes, as articulated at the beginning of the project were:

1) Increased capacity of partners to better serve their clients by extension of services;
2) The creation and testing of four, dense "mesh" networks serving approximately 1,000 to 1,200 households, small businesses, and other community institutions – any of whom will receive donated and reconditioned computers, as needed.
3) A replicable, sustainable business model that builds a new community asset and reconnects participants to the mainstream economy.

EVALUATION METHODOLOGY

During the planning stages for WCN, the Center for Urban Research and Learning (CURL) of Loyola University Chicago was asked to evaluate the initiative. In January 2004, CURL assumed responsibility as evaluator for the Wireless Community Network (WCN) project being planned and implemented by the Center for Neighborhood Technology (CNT).

The Center for Urban Research and Learning seeks to promote equality and to improve people's lives in communities throughout the Chicago metropolitan region. CURL pursues this goal by building and supporting collaborative research and education efforts. These partnerships connect Loyola faculty and students with community and nonprofit organizations, civic groups, and government agencies. Such collaborations link the skills and wisdom present within every community with the specialized knowledge and academic discipline of a vital urban university. Working together, community needs are addressed and the academic experience is enriched. Thus, CURL was well situated to act as evaluator on this project.

The evaluation team was comprised of CURL staff members, CURL Graduate Fellows and Undergraduate Fellows. This team was responsible for data analysis and evaluation report writing.

Evaluation Process

The evaluation research team utilized a participatory evaluation approach for this WCN initiative. Using such a collaborative approach that included active participation from the various levels of stakeholders provided a more complete portrait of the project. Given the collaborative nature of a participatory evaluation methodology, the evaluation plan was

designed with the flexibility needed to allow for changes suggested by the community partners. The evaluation assessed the impact of the WCN initiative on three levels as presented below in Table 3. The overall evaluation plan for the WCN can be seen in Appendix A.

Table 3. Evaluation Data Collection

WCN Stakeholder	***Data Collection Method***
CNT project leadership	
	Exit interviews with departing staff
	Focus group with project leadership
	Participant observations of staff meetings
Anchor Institutions	
	Focus group with project leadership
	Quarterly interviews with staff
	Exit interviews with departing WCN project staff
	Site visits
End-Users	
	Focus groups in Pilsen and North Lawndale
	End-user survey

Development of Evaluation Measures

All of the measures utilized for this evaluation were first developed by the CURL evaluation team. Drafts of the evaluation plan and measures were presented to the CNT project leadership and anchor institutions for comments, particularly relating to the relevance of questions being asked and user-friendliness of the end-user survey. All of the measures described below that were utilized for this evaluation can be found in Appendix B.

End-user surveys. The evaluation team proposed to gather information from the community residents (i.e. the end-users) of the WCN via a questionnaire. The survey consisted of basic questions about end-users' use of computer technology, including the internet, and their satisfaction with the WCN project in their community. The questionnaire was created by the evaluation team based on existing evaluation questionnaires used in previous CURL evaluation projects.

A variety of techniques were used to administer the end-user survey.

- The survey was mailed to all documented "WCN connected residents;" as provided by the community partner organizations and CNT.
- A web-based version of the survey was posted on an online survey site and end-users were given information on how to access it;
- The survey was also administered over the telephone to several end users.

Quarterly updates from anchor institutions. The evaluation team also connected with staff from the anchor institutions to check on the progress of the WCN initiative in their community and to document recent project activity. In addition, the quarterly updates allowed the evaluation team to establish some rapport with agency staff and learn more about their perspectives of the WCN project.

Focus groups with WCN stakeholders. The focus group questions for the CNT leadership, anchor institution staff, and end-users were constructed by the evaluation team in consultation with CNT staff. The questions posed at each of the focus groups focused on project implementation, successes and lessons learned in the program as well as ideas for the direction of the project.

Changes in Evaluation Methodology

Limited end-user data. As mentioned earlier, the evaluation of the WCN initiative began as the project was just being developed and implemented. Thus, this evaluation focused more on the *process* of the project implementation rather than the proposed outcomes. For example, the evaluation team constructed a questionnaire for WCN end-users to assess their satisfaction with the network as well as to gain insight on how the network was being utilized by community residents. There were, however, fewer end-users than anticipated and this was ultimately reflected in the number of residents that completed the end-user survey (n=14). Some of the end-user responses are listed in Table 4 and the full results to the end-user survey can be viewed in Appendix C. Given that this was a very small sample size, the findings for this evaluation did not include these survey findings on the WCN end-user experiences.

Table 4. Various Responses from WCN End-User Survey (n = 14)

	Survey Items	***Percentage of Respondents***
WCN Usage	Connected to the WCN and regularly use the internet service.	38.5%
	Connected to the WCN but do not use the internet service.	15.4%
WCN Outreach	Learned about the WCN through an organization in their community	38.5%
	Learned about the WCN through CNT	15.4%
Why Did They Join WCN?	To have access to computer and internet at home	61.5%
	Because it's free	53.8%
WCN Training	Found the WCN training and education sessions to be very helpful	46.2%
	Found the local organizations to be very helpful	30.8%
	Found CNT to be very helpful	50%
WCN in the Community	Felt that WCN being based in own community was very appealing	69.2%
	Felt that WCN was very helpful in helping to feel connected to other people	46.2%
	Felt that WCN was a good internet option for home	61.5%

Assessing unique outcomes for each WCN site. Given the diverse context of each community, it was clear to the evaluation team that the same evaluation plan could not be used to evaluate the WCN initiative in each of the four communities. Thus, the evaluation plan for each community was further defined in terms of its projected end-users and desired outcomes. These differing contexts and subsequent evaluation plans gave rise to four unique community-based WCN models with unique outcomes. These unique models will be discussed in detail in the findings section. Given the limited amount of end-user data available for this evaluation, these customized evaluation plans were used more to document

the creation and implementation of the WCN in each community rather than using it as a guide to assess outcomes.

Data Analysis

Qualitative data collected in the focus groups, site visits and questionnaires was coded for themes by the research team. The quantitative data was entered into an online survey database. Data was analyzed using Survey Monkey - the online data collection system, Microsoft EXCEL and Statistical Program for Social Science (SPSS).

EVALUATION FINDINGS

CNT and the partner organizations began the WCN project with an exciting vision for asset building that would foster empowerment and opportunity in the four pilot communities. A solid vision is crucial for an innovative project such as this to move forward, and this vision provided momentum throughout the pilot period. However, very specific elements are necessary in the process of transforming vision into effective strategy and successful outcomes. This WCN evaluation highlights several key ingredients that facilitate the transformation of an innovative vision into action in this pilot project.

The following sections offer an overview of each ingredient, illustrating the way each aspect was integrated in the WCN project. Each of these areas is necessary for transforming innovative vision into action.

- **Fostering Effective Community Engagement**
- **Assessing and Mobilizing Resources**
- **Stable Technology as the Key to Success**
- **Balancing Expectations in a Pilot Initiative**
- **Developing Fluency through Education and Training**
- **Recognizing Diverse Contexts**
- **Establishing a Critical Mass**
- **Integrating Sustainability Throughout the Process**

FOSTERING EFFECTIVE COMMUNITY ENGAGEMENT

In order for a community driven project to be successful and sustainable, the residents must be committed to the vision and willing to actively participate in seeing the projected goals become a reality. Several components contribute to this ideal level of engagement from within the community.

Selecting Ideal Community Partners

The WCN project was heavily grounded in partnerships, beginning with the collaborative relationship between CNT and the local community organizations that served as partners in the pilot project. Strong organizational partnerships led to a diverse and committed network of residents to support the program. For this project, the best method for establishing contacts within a community was to partner with a well-established, trusted community organization that had a strong understanding of the community members and their culture. The partner organization's knowledge would allow the project to be modeled around the communities' needs and resources taking into account the cultural context of the community and its residents. Organizational buy-in would represent a strong commitment to see the pilot project through to fruition, and assure this support from the beginning would lead to project successes.

Strategic Outreach

Targeting potential end-users is a complex process and should address several key factors:

- Finding community residents who are interested in participating is an obvious element, but not the only factor to consider.

- Geographic location of the physical site is important in order to ensure an adequate signal, but also to establish a dense, wide-spanning network.
- Residents who are supportive of the community-based aspect of the project are ideal participants, as they see the project in broader terms beyond internet access. By supporting the WCN initiative, these residents are supporting the development of a positive asset in their community.

WCN end-users were recruited through community partner programs, but also through contacts with additional community organizations. Limiting outreach to partner programs impacted the number of potential end-users. For example in Pilsen, the project became an effort of one organization, rather than an initiative linking the community on multiple levels through varying arenas. Pilsen residents were primarily targeted through the Gads Hill Center, whereas North Lawndale expanded its recruitment efforts by working with a network of community organizations.

Establishing Strong Communication

Maintaining strong lines of communication between CNT, the community partner organizations and the end-users is among the most important components of a successful initiative. For this reason, it was necessary to establish consistent, open, honest communication with the community members.

> *I feel that maybe what we should have been doing is keeping more of a tab on what was going on in the big picture and communicating that better to the community partners, not just the WCN partners but Lawndale partners, like this is the latest on the network and what is and is not working.* (Community Partner)

As established organizations grounded in each community, local partner organizations provided the most fitting source of direct communication with residents. Legitimacy and trust were crucial in establishing and maintaining both interest and commitment among residents, and working with organizations where these relationships exist eliminates the difficulty in building new relationships.

Communication among end-users was a key component of engagement, as highlighted during one focus group. End-users in North Lawndale suggested integrating an e-mail system as part of the project, creating a central line of communication between all parties involved. Overall, they were very focused on the need for greater content, beyond just the actual internet service. Along with creating a WCN e-mail account system, suggestions included a newsletter, online bulletin board, and a more established help desk or hotline where end-users could call for assistance. Another suggestion was a chat room – a clear way to not only improve communication, but allow end-users to help each other with issues. Such a tool would not only enhance community engagement and connections among residents, but would serve an important role in enhancing network sustainability.

Communication posed an ongoing challenge throughout the project, not only between organizations and end-users, but between the organizations as well. CNT made a concerted effort early on to foster effective dialogue and idea sharing, however the demanding schedules of partner staff and the difficulty in scheduling mutually convenient times for meetings created a barrier. Monthly conference calls including representatives from all four communities were inconsistent. While in-person meetings were implemented during the second half of the project, these included representatives from the Chicago communities only. Therefore, West Frankfort and Elgin remained more isolated from the other

communities. Other communication methods such as a WCN blog and wiki were put in place, however they too were somewhat inconsistently utilized.

Encouraging Active Participation

Community events are an effective way to create interest throughout the neighborhoods. Both North Lawndale and West Frankfort organized formal public launches for the network where CNT staff, partner organizations and community representatives highlighted the vision and goals for the WCN. Such events formalized the project and illustrated its potential to the broader community.

Outreach cannot end with the initial recruitment but includes maintaining active relationships. This became a challenge when end-users relocated, not always providing updated contact information. Some end-users moved to new homes, taking donated computers with but leaving nodes behind. CNT and the community partners worked to connect the new tenants, however this required relationship building that was not always successful. West Frankfort seemed to experience this most frequently, likely due to the target population being people who rent their homes rather than own. End-users in Pilsen and North Lawndale included both renters and homeowners.

To increase engagement and feelings of ownership, the community members need to actively participate throughout the stages of the project including creating the components and making decisions. Residents in North Lawndale who were able to volunteer with the project by building nodes and helping with installations appeared more committed to the overall success of the initiative. Fostering ownership is also an important step toward greater sustainability. When end-users were involved at multiple levels, they began to see the project as community-driven, rather than a service provided by an outside organization. One

end-user in North Lawndale suggested some ways this could have been more adequately addressed in the WCN project:

> *If they did a community bulletin board, you could do frequently asked questions so that people could log in. Because a lot of people have the same questions and if you could list the answers to those so that people could find ready answers to things quickly that come up all the time…It's a simple thing to do because it will configure itself. But you have to know where to go and what to do. It's the little things like that. Chat, for instance, might be a good thing where we can ask questions back and forth and get an answer. I think one of the challenges is for people that have internet and decide to do this, they're used to a service provider that has content. You get e-mail, chat, you get links to shopping. You get a lot of stuff. But when you get a raw internet like we have…this is an internet connection. You can connect to anything but there is no pre-built content. There is no infrastructure to it. People who don't know how to use it, how to find a search engine are lost because there's no content, there's no e-mail, there's no anything. There's nothing familiar for them.* (North Lawndale End-User)

This participant saw the potential for engaging residents with each other and with the resources provided through a community-based internet program. However, the WCN project did not reach a point where content became a focus. As discussed later, much of the pilot project period involved stabilizing the technology and moving it toward a more

functional level of service in hopes of competing with other internet service providers. In turn, the continued focus on technology remained the driving force throughout much of the project. As a result, CNT and its partners were limited in their ability to focus too heavily on community engagement to the extent they originally hoped.

