FINAL REPORT

Contract Number 200-2001-00121

Task 9

Process Evaluation of the Protocol for Assessing Community Excellence in Environmental Health (PACE EH)

Submitted to

Brian Hubbard, M.P.H.
Technical Monitor

Centers for Disease Control and Prevention
Environmental Health Services Branch
4770 Buford Highway, NE F - 28
Atlanta, GA 30341-3724

February 28, 2007

Submitted by

Carlyn Orians, M.A.
Task Leader

Shyanika Rose, M.A.
Letitia Reason, Ph.D., M.P.H.
Tiffiny Bernichon, B.S.

Edward Liebow, Ph.D.
Case Study Leader

Bradley Skarpness, Ph.D.
Survey Leader

Battelle

Centers for Public Health Research and Evaluation
1100 Dexter Avenue North, Suite 400
Seattle, WA 98109

Executive Summary

I.   Statement of the Problem

The Protocol for Assessing Community Excellence in Environmental Health (PACE EH) is designed to engage the community in environmental health planning and assessment activities. Historically, public health agencies in the United States have focused on sanitation, food safety, and water quality. New threats to public health that have emerged over the past 50 years—air and noise pollution, solid and hazardous wastes, ionizing radiation, terrorism inside our national borders, emerging infectious diseases—have catalyzed a reassessment of the roles and competencies of environmental health professionals, as well as the development of new approaches to anticipating and responding to a wider variety of public health concerns. Accompanying this expanded domain has been a shift away from service delivery to operating via the core public health functions of assessment, policy development, and assurance. Agency use of public involvement in identifying, prioritizing and addressing issues of concern in the community has gained momentum as a way to allocate resources and mobilize effective action.

The PACE EH philosophy is tightly linked to the core functions of public health. It seeks to strengthen public health leadership, promote community collaboration, and encourage environmental justice. In the long run, PACE EH seeks to establish a new leadership role for local public health agencies and to build sustainable community processes for decision-making.

Significant resources have been devoted to developing, testing, promoting and assisting health agencies in the use of PACE EH. Some implementation barriers were previously identified through ten pilot and eight demonstration sites. However, little was known about the extent of implementation nationally nor the experiences of other sites that were not included in the early test sites. Additional knowledge was needed to understand these experiences and to identify future activities that CDC could undertake to support the use of PACE EH.

II.   Evaluative Objectives

Battelle was asked by CDC's Environmental Health Services Branch, National Centers for Environmental Health, to conduct a process evaluation of the implementation of PACE EH. The process evaluation was designed to answer five principal questions:

- Q1.   **Awareness.** How have potential users been made aware of PACE EH?
- Q2.   **Adoption**. What factors contributed to the decision to implement PACE EH?
- Q3.   **Implementation Process.** How is PACE EH being implemented in the communities that have elected to use the method?
- Q4.   **Intermediate Impacts.** What have been the intermediate impacts of PACE EH on agencies and communities?
- Q5.   **Recommendations.** What recommendations do local and national stakeholders have for improving the method and/or the guidance provided to implementing sites?

This process evaluation contributes to the knowledge base by providing additional information about how each potentially interested community evaluates the suitability of the PACE EH methodology for its own situation, the relative advantages and disadvantages each perceives in this methodology compared to other tools and methods available for conducting environmental health assessments, and the range of challenges encountered and strategies used among locations that have elected to implement PACE EH.

III.   Methodology

To answer these questions, the evaluation relied on three primary sources of data:

- **Interviews with key stakeholders**, including stakeholders involved in the development and early marketing of PACE EH. We also included individuals who were central to the development of other public involvement protocols. These open-ended interviews were designed to elicit information about the genesis of PACE EH, the anticipated goals, and the relationship of this protocol to other public involvement protocols. The interviews also provided information about how PACE EH was marketed and about the motivations and experiences of early adopters.

- **Qualitative case studies,** including 8 in-depth cases to examine PACE EH implementation and key contextual variables, and 16 rapid assessment cases to more clearly define the range of local implementation strategies. In total, 206 individuals were interviewed as part of the 24 case studies. Of these, 89 interviewees held public health positions and 117 were community members or representatives of community organizations. The case studies were completed in 2004 and 2006.

- A **web survey** of all local agencies that expressed interest in implementing PACE EH. Invitations to complete the survey were sent to 917 organizations. A total of 656 responses were received. Of these, 354 had not considered implementing PACE EH and thus were not asked to complete the survey. Another 302 responded, were eligible, and provided at least partial answers to the survey. The survey was conducted in 2006.

IV.   Major Findings and Recommendations

Question 1: How have potential users been made aware of PACE EH?

The National Association of County and City Health Officials (NACCHO) was an important partner in the development and marketing of PACE EH. The marketing strategy employed by NACCHO has centered primarily on its membership base. Marketing to this audience has included promotion in the NACCHO Newsletter and discussion on the NACCHO website. The *Guidebook* is available for sale on the website, along with its companion volume, *PACE EH in Practice*, a compendium of case studies from around the country. Newer additions to the website include a resource tool kit, which includes such materials as meeting agendas, invitation letters, surveys, sample press releases, action plans, notes for local community meetings, and assessment instruments. In addition to these resources, the website provides access to a database of Model

Practices, which includes case studies from NACCHO members regarding their experiences with PACE EH implementation.