ASSESSING AND MOBILIZING RESOURCES

In transforming vision into effective strategy and action, resources are the key to success. The process of building a wireless network demands a great amount of resources, including time, funding, staff and materials. Examining the presence of such resources, as well as their limitations and uses, offers further insight into the positive outcomes and challenges within the WCN project.

Human Resources

In particular, the ongoing presence of staff to trouble-shoot various issues and remain in communication with end-users is of utmost importance. CNT's technology staff was highly skilled and knowledgeable, understanding the intricate details of the network and its components. As a relatively small group (mainly two people at the outset of the project), however, CNT staff simply did not have the capacity to cover all the ground necessary to keep the project running as well as expanding.

> *I also think it was a capacity issue because, I mean we had enough money for a staff person, a (emphasized) staff person in Lawndale and we can't expect one staff person to do all the technical assistance, help with installations, do all the outreach and everything else. So we just didn't have the capacity I think to do everything well.* (CNT Staff)

It was clear that the staff were pulled in many different directions. Those who were most heavily involved at the community level noted the incredibly demanding schedule of working on a pilot project.

Forming a specific accountability structure – including a designated point person in each community – also contributes to clear communication and success. Ongoing changes with staff meant that different people held this role at various points in the project, complicating the lines of communication on all levels. In a project such as this with multiple layers of accountability, consistency is crucial. Recruitment, installations, follow-up and trouble shooting were largely done through individual relationship building rather than an established, standard process of steps. One staff member explained:

> *I think that the one-on-one visit is really a good idea. But then there should be a piece of paper that they can refer to afterwards just so that, because the thing about a one-on-one, it's great except that one-on-one will be different than this one-on-one, and at the end of the day everybody has to have the same information.* (Community Partner)

As the partners were working with new technology and developing strategy alongside continual changes in the project, there was much fluctuation in how to actually complete installations of the nodes. As a result, the wireless communication lines between households were hampered based on the limited existence and strength of nodes.

Community Technology Consultants. In early 2005, two additional staff members were hired – one in Pilsen and one in North Lawndale – to help ease the demand placed on

CNT's technology staff. Originally hired as "consultants," their engagement with the project proved to be an essential element in the project's successes and their work spanned far beyond a consultant level. Covering aspects of outreach as well as installations and training, these individuals were crucial in moving the network forward. In particular, they ensured a steady and consistent flow of information between CNT, the community partner organizations and end-users. The WCN in Pilsen and North Lawndale grew extensively following the these new additions to the team. Each took on multiple roles and became deeply integrated in the process. They developed relationships with community residents and were readily available for consult, yet also intensely engaged at the management level with CNT and the community partner staff. Thus, they served as resources for all parties involved in the project.

The impact of staff turnover. Staff turnover and transitions occurred throughout the project in all four communities as well as within CNT, creating additional barriers to consistency. In some cases, departing staff was replaced by new individuals who were eventually integrated into the project. However, some positions were eliminated during the pilot period, causing forced restructuring. CNT staff transitioned early on, with the original manager being replaced. The community partners sensed that the early transitions had the heaviest consequences due to the slow pace of the project overall at that point. The more the project was established, the easier it was for others to take over aspects of leadership. In a project of this length, such changes are to be expected. These changes caused a few setbacks, as new staff needed to acquaint themselves with the project, but overall the process ran smoothly through such staff changes.

Material Resources

Limited resources available for installation of nodes. CNT was also limited for resources needed to complete node installations, specifically transportation and node-installing materials (e.g., a ladder). With the nodes being installed on rooftops, the safety of workers and volunteers was an important concern. Not only was special equipment needed to ensure safety, but insurance coverage for such work was not factored in to the budget. To account for these missing elements, CNT contracted with an outside organization to make the node installation process more safe and efficient.

> *When we realized we had to go to the rooftop model, well then liability issues came into play and other things, so it became less, you know, hands on for everyone who was a part of the network and we had to try to get it to this other level where professionals did the work.* (CNT Staff)

In terms of advancing the development of a technology infrastructure – the core of this project – this decision proved beneficial. Once these barriers were overcome, the node installations progressed and end-users were more readily connected to the network.

Availability of computers for residents. Another important material resource is the availability of computers for those who do not already own one. West Frankfort had a steady source of computers, but CNT spent a great deal of time and energy securing computers for Pilsen and North Lawndale.

> *A lot of people in the beginning of the project, at least in North Lawndale, I'd say half to three quarters of those people don't have computers or they have a computer but it's very old and it just can't connect to the network. Not the right software I guess. And I feel that maybe…well there's not really a good source for computers. I think I…We can bring in like five computers a week, which is a lot but not enough for like a huge community network, a municipal network, which I think a lot of municipalities are overlooking. So like Philadelphia, I'm sure Chicago will address it. A lot of them are just like, "here's the internet. We provided everyone the internet connection and that's all we have to do now. If they can't get a computer, that's their fault." I think that's a big thing with wireless networks, community or municipalities should be looking at that.* (CNT Staff)

A new community resource has little impact when residents do not have the tools to access that resource. From the start, West Frankfort had a consistent supply of computers that provided for over 100 households. In turn, they spent more time and energy on the network infrastructure and expanding their base of end-users.

STABLE TECHNOLOGY AS THE KEY TO SUCCESS

Although community engagement was at the core of this initiative, the overall success and attainment of the projected outcomes depends on one crucial factor – the technology. A stable, reliable technology infrastructure is the backbone for a community wireless network and as a result, challenges with the technology can severely impact all other aspects of the project.

Technology setbacks. Ongoing technology issues posed the greatest barrier to the project's advancement in all four pilot communities. The bulk of the node installations and internet connections were completed during the last year of the three year pilot project. During this time, those that were connected to the WCN network reported ongoing challenges with the technology's functionality. Prior to system upgrades conducted in December 2005, end-users in North Lawndale were still having difficulty accessing the internet on a consistent basis without interruptions. End-users reported smooth installation processes, however the technology was too unstable to be useful.

> *The best thing I would say was the installation. That's the only thing that went right, right away… installation of the node…When they started the upgrades a couple of weeks ago, that was the first time I was actually able to get online with the node, with the network.* (North Lawndale End-User)

Others reported similar challenges in the period prior to the upgrades. While the nodes were installed, the access was very limited and not consistent enough to serve its

purpose. Although access improved following the network upgrades, end-users still reported ongoing difficulties in connecting to the internet through the WCN.

> *Every now and then, like maybe once a month I could get something but it wasn't long enough. It was showing pages actually loading up and it would stop in the middle. That would be my biggest problem. Now it's coming up but maybe fifty percent of the time it works correctly.* (North Lawndale End-User)

These technology setbacks stemmed from a variety of issues. This pilot project was utilizing experimental technology, which did not run as smoothly as envisioned. The physical nature, for example, of each community was an important consideration. Specifically, the housing stock (single family homes versus tall apartment or office buildings) and the placement of trees played a role in how effectively and efficiently the antenna emitted its signal:

> *I pretty much had the same situation. The installation went smooth. I really couldn't connect after it was installed because there's a tree in my line of sight from the antenna that's broadcasting. Since they put in the south facing antenna that's broadcasting and downloaded the network upgrades, I'm able to connect sporadically but it's unstable.* (North Lawndale End-User)

The end-users who remained involved in the project eventually saw a more stable network. However, doing so required patience and often a back-up plan for those who were

more dependent on having reliable internet access. Some end-users maintained a dial-up account in case the WCN network was down or inconsistent.

Resident responses to slow technology advancement. While CNT was working on the technology, some residents grew impatient and frustrated, feelings that were exacerbated by a perceived lack of information. End-users in Pilsen had similar experiences to those in North Lawndale:

> *All of a sudden there was a cut off in communications. We stopped by to see what had happened and the center told us they would send someone to check the antenna. No one ever showed up and we called again. We found that the staff had changed and there was a new person in charge. We thought the project was dead and we let it go because no one seemed to know what the problem was. They just told us that there was something wrong with the server and we felt that the program would not continue.* (Pilsen End-User)

This family was eventually connected, however they waited approximately two years. They seemed pleased with the program once they received service, but the process of reaching that point was slow and undefined.

> *It was easy to join the program; the people were friendly in installing the equipment in my home. However, they told me one thing and did another. They told us that they would give us computers and that they would be new. But when they gave us the computers they turned out to be really slow. I was*

calling them because they told us that they would call us first but they never did. The coordinator said that they would come by at a certain date but it had to be pushed back because the funds had not yet been received. Finally she called me and told me that everything was square and that they would send someone to install everything. After that it was easy. (Pilsen End-User)

Increasing motivation for home-based internet access. Working with unstable technology places a great deal of burden on patient, committed residents to remain with the project. Some residents who expressed interest in participating eventually signed up for service with a corporate internet service provider. The WCN project was successful in sparking their interest and illustrating the added benefits of home-based internet access, despite not meeting these immediate needs. This exemplifies a key outcome of this project – fostering engagement with the internet within each community. While this materialized in a different manner than expected, the WCN effort contributed greatly to this expanded interest.

BALANCING EXPECTATIONS IN A PILOT INITIATIVE

The excitement over the WCN project in large part stemmed from its innovative vision, targeting communities that were not often recipients of cutting-edge technology. While this was a key selling point in conducting outreach, the pilot approach necessarily meant that some aspects were experimental, particularly the technology. Subsequently, CNT and the partner organizations were faced with a dilemma – How do we encourage excitement and market the project, but encourage realistic expectations given the experimental nature?

Challenges for community partners. With setbacks in the technology development, CNT and the community partners were faced with the challenge of maintaining excitement among residents while also encouraging patience with the developing pilot project. This was particularly true for the community partners. As the visible front for the network in each community, residents went to the partner organizations with questions related to the WCN. There was concern about balancing the number of end-users involved in the project, the capacity of the technology resources, and the capability to provide quality products in a timely manner. Balancing the varying responses from the community proved to be an ongoing issue for the community partner staff, particularly those serving as primary contacts for end-users or potential participants:

> *There's people sometimes who get really, really mad, especially when I'm looking for computers for them or when I'm having a hard time getting a computer ready for them, because maybe I had to reformat the drive. I had a good computer for them and then I figured out that a spring wasn't working*

so I couldn't give them the computer. Sometimes they're very understanding. There's a certain group that's really understanding, it's a project it's a pilot, they're not paying anything, it's a pilot-project. And there's another group of people who don't understand that. They want their service and they want it now and they don't know why it's not working, and if we promised them it's not working. So we get both ends of, some people are really like, like they'll call us and they'll let me know, "It's not working but I understand if it's not working, I'm just letting you know so if you're not aware of it" and it's done. And there's some other people who call and they're fuming because it's not working. (Community Partner)

Frustrations such as this can lead to negative perceptions, which in turn impact the way the project is viewed in the broader community. Residents signed up for the project because they clearly appreciated the vision and purpose – especially its emphasis on low-cost internet service. A positive experience would ideally prompt end-users to refer their friends to the program, increasing its scope and strength. However, the technology must be stable in order for people to feel confident in recommending it to others:

As long as the internet is constant there won't be a problem recommending it to our friends, especially since it's free. Right now the internet is expensive and one has to choose whether to pay the service or pay for the phone, or light, or gas. Being effective, with a good recommendation the whole neighborhood will want it. (Pilsen End-User).

An end-user in North Lawndale shared a similar perspective:

> *I had the same experience because when I signed up and it took a year before I actually got it, I was like, you know I'm waiting all this time, I wonder if this thing is even fast? Cause I've got dial up which isn't fast. If this isn't going to be any better, why should I bother? And it was not until…I've been in the program a year and a half…a month ago that I actually saw the speed of the network. Actually, physically saw it demonstrated. So there was no WiFi. So even if I was to go out and tell somebody, I wasn't talking from any experience.* (North Lawndale End-User)

Issues with the technology made residents unsure about promoting the program. Had the technology been consistent at an earlier stage, it is likely that more residents would be made aware of the opportunity through their neighbors and friends.

Fostering patience among residents. The struggle in stabilizing the technology was an ongoing issue throughout the duration of the project, and limited attention on other projected outcomes. Highlighting problems over successes has a particularly significant effect when community residents had an influential voice within the neighborhood.

> *I know that that's one of the things that we've, you know, had successes and challenges with, you know people that we connected because they were political members of the community but who weren't in an ideal place. There*

wasn't an obvious way to connect them at the time and so they've really become…I mean it's been a problem for them because they can see at least from my perspective that the network doesn't really work at all. (Community Partner)

The technology was more consistent for some residents compared to others, and there were some clear improvements as the project progressed. However, the irregularity and problems with the technology seemed to overshadow successes, limiting both excitement and community engagement. Although connections were increasing, this growth received less attention in the context of continued issues in stabilizing the network.

A slow pace on installations and connections can also foster negative perceptions, damper community excitement and limit program expansion. As a result, the project never reached a point where specific aspects of usage could be measured, mainly because the technology demanded so much attention throughout the duration of the pilot period. The primary goal became connecting end-users rather than the initial focus on measuring ways residents became connected to resources and utilized the internet for individual and community change. As a CNT staff member noted:

The entire time was a development and testing phase where that's how it wound up occurring. Where what we said was we were going to develop and test and deploy this network initially and then spend the rest of the time rolling it out to the people and sort of building the network. But we spent the entire time wrangling with the technology and there's a number of reasons for

that. One was the software was immature and there were just aspects of it where it didn't work as well. It didn't do the things that we needed it to do. So there was a development phase and eventually it got to that point. In fact new challenges occurred even when we go to the basic functionality point. So that was a struggle because instead of being able to step back at a certain point when things had stabilized and concentrate on polish and integrating and all of those things that I mentioned a little bit with regard to a municipal network, we kept coming back to just dealing with the core technology. (CNT Staff)

While the original WCN design focused on the outcomes gained through technology access, the effort dealt most heavily with the first step of providing the technology. The ongoing challenges changed the scope of the project and in turn, technology became the end rather than a means to an end.

DEVELOPING FLUENCY THROUGH EDUCATION AND TRAINING

An individual deeply involved throughout the project at one point stated that providing internet access without the necessary skills to use the resource is like giving someone a car with no keys. The vision for the WCN went beyond internet access – CNT and its partner organizations saw outcomes growing out of access. Education and training provided the means for expanding the program's capacity in this way.

Providing the "keys to the car." Training and education were, from the early stages of the project, a primary focus of the project and each community implemented a strategy for ensuring people understood the basic aspects of computer and internet usage. Because each community partner organization had access to a computer lab, they were better able to organize classes and make training available to end-users. Despite including this in each action plan, the training still had limitations.

> *I think the training process, the way it's set up, is good. It's just that you need more repetitions. I put together maybe two nodes and I'd hate to actually have to go out to someone's house and put one together because I've only done it twice. So I think the training is done well, it's just a matter of repetition.*
> (North Lawndale End-User)

As many of the end-users were not computer owners at the start of the program, the technology staff faced a great deal of demand in terms of providing basic training. The steep learning curve meant that basic training was not sufficient to create technological fluency.

This missing piece created further limitations in developing a community owned and operated asset.

Learning how to "trouble shoot." Understanding how to deal with basic problems – "trouble shooting" – is one area where end-users would greatly benefit from increased training. WCN staff spent valuable time working with participants on solving basic issues. While the staff took pride in this one-on-one attention, they recognized the demand on their time, particularly how these needs took away from time spent on installations and recruiting new participants. The community partners, mainly those who were in close contact with end-users, worked with people to teach them some basic trouble shooting techniques to help alleviate the demand, but had difficulty fostering fluency in this regard:

> *I think another challenge is that some of the people who were connected didn't have basic computer skills sometimes so a lot of people got caught up in, "Well, my printer doesn't work" or "I don't know how to open the internet access" or things like that that people would just assume the network was down but it was because they didn't clearly know how to use their computer properly so I think that was a challenge as well. There were a lot of different layers to the project so it got complicated by some outside factors.* (CNT Staff)

The level to which staff would need to address general problems was not fully considered at the outset of the program, and thus led to setbacks in other areas.

Transferring skills to other settings. Training and education need to go beyond the end-user's ability to utilize the WCN in their home and address the transferability of skills to an educational or occupational setting. In North Lawndale and Pilsen, about half of the end-users had computers running through an open-source operating system (Linux). CNT made this decision in order to save costs on transferring licenses for Windows, but also to support the open-source model. While community partners were supportive of the idea, there was ongoing concern about its place in this particular context.

> *I'm not going to say that Windows is more sturdy than LINUX but it's just more user friendly for the average person because, like the kids if they get a program at school with this and that … like a math game they could easily just use it and if we're using the other systems, the open software systems, it just makes it a lot more difficult. To be on the internet it's the exact same thing it makes no difference. That's why sometimes I try to explain to them that we are only committing ourselves to letting them go on the Internet.*
>
> (Community Partner Staff)

Using open source software highlights an important issue within the WCN project. The open source model, while positive in its cost-effectiveness, came with limitations for end-users. It did not always match the system used at school or places of employment, and there was some confusion over what software programs could be installed and easily used with this operating system.

This example highlights the importance of training and education stepping beyond basic usage in order for end-users to reach a fluency level. End-users need a solid

understanding of what constitutes legal and illegal activity on the internet, such as downloading music or movies from an unauthorized source, as well as how to protect personal information and prevent viruses. In addition, it is important to provide multiple avenues for gaining knowledge, offering training through a variety of mediums. The issue of training and education directly relates to active participation and sustainability. When knowledge and skills combine to create technological fluency, end-users are no longer dependent upon experts (in this case, community partner organizations or CNT) for assistance. They may learn to troubleshoot and solve their own issues, or learn where to find needed information online. Moreover, using the end-users skills to help engage and train future users can create more investment in the project, saves cost for training new users, builds capacity and a community asset.

The challenge among end-users in reaching technological fluency is perhaps most noticeable in the outcome of a web-based end-user survey meant to inform the outcomes evaluation. Only a portion of the end-users had e-mail addresses on file and less than twenty responses were received. While this is in part due to a small target population, one would expect a greater response considering the nature of the program being evaluated. A sure sign of technology fluency is a level of comfort in utilizing the internet. The limited number of e-mail addresses suggests that people were still not at a basic fluency level near the conclusion of the project.

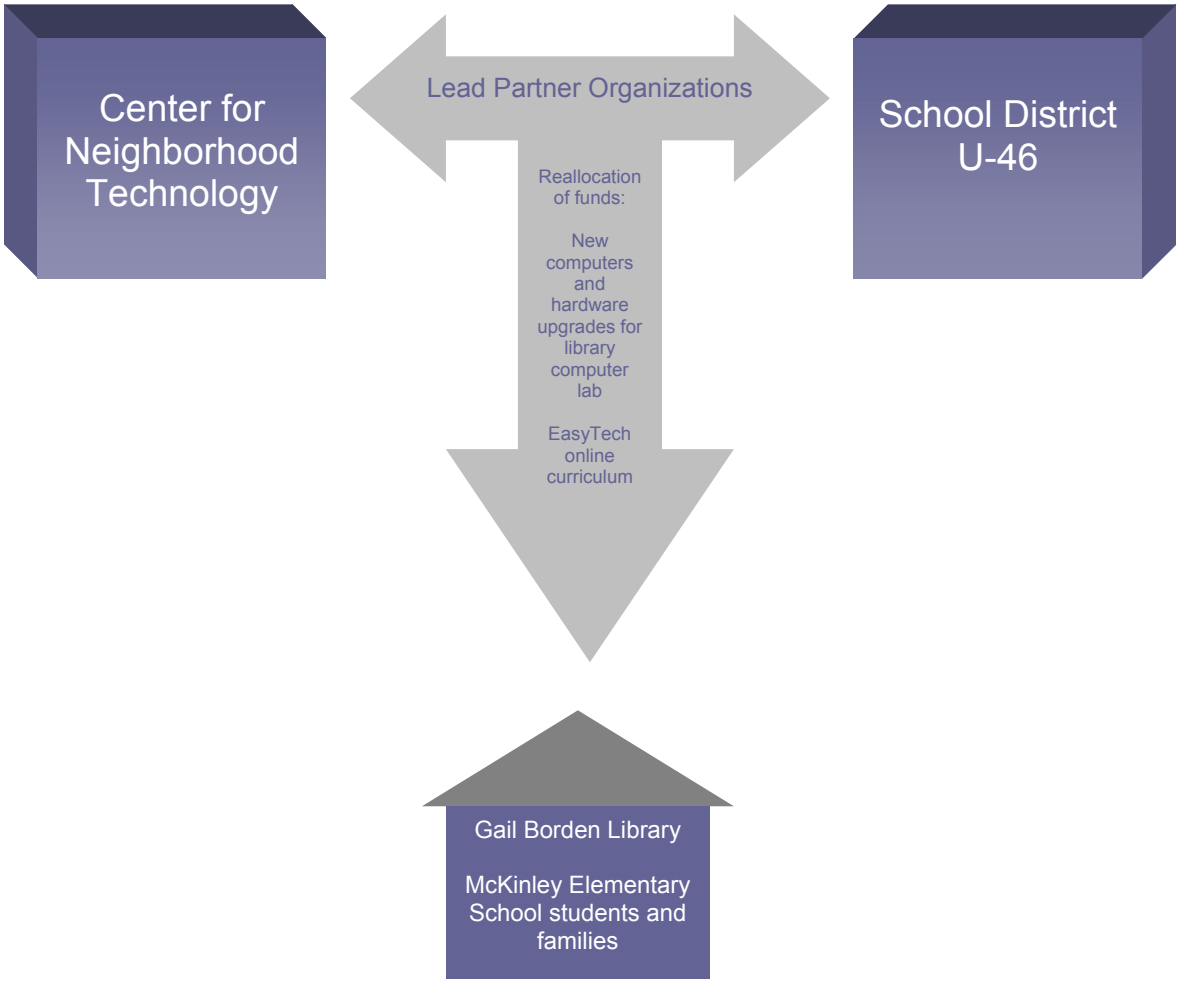
RECOGNIZING DIVERSE CONTEXTS – COMMUNITY MODELS

The Wireless Community Networks (WCN) Project began as a single initiative, spearheaded by CNT, with funds divided among four pilot community areas. In each community area, a partner organization took the lead in creating awareness of the program and recruiting potential participants. Despite the similar approach taken in each community, the pilot sites were truly unique in many ways. As the project evolved, so too did the network structure in each of the four areas. The diverse characteristics of the four communities fed into a model for the WCN that included all stakeholders – from CNT as the lead partner to the different end-users targeted for program participation.

This evolution process is best described as "organic" because the models developed out of and in response to the individual community contexts. In other words, the partner organizations did not purposefully create the structure, rather each formed in response to the unique process each community took in implementing the network. The residents, the housing stock, the community partner organizations' missions and purposes and CNT's proximity to each area informed these models.

While the ideas for community asset building strategies (such as the WCN project) are formalized in writing, any sort of initiative is conceptualized and deployed in a particular social, economic and cultural context. These models offer a visual aid for better understanding this context, and subsequently, the WCN program in each of the four pilot communities. The variance in community models provides more than a specific description of each network. These models represent a tool for understanding why the program expanded in some communities but remained limited in scope in others.

ELGIN WIRELESS COMMUNITY NETWORK MODEL



The WCN in Elgin underwent the most significant transformation throughout the duration of the project. Most notably, the wireless network aspect of the initiative was essentially dropped and the funds were put toward other uses. In the early stages of the project, Elgin appeared furthest along in terms of project development and was poised to launch a successful mesh network prior to the other communities.