Beyond its membership, NACCHO has promoted PACE EH at professional conferences and regional workshops. It has also been promoted through "*word of mouth*" among environmental health professionals. Additional marketing efforts beyond NACCHO members have included NACCHO participation in a 2004 training sponsored by the Indian Health Service in Albuquerque. The protocol has been marketed primarily as a tool for promoting community involvement. Marketing messages have focused on its flexibility and adaptability to local situations, emphasizing that all tasks need not be completed in sequence or at all, as long as the community involvement component is not lost.

Most survey respondents learned about PACE EH from NACCHO, CDC, or at a professional conference:

- **NACCHO membership status**. NACCHO members were most likely to have learned about PACE EH from NACCHO. Nearly three-quarters of respondents who are NACCHO members reported that NACCHO was the source of their information, whereas non-NACCHO members were equally as likely to have heard about PACE EH from NACCHO, CDC, or a professional conference or workshop. This information confirms stakeholder observations that NACCHO marketing efforts have focused most heavily on its membership base.

- **Type of agency**. Health departments at the county, city/municipal, district or regional level were more likely to have received information about PACE EH from NACCHO, while most state health department respondents reported that CDC was their source of PACE EH information. Tribal health departments were more likely to have learned about PACE EH at a professional conference or workshop.

Q2. What factors contributed to the decision to implement PACE EH?

Many factors can play a role in an agency's decision about whether to implement PACE EH. Each survey respondent was categorized as an "implementer," "non-implementer," or "undecided." Factors associated with the decision to adopt have to do with organizational capacity, the range of public health services offered, existing community partnerships, and an in-house "champion." Prior experience with other strategic assessment protocols is not a useful predictor of whether agencies would decide to implement PACE EH.

- The majority of implementers are from large county health departments with a relatively large number of staff, as well as higher numbers of staff focused specifically on environmental health issues. The non-implementing groups tend to be agencies which serve a smaller average population and have fewer employees.

- The implementing group has a lower percentage of their operating budget coming from local general funds or fee-for-service arrangements, and more from state or federal funds. The group of agencies which is undecided about implementation includes the middle

range health departments with regard to average population served, number of staff, and annual operating budgets.

- Implementers more frequently reported that their agencies provide a wider range of services including occupational and health safety, radiation control, outdoor air quality control, drinking water safety, and lead abatement.

- Agencies who implemented PACE EH are more likely to view the protocol favorably than those who chose not to implement. Implementers were more likely to agree that they have adequate staff time and money available for PACE EH and that they have community partners who could contribute resources. Implementers are also more likely to agree that PACE EH was supported by their agency's leadership and that it fit with the agency's priorities and business style, than did the non-implementing group. Furthermore, implementers found the *Guidebook* more useful and had more confidence in their knowledge of where to get further help with implementing PACE EH.

- Little difference was found between implementers and non-implementers in their previous experience with other community-based or environmental assessment protocols. However, implementers did have more experience with Mobilizing for Action Through Planning and Partnerships (MAPP).

- Implementing agencies were more likely to have a "champion" for their PACE EH process than were non-implementers and those who have not yet decided to implement. Among the implementing group, the agency's Environmental Health Director, overall Director, or other agency staff were most likely to have served as the "champion."

Q3. How is PACE EH being implemented in the communities that have elected to use the method?

The PACE EH *Guidebook* presents a framework for environmental health assessment that promotes community involvement and local flexibility. Although the *Guidebook* presents 13 tasks to lead sites through the assessment process, it is designed to be flexible. It was not anticipated by the developers that sites would necessarily conduct every task as presented, nor that they would strictly follow the sequence. Thus there is considerable variation in how sites approached each task. The 13 tasks in the PACE EH process include:

1. Determine Capacity
2. Characterize the Community
3. Assemble Team
4. Define Goals
5. Generate Issues
6. Analyze Issues
7. Develop Indicators
8. Select Standards
9. Create Issue Profiles
10. Rank Issues

11. Set Priorities for Action
12. Develop Action Plan
13. Evaluate Progress

Below we briefly summarize the key findings with respect to how PACE EH has been implemented.

- **Staff-directed vs. community-directed**. Implementing sites followed distinct implementation models. One model can be described as "staff-directed." In these sites, staff did most of the groundwork and used the committee more as an advisory board. Another model can be described as "community-directed." In this model committee members were almost exclusively citizens and they were asked to make decisions at every step along the way and to roll up their sleeves and prepare documents, such as issue profiles. Most sites fell somewhere in between these two ends of the spectrum.

- **Resources used**. PACE EH is generally described as a resource intensive undertaking, especially with regard to staff time. Most sites found that PACE EH implementation requires at least a half-time dedicated coordinator, along with additional staff support from within the lead agency. The average length of time from PACE EH adoption to the approval of their first action plan (Task 12) was 17.1 months.