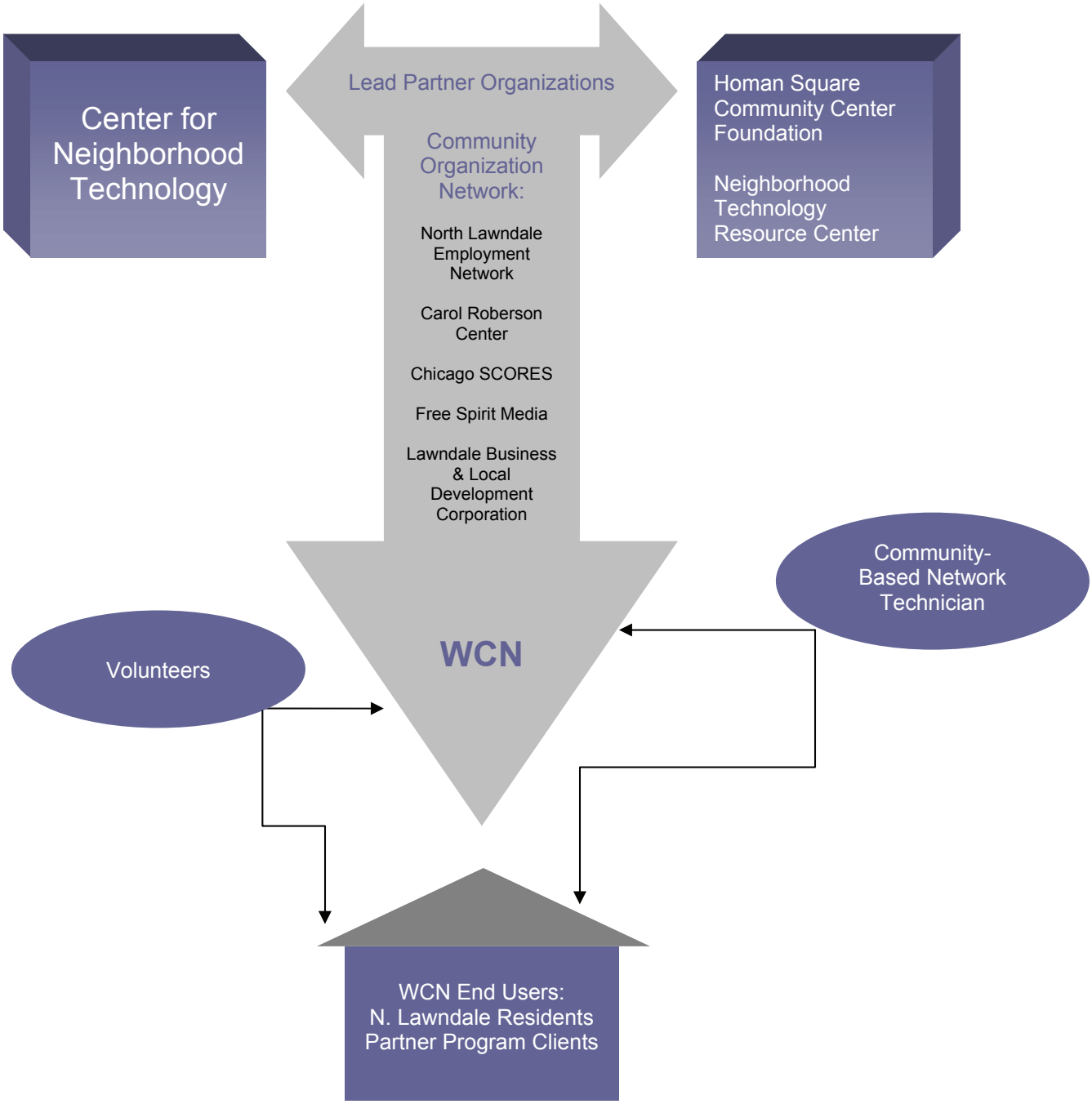
Including a public school district as the lead community partner resulted in several issues unique to the project in Elgin. From the beginning, network security was a primary concern especially given the target population and connection to the public school district. CNT was not prepared to offer the level of security expected by the district, which became one of the key barriers in moving the network forward in Elgin. This issue speaks to the partner selection process, as well as the importance of clear communication around expectations. Specifically, it is crucial that resources and limitations are considered in light of the community context and the expectations or requirements of the partner organization.

The school district's focus also shifted partway through the WCN deployment effort. In an effort to create a more integrative technology model for the school district, several new staff were brought on to push the district to this next level. In particular, the district sought to establish stronger networks between its schools. While this was an important change for the community and its schools, the shift proved challenging in light of the WCN project. With this shift, U-46 transitioned to a new model of district oversight. Previously, individual schools were largely autonomous and operated independently of each other. Among the district's changes was an effort to link schools together and conduct district-wide programming rather than focusing on efforts targeting specific schools. The WCN program was at a disadvantage in this new arrangement given its close connection with McKinley Elementary School. Following the district's new direction, it no longer made sense to move forward with a project so heavily concentrated on one school. A major concern that permeated much of the process in Elgin was the issue over network security. As a public school district, U-46 has a much greater responsibility in controlling content than community partners in North Lawndale, Pilsen and West Frankfort. Working with young children and

the affiliation with a public entity led to consistent concern over the inability to monitor content and restrict access to certain sites.

Despite these concerns, the district did not want to abandon the program completely and thus developed an alternative plan for utilizing the funds that had very positive outcomes for the community. This new approach is reflected in the community network model diagram. The funds were reallocated toward two efforts, both enhancing technology resources in Elgin but via a different approach than the original WCN proposal outlined. The school district used a portion of the funds to purchase EasyTech, a web-based curriculum that is now available online to students and their parents. In addition, the Gail Borden Library, currently the only public library in Elgin, received grant funds to purchase new computers and upgrade their computer lab. This library is situated near McKinley Elementary School, thus keeping the resources close to the original intended population, but allowing for a wider reach in technology access for the community overall.

NORTH LAWNDALE WIRELESS COMMUNITY NETWORK MODEL



Although the two Chicago neighborhoods participating in the WCN project are fairly close in proximity and may have appeared similar on the surface, the community network models evolved into highly unique and differentiated structures. North Lawndale was perhaps most successful in creating a mesh of organizations along with the actual mesh network design. While this largely stems from some concerns voiced by residents about the level of community ownership with the WCN, the end result was positive.

In early 2005, a group of residents began voicing concern over the level to which the WCN was truly grounded in the North Lawndale community. Out of these concerns, CNT expanded its partnerships in North Lawndale to include additional community organizations as shown on the diagram. These additional community partners hosted node-building events, helped publicize the program and aided in recruiting potential end-users from within its program client base. As a result, the end-user base for the WCN project represented a diverse range of residents with varying organizational connections.

> *The community already sees the network as theirs, as Lawndale's network and are committed to in the next several months figuring out the course, what character it will take, how it will stand in relation and contrast to the city network, who will run it, own it.* (CNT Staff)

With this expanded network model, the original partners – Homan Square Community Center Foundation and the Neighborhood Technology Resource Center – still maintained their place as the lead community organizations. This was important for streamlined communication, efficient trouble-shooting and organized record keeping.

North Lawndale's model also reflected an interest in integrating technology into organizations that had a need for expanded resources:

> *Well, it was more we were thinking about who would care about this thing. Well, North Lawndale College Prep would care about this thing, Carol Roberson Center would care about this thing, Lawndale Christian Development Corporation would care about this thing, and Mount Sinai would care about this thing. I mean we just kind of looked around and thought Where is the action? Where is stuff happening in the community where people would realize that this is really an advantageous thing to do? And then you know, a few key people, people that would, that were community leaders that would help to carry the ball* (Community Partner)

This comment reflects the ongoing consideration of building a sustainable network. This constant concern on the long-term results was visible throughout the duration of the project, as shown in the way outreach was approached.

Providing opportunities for people within the community to participate in other aspects of the project, such as building nodes, adds great potential in terms of sustainability. The more people with knowledge and skills in the community, the less ongoing support was needed from CNT. This effort in North Lawndale to broaden the scope of involvement among residents firmly grounds the network in the community, rather than with an outside organization like CNT.

Trust played a major role in the emergence of North Lawndale's network model. Community partner staff discussed the specific environment in which they were working, noting the concerns in the community around gentrification and past experiences of failed programming. Residents were often skeptical of free services, assuming stipulations or inadequate service. Partner staff discussed dealing with this aspect of the local context:

> *Our biggest problem in Lawndale was trust. It was because so much stuff went on in Lawndale, first thing they were asking me. I spent probably a little over a year explaining to North Lawndale that there's no catch to it. You, know the people in Lawndale are so used to that when something is introduced for free there's always something hooked to it, so I have to, you have to retrain that train of thought.* (Community Partner)

Another community partner expressed similar concerns, noting the importance of recognizing the specific community context:

> *A lot of people feel like they are being pushed out, because everything is growing in Lawndale, you have a lot of new things that are being built and they feel that they can't afford to keep up with things. And so they looked at this as something to help the new people coming in and not the system that's been in the neighborhood. So again, it went back to trying to retrain people's thoughts the way they look at things and again that took up the biggest amount of time.* (Community Partner)

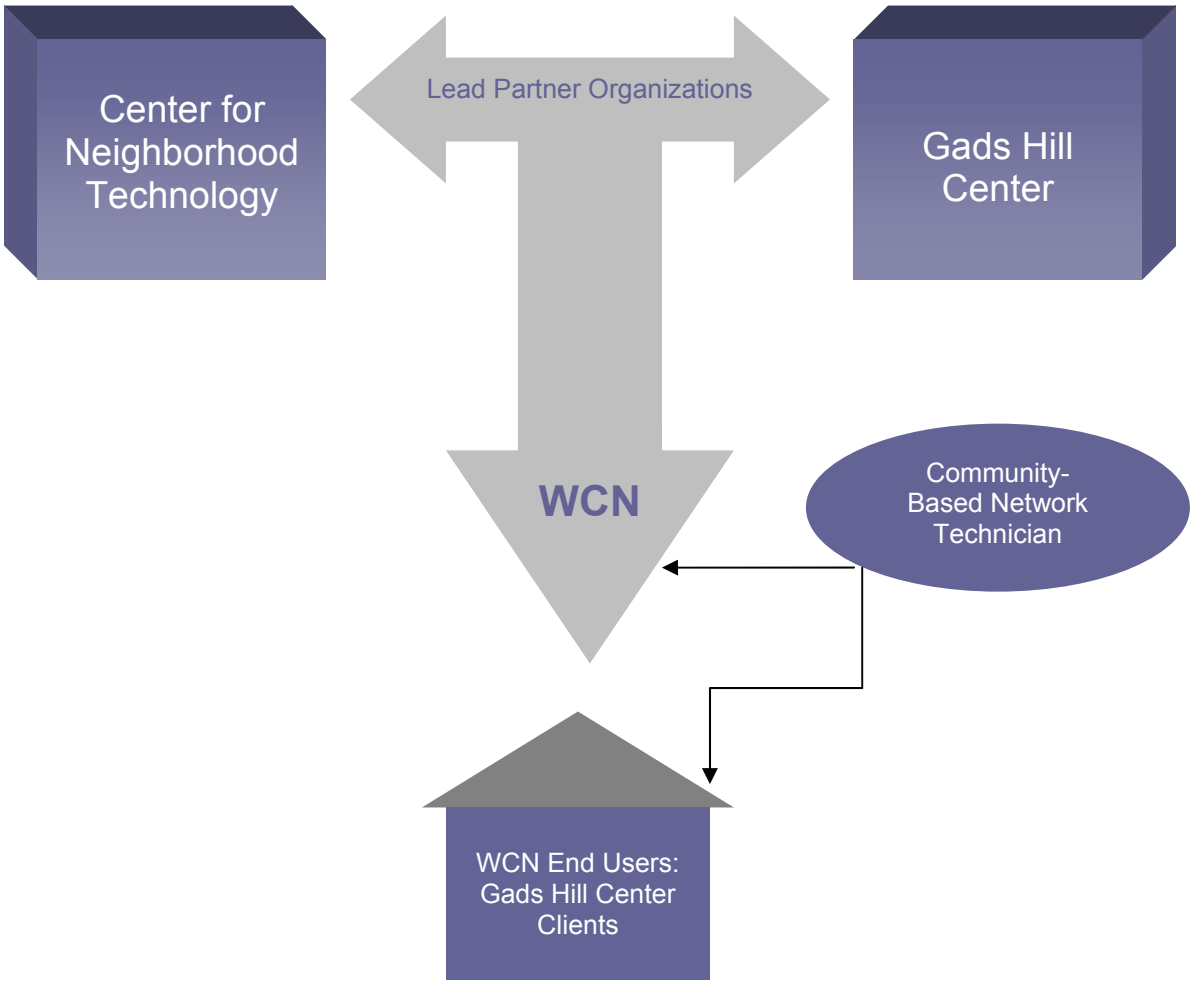
Thus, the WCN partner organizations were dealing with more than direct outreach. In advertising the network, it was important that local organizations were represented, especially those with established legitimacy and trust in the community. Doing so enhanced the community-based nature of the WCN project and resulted in greater potential toward sustainability.

In addressing the issue of trust, perhaps one of the best decisions made with the North Lawndale network was hiring a technology consultant who served an integral role in many aspects of rolling out the network. As a member of the community, he was not only trusted, but understood the people in North Lawndale and appreciated their concerns. CNT staff spoke confidently about his inclusion and the benefits this added to the initiative:

> *[He] lent legitimacy. He talked up the project to people. He was the face. He worked extraordinary hours and would go to people's homes, you know, at all hours and beyond that has other responsibilities including working at NTRC.* (CNT Staff)

As noted, this level of intense engagement allowed the WCN to flourish despite earlier setbacks with the technology. A staff person who serves diverse roles connecting residents, organizations and resources is crucial in this regard, and the integration of a core staff member like this proved highly influential in moving the project forward.

PILSEN WIRELESS COMMUNITY NETWORK MODEL



The Pilsen model resembled a more insular network, reaching out almost solely to Gads Hill Center clients. Although they used the same technology model as North Lawndale, the key difference between these two community network models stems from the number of organizations involved in the project. Gads Hill Center was the lone community partner in Pilsen, as well as the only source for potential participants. Outreach and

recruitment were all handled through this organization, a model that includes both strengths and challenges.

Logistically, record keeping was simplified and likely more thorough since Gads Hill Center already maintained records on its clients. Organizational legitimacy was another positive component of Pilsen's network model. The outreach, when spearheaded by Gads Hill Center, was well-received as people knew and trusted the organization. Early in the project when CNT distributed WCN promotional fliers in the neighborhood, residents seemed skeptical or unsure about what the WCN program entailed. Linking the outreach to a familiar organization eliminated much of this uncertainty. Moreover, Gads Hill Center has been active in the community for many years and it is widely recognized as serving the best interest of the Pilsen neighborhood.

Like North Lawndale, Pilsen also hired a technology consultant who was integral in the project development. CNT clearly recognized the impact this had on the program:

> *And [he] has also been invaluable because…both of them have the ethic of "I'll just go to the home and meet one on one and whatever issue there is, we'll work it out." See, you absolutely have to have people who can…In a sense, he's a liaison but he's a translator between the project, technical aspects of it, its goals. And he's one of them…he's one of the community people.* (CNT Staff)

Like the technology consultant in North Lawndale, Pilsen selected an individual who was familiar with the community environment and culture and thus could serve a lead role on

several fronts. End-users reflected positively on the community based nature of the project, suggesting a more "family like" feel to the WCN as opposed to impersonal, corporate options. Others noted the positive benefits of having a technician nearby who they could contact directly for help.

Despite these added benefits – logistical ease and legitimacy – outreach efforts still faced some limitations in Pilsen. The structure of the technology meant that only certain households were in range. Thus, the actual pool of potential end-users was much smaller than the number interested in the project. In addition, Gads Hill Center's program clients represent only a portion of the neighborhood. Although some end-users did their own outreach to friends or neighbors, the dual partnership (CNT and GHC) did not extend throughout the community as it did in North Lawndale's multi-leveled model.

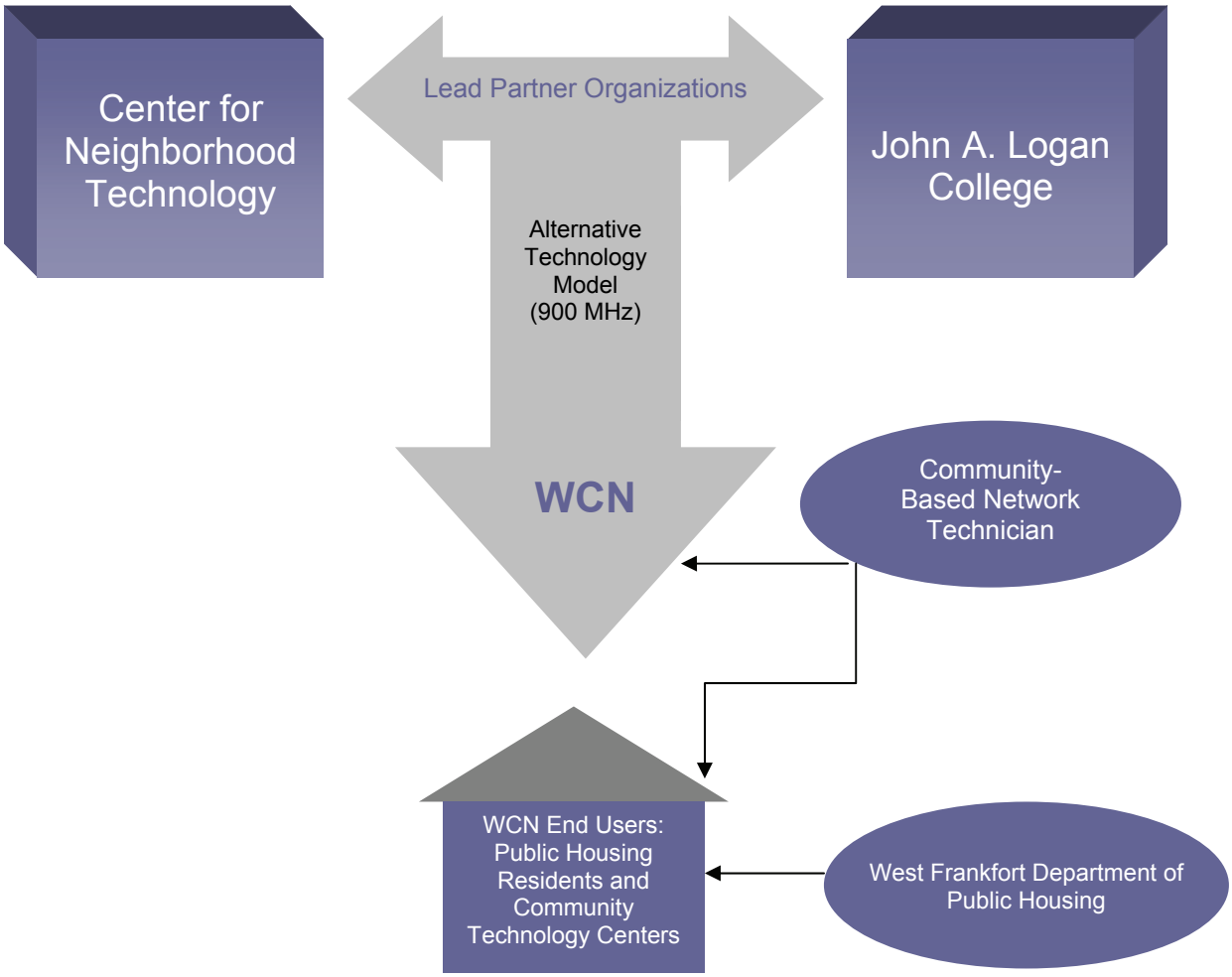
The insular nature of the project in Pilsen also led to drawbacks in terms of sustainability. The technology consultant served as the main contact, and thus was responsible for a wide range of trouble shooting issues alongside scheduling installations and managing outreach. The lack of a centralized help line was also noted as a difficulty, as was making people comfortable with the idea of home-based internet access.

> *I mean some people where they have older kids where they're in high school or they're in their higher grades in grammar school or of course if their in college, well then just mention it to the kids and they'll know exactly what I'm talking about. They're like oh it's an internet connection, and it's just a little different, we're using different technology to get the connection to the home. And the bottom line, at the end of the day it's an internet connection, so they*

> *can kind of see that and they'll understand it. But to try to explain that to a different family where they have younger kids or they have never touched a computer, they'll say that they're not interested or, they won't be able to see the outcomes or the resources that are going to be there. And I think that's my biggest challenge there. There are a lot of people in Pilsen, I mean, but to try to get people involved is the hard part.* (Community Partner)

These challenges reflect the unique nature of Pilsen's context and the necessity of adapting the project to the community environment, its residents and their specific concerns.

WEST FRANKFORT WIRELESS COMMUNITY NETWORK MODEL



As CNT determined its technological approach for building the network, the partners in West Frankfort decided to head a different direction. Although their model would remain focused on wireless technology, the mesh model CNT proposed for the technology did not seem feasible to those actually working in the community. Instead, Logan College (as the

lead community partner) chose to deploy a "hub and spoke" model where the central antenna emits the signal to all end-users. What differentiates this from the technology models used in Pilsen and North Lawndale is the absence of a mesh system. In the Chicago neighborhoods, the nodes connected to the main antenna as well as to each other, creating a denser, wider spanning network.

The reasoning behind this choice stems partially from the structure of the public housing buildings and the metal mesh embedded in the walls. Because West Frankfort targeted the public housing population for the WCN project, they needed a technology model to fit the needs of this context. The distance from CNT also influenced Logan College's decision to work with an alternative technology model. CNT visited West Frankfort during the early stages of the project for the launch event, but subsequently remained largely separated from the downstate effort. Knowing that support from CNT was limited, the technicians at Logan College leading the WCN project selected a model with which they were more familiar.

The choice to use an alternative model, however, came with some challenges,. The equipment needed for each connection limited the potential scope of the network. For example, each participant needed a "radio" to access the signal, but only a limited number could be purchased within the project budget. Therefore, like Pilsen, the West Frankfort network remained more insular, primarily serving the public housing residents.

West Frankfort's model reflected a successful approach in several ways. Targeting residents in public housing simplified outreach. While other communities dealt with seeking landlord permission for installing nodes, Logan College established a partnership with the public housing authority and thus eliminated the constant relationship building process. West

Frankfort's WCN also reflected a highly successful management model. Despite being somewhat isolated from CNT and the other communities, there was a core staff person at Logan College who served in a similar role as the community technology consultants in North Lawndale and Pilsen. This role transitioned through several people, however there was a consistent contact person who oversaw outreach, installations, computer donations, training and ongoing maintenance. Finally, while the main effort was connecting people to the WCN, Logan College donated over 100 free computers to residents, both in public and private housing.

There were some challenges, however, in West Frankfort. First, the strength of the signal was more limited, and when one household created a high demand (for example, by downloading a large file), others felt the effect. Second, not all residents had telephone service which created difficulties with communication and drew out the concern over meeting basic needs before integrating additional technology resources.

ESTABLISHING A CRITICAL MASS

For the WCN program to successfully meet its goal to be community-based and community-driven, a critical mass was needed in each pilot site to ensure ongoing involvement and sustainability. The unique community models noted above highlight the level to which each pilot community was successful in mobilizing a solid group of end-users that could move the project toward sustainability.

North Lawndale was most successful in engaging a wide scope of the community, drawing in participants through a variety of means. The community model which emerged in North Lawndale speaks to this success, namely in its integration of multiple community organizations. West Frankfort was also able to establish a solid group of end-users, though other constraints limited its growth beyond those connected at the end of the funding period. Pilsen developed a contingency through Gads Hill Center, but found it difficult to recruit participants outside the groups involved in the Center's programs. As noted, Elgin found an alternative way to utilize the project funds, though remained within the overall project focus to enhance technology resources in their community.

If numbers were the sole measure for claiming success, the WCN fell short of its goals. At the conclusion of the pilot project, there were a total of 31 nodes installed in Pilsen and the same number of households connected to the network. In North Lawndale, 42 nodes were installed with 40 officially documented households utilizing the network and two organizations. It should be noted that these numbers represent documented end-users, or those listed in CNT's database as official project participants. There are additional end-users beyond these numbers, mainly in North Lawndale. Approximately 110-140 people connect

to the network through a neighbor's signal or the hotspot at the Homan Square Community Center, but are not officially registered with the project.

> *I think it's worth noting that despite all of the challenges and the fact that I think demonstrably we didn't achieve a lot of the goals that we set for ourselves that there are a hundred or more…hundreds of families that are actually connected and using it on a daily basis and that's no small feat. And I think that if nothing else, we can point to that and be proud.* (CNT Staff)

This comment reflects the positive outcomes stemming from this project and the community partners' ability to concentrate on these gains despite

In West Frankfort, 42 households were connected to the WCN. A computer lab - the Imagine Center – was also upgraded with grant funds and is being used for an after school youth program and for new user training. In addition to providing internet access through the WCN, Logan College donated 130 free computers to residents, many of which will participate in the project in the future. There are also plans to connect private residences to the network, some of whom received computers through the project. More details on how West Frankfort utilized the free computers can be seen in Appendix D, which shows how they documented resident usage of the computers.

INTEGRATING SUSTAINABILITY THROUGHOUT THE PROCESS

Creating a replicable, sustainable business model was one of the three projected outcomes of the WCN project. While this goal seems most relevant to the conclusion of the project, sustainability must be considered throughout the entire process. Keeping this in mind means that each aspect of the project will not only serve an immediate need, but will be developed with long-term outcomes in perspective.

Sustainability in numbers. In January 2006 at the community partner retreat, there was concern over sustainability due to the low number of households connected. The critical mass of end-users proved to be an important component toward sustaining the WCN as an available resource in each community. However, alongside numbers, sustainability can only be achieved when the community is fully engaged so that they feel a sense of ownership. Partnership with multiple community organizations seemed to increase community interest and engagement and thus increase the potential sustainability. By having multiple partners involved, more was invested and more relationships were on the line so the organizations were more likely to continue their work on this project. With this sense of ownership, community-based projects like the WCN can become a reality as the lead organizations ease out of the leadership role, allowing for greater control and community-driven leadership.

The challenges associated with stabilizing the technology point to the importance of comprehensively addressing the location, type, safety, content and installation of technology prior to implementing the program. An adequate amount of human, financial and technical resources need to be ready to deal with the technical issues that will arise to maintain the stability of the project. Also the time needed to stabilize the technology needs to be factored

into the project timeline. The project should be realistic concerning the service their technology projects can provide given the need for maintenance and other barriers to installation and upkeep (unstable population, lacking resources beyond the internet). Without the resources to handle technology issues the organizations will be unable to supply their products and services to the end-users.

Balancing outreach with the pace of technology development. Outreach should thus be considered in the context of the technology strategy. Outreach efforts should not be maximized until the project able to provide technology because the community members may feel frustrated due to these delays and this could result in less interest and engagement thus decreasing the potential project sustainability. Although the WCN project was intentionally set apart from corporate internet service providers, it remains important for the product to be competitive with other resources available to the community members (i.e. Cable internet, DSL) to maintain the interest of the end-users.

CONCLUSION

The Center for Neighborhood Technology and its community partners had high expectations for the WCN project. While some aspects were not met, the WCN was a learning experience and one that charted territory yet to be approached on the community development front. The benefit of a pilot project is that its emphasis is learning. As one of the first, if not the first, organization to attempt to integrate home-based wireless technology into underserved communities, CNT was in the inevitable position of learning as the project progressed. While this meant some unmet expectations at the conclusion of the pilot period, CNT and its partners realized the complexity of community technology development. A community partner staff member summed up the issue of unmet expectations well in stating:

> *I did come into the project thinking that it was going to be a lot easier obviously, and to be honest with you I figured we were gonna get like 200 participants no problem. And then after you get there you figure out that it's not as easy. I don't know maybe certain things weren't taken into account because of course nobody had tried this, or at least nobody that had documented something like this project so, in the eyes of the people who were writing the proposals for the grants I mean it probably seemed like an easy thing to do. I mean they probably didn't think, it was going to be that difficult to get 200 people to sign up for this program but we realized that it was harder than we anticipated. So it's hard for me to say that it was a failure or*

that it was this and that because there was nothing to gauge it to before hand. (Community Partner)

There were some important successes with the project that are not visible through such a quantitative approach. Despite challenges with meeting the originally projected goals, the community partners had a positive outlook on their involvement with the project:

We don't have the numbers of people connected that we talked about. I mean to be able to say that we'd have 250 families connected together in Lawndale would be a wonderful thing. But we're a far cry from that. I mean even at full speed ahead for the next four months, we're still a far cry from that. So has it met my expectations there, no. Do I think that we've learned a lot and if we had to do it again would I do it? Absolutely. And I think it's really great, even if the number of people that's been affected by this is even a tenth of what it was supposed to be than those people have been impacted and there can still can be a lot of ripple effect from those people if we can do this training thing that you're talking about and if we can get the geek contingent a little bigger, you know. So, I think in terms from my perspective, at the community center to be able to say that we are part of the Wireless Community Network and that our antenna is up there on that tower and this is a hot spot and it's really great and it's been great. (Community Partner)

What this perspective highlights is the success gained through charting new territory on several fronts. From a community development perspective, the WCN project offers an innovative approach to asset building. From a technology perspective, the project draws attention to underserved communities and addresses the differential access to resources among low-income households. Another community partner representative shared a similar view:

> *The numbers, disappointed with the numbers even though I personally know that it couldn't be helped because of various reasons because there's no way we could have done anything any different with the tools and staff that we had to have improved on that part. On the other hand on the other side of the coin we've been able to give people a chance at something that they were not going to have a chance to have for a long time.* (Community Partner)

The community partners are embedded in these communities and thus see the impact of unequal access. Seeing residents move from being largely disconnected from current technology resources to considering ways the internet could benefit them educationally, professionally and personally meant that the WCN was influential and therefore worth the effort. Being part of an initiative that focuses on those traditionally left out of innovative developmental strategies is therefore exciting and rewarding for these organizations. The WCN initiative provided much more than internet access and despite the lower number of connections, this effort provided a positive learning tool in the communities.

Community partners and CNT staff were not alone in recognizing the benefits of the WCN project in light of the ongoing challenges. Although the process was not as smooth as expected, end-users reported positive results stemming from their participation in the project, such as this participant in Pilsen:

> *I didn't know how to turn on a computer before but now I do, and I also know how to get on the internet and look for things that I need. It is better for the kids to have it, that way they don't have to be coming home so late because they need to use the internet at a friend's house or at the library. It is more convenient. We bought a computer for the boys and now they only stay late at school because they are in other programs or they are organizing parent meetings.* (Pilsen End-User)

The WCN vision is evident in the voices of end-users who realize the benefits stemming from increased internet access. Community residents and partner organizations are enthusiastic about the vision, but this is only the starting point for implementing a program in underserved communities. Beyond this, there must be a clear strategy informed by this vision so that technology may become more than an end in and of itself.

TRANSFORMING VISION INTO ACTION

CNT had a clear, innovative vision for this project – bring cutting-edge technology to traditionally underserved communities, develop a community asset that will enhance services and connect residents to opportunities. Undoubtedly, CNT's commitment to this vision and to the people it planned to reach with this initiative was among the driving forces that kept the project moving forward. Yet in the midst of this strong vision and level of commitment, the project fell short of meeting the goals laid out in the proposal. What was the missing piece? If CNT and the community partners anticipated a much broader spanning network and had a plan in place to meet these goals, why were they unable to do so?

Difficulty in stabilizing the technology was the greatest challenge throughout the project. The issues of finding proper sites to place nodes, ensuring the nodes work properly, keeping the network running smoothly and keeping households connected were ongoing and difficult to erase. While these difficulties seem only relevant to the technology goals, they in fact influenced all other aspects of the project. When considering the challenges that arose around outreach, most can be traced back to technology issues. None of the partner organizations reported any trouble recruiting interested residents. The difficulty was in maintaining the right level of excitement – realistically portraying the project as a pilot initiative with experimental technology alongside keeping residents engaged with the idea of being part of something new and exciting in their community.

It was challenging for this project to reach its various community engagement goals. So much of the available resources and energy were put toward building and stabilizing the technology that the community engagement goals were set aside for periods of time.

Looking at the long term objective of sustainability, a lack of emphasis on community engagement complicated efforts to illustrate *why* the internet is such an important – almost necessary – resource. That is, technology is a resource, however the understanding of what it can be used for – community engagement and development – makes it an even greater resource. CNT had a vision for this far-reaching resource and was continually challenged to balance their strategies for technology development *and* community engagement.

To that end, among the greatest lessons to be learned from this pilot project is the importance of recognizing when a vision and strategy need to be altered. Representatives from School District U-46 in Elgin spoke positively about the way the funds were eventually used, noting the ongoing challenges and setbacks. Likewise, West Frankfort approached the barriers in their community by engaging a different technology model to fit their context. And North Lawndale's decision to bring in additional community partners reflects its willingness to adapt to changing circumstances. Within these challenges, the community organizations and CNT were able to rethink their strategy in a way that stayed within the overall focus of the project, but did so through unique and varied means. That is to say, flexibility was key, and the varying factors within each unique community meant that a vision – as exciting and innovative as it is – may not fit perfectly into every setting.

The WCN project is quite different in its outcomes than originally envisioned. However, the knowledge gained throughout the process serves the intended purpose – to fully understand what it means to bridge the digital divide and recognizes the challenges and key ingredients in transforming vision into action.

APPENDICES

Appendix A: Overall evaluation plan for the WCN

Appendix B: Evaluation measures

Appendix C: Full results for the end-user survey

Appendix D: West Frankfort log for resident usage of the computers

Appendix A: Overall evaluation plan for the WCN

Outcome #1 ***To create and test wireless mesh networks to provide approx. 250-300 users internet broadband access points in each of four pilot community areas.***

What does the organization want to know?	Indicators	Source	Method
1. Is there a working, active wireless mesh network in the pilot community?	**1.** There are [25] number of rooftop nodes installed (set target number w/ CNT and partners for each community) Between 250 and 300 households are able to connect to the network via the rooftop nodes (focus on *function* of the network) Percentage of nodes connecting directly to a gateway Percentage of nodes connecting through another node	**1.** CNT project records CNT project records CNT tech records CNT tech records	**1.** record data based on final numbers from CNT record data based on final numbers from CNT record data based on final figures from CNT record data based on final figures from CNT
2. Does the network provide a competitive level of service in terms of speed and reliability?	**2.** The WCN speed is similar or better than that available through a corporate ISP End-users report that they are satisfied with the speed End-users report that they are satisfied with the	**2.** CNT project records End-users End-users CNT project records	**2.** record data based on ongoing tech records from CNT survey and focus groups with end users survey and focus groups with end users

	reliability of the network in comparison to that available through a corporate ISP The network is consistently working (define "consistently" with CNT – a percentage of the time? Number of technical difficulties reported by end-users?)		Record data based on CNT records on complaints or instances when the network was not working
3. Was the target goal for end-users (250-300 households) met in the pilot community?	**3.** Between 250 and 300 households are able to connect to the network via the rooftop nodes (focus on *numbers*) Each of the end-user households have a computer compatible with the WiFi technology with which they have access to the network The project remained within its budget	**3.** CNT project records CNT project records CNT project records	**3.** record data based on final numbers from CNT record data based on final numbers from CNT and community partners compare projected versus actual expenditures for the entire project

Outcome #2 ***To increase the capacity of community partners to use wireless technology to engage users in individual and community change, to enhance their services to clients, to help reconnect participants to the mainstream economy, and to build a new community asset.***

What does the organization want to know?	Indicators	Source	Method
1. What programs were developed or enhanced through the integration of technology at the partner organization?	**1.** New programs (identify) have been developed at the partner organization that utilize the technology infrastructure made available through the WCN Previously existing programs (identify) have integrated the technology infrastructure made available through the WCN into their normal operations (Set parameters as to *how* new and existing programs have integrated technology)	**1.** Community partners Community partners	**1.** interviews and focus groups with community partners Interviews and focus groups with community partners
2. Has communication and program participation among community residents increased as a result of the WCN?	**2.** Participant has an e-mail account Participant sends and receives e-mail	**2.** End-users End-users	**2.** survey and focus groups with end-users survey and focus groups with end-users

3. Has a new infrastructure been developed that helps reconnect end-users to the mainstream economy?	**3.** End-users indicate that they are using the network for help with school work for them or their children End-users indicate that they are using the network to aid in small business development and maintenance End-users indicate that they are using the network to search for job training resources End-users have been connected to job training resources via the WCN End-users indicate that they are using the network to search for employment opportunities End-users have been connected to employment opportunities via the WCN	**3.** End-users End-users End-users End-users End-users End-users	**3.** survey and focus groups with end users survey and focus groups with end users survey and focus groups with end users survey and focus groups with end users survey and focus groups with end users survey and focus groups with end users

4. Has a new infrastructure been developed that fosters engagement between end-users and their communities?	**4.** End-users indicate that they are accessing community services via the internet Greater attendance at community organization programs End-users are exploring new program opportunities at community organizations Increased community organizing participation among end-users	**4.** End-users End-users; community partners End-users; community partners End-users	**4.** survey and focus groups with end users survey and focus groups with end users; interviews and focus groups with community partners survey and focus groups with end users; interviews and focus groups with community partners survey and focus groups with end users

Evaluation Plan

Outcome #3 ***To develop a replicable, sustainable business model for financially self-sufficient community partnerships providing services and programs using community wireless mesh networks for internet broadband service.***

What does the organization want to know?	Indicators	Source	Method
1. Is the WCN sustainable without the involvement of CNT?	**1.** End-users indicate that they are willing to pay for the service Amount end-users are willing to pay multiplied by the number of end-users is sufficient for sustaining the network on an ongoing basis End-users indicate that they are committed to remaining involved in the WCN project on a long term basis (specify time??)	**1.** End-users CNT project notes End-users	**1.** survey and focus groups with end users record data from CNT final estimates on cost to run the network survey and focus groups with end users
2. Do participants view the WCN as a viable option for home based internet access?	**2.** End-users indicate that they choose the WCN over a corporate ISP End-users indicate that they are satisfied with the service and would likely not switch to another provider	**2.** End-users End-users	**2.** survey and focus groups with end users survey and focus groups with end users

3. Is the WCN replicable?	**3.** CNT has maintained a log of resources required for network creation CNT has maintained a process log outlining steps required to build the network A final business model plan has been developed that may be copied by other communities wishing to follow suit	**3.** CNT project notes CNT project notes CNT project notes	**3.** record data from CNT final projections on the resources (material, people) required to build the network view final report on steps taken to build the network from start to finish view final business model

Appendix B: Evaluation measures

Wireless Community Network – Program Evaluation

Community Partner Focus Group Questions

Implementation

Discuss your impressions of the implementation process of the Wireless Community Network.

What do you feel worked well in the process?

How do you feel things could have been done differently in relation to the implementation of the network?

Relationship with Lead Partners

Discuss your relationship with CNT.

How did this improve or not improve throughout the duration of the project?

Discuss the support your organization received thus far with the project.

Relationship with Project Participants

Discuss your relationship with the project participants.

Project Outcomes

Discuss the future of the project from this point on.

What did you gain from being a partnering organization in the project?

What were your initial expectations, and how were these met or not met?

Wireless Community Network – Program Evaluation

Interview Schedule for Individuals

Implementation

Discuss your impressions of the implementation process of the Wireless Community Network.

What do you feel worked well in the process?

How do you feel things could have been done differently in relation to the implementation of the network?

Training

Discuss your impressions of the training provided, both initially and throughout the project.

Discuss your impressions of the project support system, specifically the help desk.

Relationship with Project Participants

Discuss your relationship with the project participants.

Relationship with Community Partners

Discuss your relationship with the community partners.

How did this improve or not improve throughout the duration of the project?

Do you feel as if you received adequate support in terms of your organization's involvement in the project?

Relationship with CNT

Discuss your relationship with the Center for Neighborhood Technology.

Project Outcomes

Discuss your impressions of the completed project.

What did you gain from participation in this project?

What were your initial expectations, and how were these met or not met?

Wireless Community Network – Program Evaluation
Project Participant Focus Group Questions

Implementation

Discuss your impressions of the implementation process.

What do you feel worked well in the process?

How do you feel things could have been done differently in relation to the implementation of the network?

Training

Discuss your impressions of the training provided, both initially and throughout the project.

Discuss your impressions of the project support system, specifically the help desk.

Relationship with Community Partners

Discuss your relationship with the community partners.

Project Outcomes

Discuss your impressions of the completed project.

What did you gain from participation in this project?

What were your initial expectations, and how were these met or not met

Wireless Community Networks
End-User Survey

Thank you for participating in the Wireless Community Network Project. This survey is one part of the program evaluation. By sharing your views on the project, you are providing important information that will help improve the program for you and other participants.

How did you learn about the Wireless Community Network (WCN)?

- o Organization in my community
- o Center for Neighborhood Technology (CNT)
- o Neighbor or friend
- o Relative
- o My child's school
- o Flier
- o Other (please specify)

Why did you decide to sign up for the program? (choose as many as apply)

- o To have a computer and internet access in my home
- o Because it is free
- o I wanted to participate in a community-based program
- o My children or I am involved in a program at an organization in my community
- o Other (please explain)

The Center for Neighborhood Technology and partner organizations in your community used several ways to educate residents about the Wireless Community Network. Please rank how helpful each of these techniques were in your experience:

Phone calls

- o Very helpful
- o Somewhat helpful
- o Not helpful at all
- o I did not receive any phone calls

Home visits

- o Very helpful
- o Somewhat helpful
- o Not helpful at all
- o I did not receive visit to my home

Information sessions in the community

- Very helpful
- Somewhat helpful
- Not helpful at all
- I did not attend an information session

Fliers and mailings

- Very helpful
- Somewhat helpful
- Not helpful at all
- I did not receive a flier or mailing

TRAINING AND EDUCATION SESSIONS

Overall, how helpful were the training sessions and education for the WCN project?

- Very helpful
- Somewhat helpful
- Not helpful at all

What information would have made the training sessions more helpful?

How helpful were the organizations in your community, such as NTRC, Gads Hill Center and John A. Logan College?

- Very helpful
- Somewhat helpful
- Not helpful at all

What are some examples of help and support you received from organizations in your community?

Did you receive information or help from the Center for Neighborhood Technology (CNT)?

- Yes
- No

If yes, how helpful was CNT in your experience?

- Very helpful
- Somewhat helpful
- Not helpful at all

What are some examples of help or support you received from CNT?

Have you encouraged friends or neighbors to sign up for the WCN project?

- Yes

- No

What additional help or information do you need to tell other people about the WCN project?

Have you used the WCN toll free number to ask for help with the network?
- Yes
- No

If yes, how helpful was this service?
- Very helpful
- Somewhat helpful
- Not helpful at all

USING THE NETWORK

What do you use the network for? Choose as many as are applicable:

- I use the WCN to communicate with family or friends by e-mail
- I use the WCN for help in finding a job online
- I use the WCN to look for job training programs online
- My children use the WCN for school work
- I use the WCN to communicate with my child's teacher and school
- I use the WCN for my own school work (please give examples)
- I use the WCN to help run my small business (please give examples)
- I use the WCN for my own personal accounting, such as balancing my checkbook and paying bills online
- I use the WCN to find out about issues that impact my community, such as CAPS meetings or school information.
- I use the WCN to find programs and services in my community (please specify)
- I or my children use the WCN to play games online
- Other (please give examples)

How helpful is the WCN? Please indicate based on the following areas:

School work for your child:

- Very helpful
- Somewhat helpful
- Not helpful at all
- Not applicable

School work for yourself:
- Very helpful
- Somewhat helpful
- Not helpful at all
- Not applicable

Finding programs and services available in your community:
- Very helpful
- Somewhat helpful
- Not helpful at all
- Not applicable

Looking for job training programs
- Very helpful
- Somewhat helpful
- Not helpful at all
- Not applicable

Looking for a job
- Very helpful
- Somewhat helpful
- Not helpful at all
- Not applicable

Managing a small business or community organization
- Very helpful
- Somewhat helpful
- Not helpful at all
- Not applicable

THE WCN IN MY COMMUNITY

The fact that the WCN is a service based in my own community is:
- Very appealing
- Somewhat appealing
- Not appealing at all

How helpful is the WCN? Please indicate based on the following areas:

Creating ways for community residents to socialize with each other

- Very helpful
- Somewhat helpful
- Not helpful at all
- Not applicable

Creating ways for people to talk with each other about community problems

- Very helpful
- Somewhat helpful
- Not helpful at all
- Not applicable

Helping people feel connected to each other

- Very helpful
- Somewhat helpful
- Not helpful at all
- Not applicable

Developing a sense of community spirit among residents

- Very helpful
- Somewhat helpful
- Not helpful at all
- Not applicable

SUSTAINABILITY

Do you think the internet is a good way to access on-line information for homework, personal and professional communication or other general uses?

- Yes
- No
- Unsure

Why or why not?

Do you think the WCN is a good option for home internet service for you and your family?

- Yes
- No
- Unsure

Why or why not?

Would you be willing to pay a fee to continue participating in the WCN project?

- Yes
- No

If so, how much would you be willing to pay?

- Less than $10 per month
- Between $10 and $20 per month
- Between $20 and $30 per month
- Between $30 and $40 per month

The availability of the WCN connection is:

- Very good
- Adequate
- Inadequate

The speed of the WCN connection is:

- Very good
- Adequate
- Inadequate

Please share any additional comments about your experience with the WCN:

GENERAL INFORMATION

Who uses the Wireless Community Network in your home?

Yourself
Spouse or partner
Child or children
Other relative or friend who lives in your home

Age 18-25 25-30 31-39 40-49 50-59 60 or older

Male Female

Race/ethnicity
African American Caucasian Latino Asian/Pacific Islander
Native American Other (please state).

Estimated annual household income
$0 - $10,000 $11,000 – $20,000 $21,000 – $30,000 $31,000 - $40,000
$41,000 - $50,000 $51,000-$75,000 $76,000 or more

Do you own your home? Yes No

How many years have you lived in your home?
Less than 5 years 5-9 years 10-15 years 15 years or more

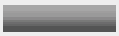
How many people live in your home?

Number of people 18 years or older:

Number of people under 18:

1. If you agree to the terms above, mark "yes" below to continue with the survey.			
		Response Percent	**Response Total**
Yes, I agree to the terms above.		**100%**	**14**
No, I do not agree to the terms above.		0%	0
	Total Respondents		**14**
	(skipped this question)		**0**

2. How are you involved in the Wireless Community Network (WCN) project?			
		Response Percent	**Response Total**
I am connected to the WCN and I regularly use the internet service.		**38.5%**	**5**
I am connected to the WCN and I occasionally use the internet service.		0%	0
I am connected to the WCN but I do not use the		15.4%	2

internet service.			
I was previously connected to the WCN but I am no longer participating in the project.		7.7%	1
Other (please specify)		**38.5%**	**5**
		Total Respondents	**13**
		(skipped this question)	**1**

3. How did you learn about the Wireless Community Network (WCN)?

		Response Percent	**Response Total**
Organization in my community		**38.5%**	**5**
Center for Neighborhood Technology (CNT)		15.4%	2
Neighbor or friend		7.7%	1
Relative		7.7%	1
My child's school		7.7%	1
Flier		0%	0
Other (please specify)		30.8%	4
		Total Respondents	**13**
		(skipped this question)	**1**

4. Why did you decide to sign up for the program? (Choose as many as apply)			
		Response Percent	**Response Total**
To have a computer and internet access in my home		**61.5%**	**8**
Because it is free		53.8%	7
I wanted to participate in a community-based program		46.2%	6
My children or I am involved in a program at an organization in our community		7.7%	1
Other (please specify)		30.8%	4
		Total Respondents	**13**
		(skipped this question)	**1**

5. Phone calls			
		Response Percent	**Response Total**
Very helpful		7.7%	1
Somewhat helpful		30.8%	4
Not helpful at		0%	0

all			
I did not receive any phone calls		**61.5%**	**8**
		Total Respondents	**13**
		(skipped this question)	**1**

6. Home visits			
		Response Percent	**Response Total**
Very helpful		23.1%	3
Somewhat helpful		**53.8%**	**7**
Not helpful at all		7.7%	1
I did not receive a visit to my home		15.4%	2
		Total Respondents	**13**
		(skipped this question)	**1**

7. Information sessions in the community			
		Response Percent	**Response Total**
Very helpful		23.1%	3
Somewhat helpful		**38.5%**	**5**
Not helpful at all		15.4%	2
I did not attend an		23.1%	3

information session			
		Total Respondents	**13**
		(skipped this question)	**1**

8. Fliers and mailings			
		Response Percent	**Response Total**
Very helpful		23.1%	3
Somewhat helpful		**46.2%**	**6**
Not helpful at all		7.7%	1
I did not receive a flier or mailing		23.1%	3
		Total Respondents	**13**
		(skipped this question)	**1**

9. Overall, how helpful were the training and education sessions for the WCN project?			
		Response Percent	**Response Total**
Very helpful		**46.2%**	**6**
Somewhat helpful		38.5%	5
Not helpful at all		15.4%	2
		Total Respondents	**13**
		(skipped this question)	**1**

10. What information would have made the training sessions more helpful?

Total Respondents	**9**
(skipped this question)	**5**

11. How helpful were the organizations in your community, such as NTRC, Gads Hill Center and John A. Logan College?

		Response Percent	Response Total
Very helpful		30.8%	4
Somewhat helpful		**46.2%**	**6**
Not helpful at all		23.1%	3
	Total Respondents		**13**
	(skipped this question)		**1**

12. What are some examples of help and support you received from organizations in your community?

Total Respondents	**11**
(skipped this question)	**3**

13. Did you receive information or help from the Center for Neighborhood Technology (CNT)?

		Response Percent	Response Total
Yes		46.2%	6
No		**53.8%**	**7**
	Total Respondents		**13**
	(skipped this question)		**1**

14. How helpful was CNT in your experience?

		Response Percent	Response Total

Very helpful		**50%**	**3**
Somewhat helpful		**50%**	**3**
Not helpful at all		0%	0
		Total Respondents	**6**
		(skipped this question)	**8**

15. What are some examples of help or support you received from CNT?	
Total Respondents	**3**
(skipped this question)	**11**

16. Have you encouraged friends or neighbors to sign up for the WCN project?

		Response Percent	Response Total
Yes		**69.2%**	**9**
No		30.8%	4
	Total Respondents		**13**
	(skipped this question)		**1**

17. What additional help or information do you need to tell other people about the WCN project?

Total Respondents	**9**
(skipped this question)	**5**

18. Have you used the WCN toll-free number to ask for help with the network?

		Response Percent	Response Total
Yes		21.4%	3
No		**78.6%**	**11**

Total Respondents	**14**
(skipped this question)	**0**

19. How helpful was the toll-free number service?

		Response Percent	Response Total
Very helpful		0%	0
Somewhat helpful		0%	0
Not helpful at all		**100%**	**3**
	Total Respondents		**3**
	(skipped this question)		**11**

20. What do you use the network for? (Choose as many as apply):

		Response Percent	Response Total
I use the WCN to communicate with family or friends by e-mail.		**69.2%**	**9**
I use the WCN for help in finding a job online.		53.8%	7
I use the WCN to look for job training programs online.		23.1%	3
My children use the WCN for school work.		23.1%	3

I use the WCN to communicate with my child's teacher and school.		0%	0
I use the WCN for my own school work.		46.2%	6
I use the WCN to help run my small business.		7.7%	1
I use the WCN for my own personal accounting, such as balancing my checkbook and paying bills online.		38.5%	5
I use the WCN to find out about issues that impact my community, such as CAPS meetings and school information.		23.1%	3
I use the WCN to find programs and services in my community.		23.1%	3
I or my children use the WCN to play games online.		30.8%	4

Other (please specify)		38.5%	5
		Total Respondents	**13**
		(skipped this question)	**1**

21. School work for your child:			
		Response Percent	**Response Total**
Very helpful		30.8%	4
Somewhat helpful		0%	0
Not helpful at all		0%	0
Not applicable		**69.2%**	**9**
		Total Respondents	**13**
		(skipped this question)	**1**

22. School work for yourself:			
		Response Percent	**Response Total**
Very helpful		30.8%	4
Somewhat helpful		7.7%	1
Not helpful at all		7.7%	1
Not applicable		**53.8%**	**7**
		Total Respondents	**13**
		(skipped this question)	**1**

23. Looking for job training programs:

		Response Percent	Response Total
Very helpful		30.8%	4
Somewhat helpful		7.7%	1
Not helpful at all		7.7%	1
Not applicable		**53.8%**	**7**
	Total Respondents		**13**
	(skipped this question)		**1**

24. Looking for a job:

		Response Percent	Response Total
Very helpful		**46.2%**	**6**
Somewhat helpful		7.7%	1
Not helpful at all		7.7%	1
Not applicable		38.5%	5
	Total Respondents		**13**
	(skipped this question)		**1**

25. Finding programs and services available in your community:

		Response Percent	Response Total
Very helpful		23.1%	3
Somewhat helpful		15.4%	2

Not helpful at all		**30.8%**	**4**
Not applicable		**30.8%**	**4**
	Total Respondents		**13**
	(skipped this question)		**1**

26. Managing a small business or community-based organization:			
		Response Percent	**Response Total**
Very helpful		0%	0
Somewhat helpful		15.4%	2
Not helpful at all		7.7%	1
Not applicable		**76.9%**	**10**
	Total Respondents		**13**
	(skipped this question)		**1**

27. The fact that the WCN is a service based in your own community is:			
		Response Percent	**Response Total**
Very appealing		**69.2%**	**9**
Somewhat appealing		23.1%	3
Not appealing at all		7.7%	1
	Total Respondents		**13**
	(skipped this question)		**1**

28. Creating ways for community residents to socialize with each other:			
		Response Percent	**Response Total**
Very helpful		15.4%	2
Somewhat helpful		**38.5%**	**5**
Not helpful at all		23.1%	3
Not applicable		23.1%	3
	Total Respondents		**13**
	(skipped this question)		**1**

29. Creating ways for people to talk with each other about community problems:			
		Response Percent	**Response Total**
Very helpful		23.1%	3
Somewhat helpful		23.1%	3
Not helpful at all		**30.8%**	**4**
Not applicable		23.1%	3
	Total Respondents		**13**
	(skipped this question)		**1**

30. Helping people feel connected to each other:			
		Response Percent	**Response Total**
Very helpful		**46.2%**	**6**

Somewhat helpful		23.1%	3
Not helpful at all		7.7%	1
Not applicable		23.1%	3
	Total Respondents		**13**
	(skipped this question)		**1**

31. Developing a sense of community spirit among residents:

		Response Percent	Response Total
Very helpful		23.1%	3
Somewhat helpful		**30.8**%	**4**
Not helpful at all		15.4%	2
Not applicable		**30.8**%	**4**
	Total Respondents		**13**
	(skipped this question)		**1**

32. Do you think the internet is a good way to access on-line information for homework, personal and professional communication or other general uses?

		Response Percent	Response Total
Yes		**84.6**%	**11**
No		7.7%	1
Unsure		7.7%	1
	Total Respondents		**13**
	(skipped this question)		**1**

33. Why or why not?	
Total Respondents	**9**
(skipped this question)	**5**

34. Do you think the WCN is a good option for home internet service for you and your family?			
		Response Percent	**Response Total**
Yes		**61.5%**	**8**
No		7.7%	1
Unsure		30.8%	4
	Total Respondents		**13**
	(skipped this question)		**1**

35. Why or why not?	
Total Respondents	**9**
(skipped this question)	**5**

36. Would you be willing to pay a fee to continue participating in the WCN project?			
		Response Percent	**Response Total**
Yes		28.6%	4
No		**71.4%**	**10**
	Total Respondents		**14**
	(skipped this question)		**0**

37. How much would you be willing to pay?			
		Response Percent	**Response Total**
Less than $10 per		**75%**	**3**

month			
Between $10 and $20 per month		25%	1
Between $20 and $30 per month		0%	0
Between $30 and $40 per month		0%	0
		Total Respondents	**4**
		(skipped this question)	**10**

38. The availability of the WCN connection is:			
		Response Percent	**Response Total**
Very good		7.7%	1
Adequate		38.5%	5
Inadequate		**53.8%**	**7**
		Total Respondents	**13**
		(skipped this question)	**1**

39. The speed of the WCN connection is:			
		Response Percent	**Response Total**
Very good		15.4%	2
Adequate		38.5%	5
Inadequate		**46.2%**	**6**
		Total Respondents	**13**
		(skipped this question)	**1**

40. Please share any additional comments about your experience with the Wireless Community Network (WCN) project:	
Total Respondents	**10**
(skipped this question)	**4**

41. Who uses the Wireless Community Network (WCN) in your home? (Choose as many as apply):			
		Response Percent	**Response Total**
Yourself		**90.9%**	**10**
Spouse or partner		9.1%	1
Child or children		36.4%	4
Other relative or friend who lives in your home		36.4%	4
	Total Respondents		**11**
	(skipped this question)		**3**

42. What is your age?			
		Response Percent	**Response Total**
18-25		23.1%	3
25-30		15.4%	2
31-39		**38.5%**	**5**
40-49		7.7%	1
50-59		7.7%	1
60 or over		7.7%	1

Total Respondents	**13**
(skipped this question)	**1**

43.

		Response Percent	Response Total
Male		**50%**	**7**
Female		**50%**	**7**
	Total Respondents		**14**
	(skipped this question)		**0**

44. Race/ethncity:

		Response Percent	Response Total
African American		**42.9%**	**6**
Caucasian		**42.9%**	**6**
Latino		7.1%	1
Asian/Pacific Islander		0%	0
Native American		7.1%	1
Other (please specify)		0%	0
	Total Respondents		**14**
	(skipped this question)		**0**

45. Estimated annual household income:

		Response Percent	Response Total
$0 - $10,000		**38.5%**	**5**
$11,000 -		15.4%	2

$20,000			
$21,000 - $30,000		23.1%	3
$31,000 - $40,000		15.4%	2
$41,000 - $50,000		7.7%	1
$51,000 - $75,000		0%	0
$76,000 or more		0%	0
		Total Respondents	**13**
		(skipped this question)	**1**

46. How many years have you lived in your home?

		Response Percent	Response Total
Less than 5 years		**57.1%**	**8**
5 - 9 years		7.1%	1
10 - 15 years		14.3%	2
15 years or more		21.4%	3
		Total Respondents	**14**
		(skipped this question)	**0**

47. Do you rent or own your home?

		Response Percent	Response Total

Rent		**71.4%**	**10**
Own		28.6%	4
	Total Respondents		**14**
	(skipped this question)		**0**

48. Number of people 18 years of age or older:	
Total Respondents	**14**
(skipped this question)	**0**

49. Number of people under 18 years of age:	
Total Respondents	**14**
(skipped this question)	**0**

50. Would you be willing to participate in a focus group to further discuss your experience with the WCN project?

		Response Percent	**Response Total**
Yes		**61.5%**	**8**
No		38.5%	5
	Total Respondents		**13**
	(skipped this question)		**1**

51. What days and times are most convenient for you to participate in a focus group?

		Response Percent	**Response Total**
Weekday morning		12.5%	1
Weekday afternoon		**50%**	**4**
Saturday morning		**50%**	**4**
Saturday afternoon		**50%**	**4**

Total Respondents	**8**
(skipped this question)	**6**

52. How may we contact you to schedule the focus group date and time? Please provide a phone number and/or e-mail address (this information will be separated to keep your survey responses anonymous and will only be used for the purposes of this research):

Total Respondents	**8**
(skipped this question)	**6**

53.

Total Respondents	**12**
(skipped this question)	**2**

Appendix D
West Frankfort User Data Abbreviation Key for Resident Computer Usage

WC = Wireless Card in Computer
NI = Computer in place but NO INTERNET

1 NE = North East
2 NW = North West
3 SE = South East
4 OA = Office Area (housing around the FCHA office)
5 Kuca = In Kuca Tower
6 AG = In Anna Gray Tower
99 = Private Residence not affiliated with housing.

User Status Key

1 = Uses WCN Computer and Network
2 = Uses WCN Network
3 = Uses WCN Computer
4 = Has WCN Computer and CPE not in use
5 = Will participate in the near future
6 = Waiting List / Housing Resident
7 = Waiting List / Non-housing Resident
8 = Dropped out of program
9 = Unable to contact
10 = *Provides Internet Access on their own using equipment from WCN Project*
11 = Fixed problem for user (who is eligible for computer through project) on computer they already own