- **Task sequence**. Most sites implementing PACE EH followed the major tasks in the protocol roughly in the order in which they are presented (i.e., convening a team, conducting an assessment, and subsequently developing action plans). However, there are many variations. Among those who indicated that they had completed a PACE EH cycle (once through the steps), surprisingly, about half had not completed all of the tasks. Five had completed all tasks but Task 13, Evaluate Progress. However, others either had ended in the middle of the process (at Task 5) or skipped steps in the middle of the process. Tasks that were commonly skipped were Tasks 6, 7, and 8.

- **Task difficulty**. The tasks described as the most difficult were Tasks 6, 7, 8 and 13. When asked why these tasks were more difficult, the most common responses included lack of staff time and data resources. Financial resources were cited as a barrier for Task 13.

- **Environmental health priorities**. Respondents listed a combined total of 170 environmental health priority topics that emerged from PACE EH, half of which were existing priorities within the health agency and half of which were not. Many topics can be broadly grouped into categories such as air quality, water quality, and waste management. Others are more specific such as injury prevention, lead contamination, food safety, and physical activity.

Q4. What have been the intermediate impacts of PACE EH on agencies and communities?

Survey results identified 66 sites that have implemented or are currently implementing PACE EH. Of these, half have completed an action plan and the majority of these have at least begun

implementation of one or more actions. Nevertheless, because PACE EH is relatively new and no sites have had the opportunity to carry out activities over more than a few months or years, we examined intermediate impacts that might be apparent during a relatively short time frame.

Overall, the positive impacts associated with PACE EH implementation were greater among those that have completed the process at least through the development of action plans, although impacts are still apparent among those that are not as far along in the process. The largest reported impacts include the following:

- **Building networks and collaboration** with other agencies and with the community.
- **Improving knowledge and skills** in both environmental health issues and collaborative processes.
- **Increasing awareness** of environmental health issues within the community.
- **Increasing trust** between key players in environmental health within the community. The impact on trust is apparent among all implementers, regardless of progress.
- **Strengthening the perception of the health agency as a leader** in environmental health. The health agency gains additional status as a leader in environmental health when the process is completed through the development of an action plan.

Implementers did not indicate that PACE EH has played a strong role in building support for existing programs, but neither did they think that it has led to loss of support for those programs. Little support was provided for the idea that PACE EH changed the environmental health priorities within the health agency or that it has led to new programs being developed. Somewhat stronger support was given to the idea that PACE EH has influenced other planning efforts in the community. Implementers did not agree that PACE EH has changed the way the health agency defines at-risk populations, nor that it has led to increased funding for environmental health.

Q5. What recommendations do local and national stakeholders have for improving the method and/or the guidance provided to implementing sites?

Most PACE EH implementers who responded to the survey and participated in the case studies are strong supporters of the PACE EH method. Individuals used words such as "*fabulous*" "*gratifying*" and "*tremendous*" to describe the process. They found value from the process in terms of building relationships, identifying issues of concern to the community, and building agency capacity, providing support for the value of the original vision for PACE EH. As with all methods, however, PACE EH had its detractors. Some community partners felt that the time spent was not worthwhile because they never succeeded in getting to action.

Both survey respondents and case study interviewees were asked to provide suggestions to improve PACE EH.

- **Exposure to PACE EH.** Many respondents and interviewees believe that environmental health professionals are already largely aware of PACE EH. Suggestions for broadening awareness included presentations and workshops at state and regional meetings, direct mail, presentation in academic courses, articles in professional journals, and through professional list-serves. Specific suggestions were offered to reach less traditional

audiences. These included marketing PACE EH through the National Council of State Legislators, the US Conference of Mayors, the National Association of Counties (NACO), and environmental agencies and groups.

- **Encouragement to adopt**. To encourage adoption, a frequent suggestion was to increase available information on PACE EH success stories: "*Here's a difference that was made in this community as a result of PACE.*"

- **Response to PACE EH *Guidebook*.** Respondents were divided as to whether changes were needed. Many were very complimentary, indicating that they thought "*it is really good*" and that "*the level of detail was good, it had a nice structure, it was clear and easy to follow.*" Others thought it was either too academic, too complex, or lacking in specific guidance or examples in key places. In general, there was a tension between those who wanted it more prescriptive and streamlined and those who preferred the existing philosophical and flexible approach and felt that prescription could lead to lack of creativity. Both sides agreed, however, that more examples would be helpful. Pilot sites in particular were happy to see the improvements that had been made to the *Guidebook* based on their early experiences.

- **Suggested changes to *Guidebook***. Sections specifically targeted as places for improvement include the chapters on Tasks 6, 7, and 8, the tasks that implementing sites indicated were the most difficult. Suggested additions to the *Guidebook* included strategies for implementing action plans and more guidance on community process and facilitation. New formats were also recommended to create a more interactive environment for completing the tasks. Specific suggestions included creating an interactive CD or webpage version including electronic templates that could be modified rather than recreated.

Technical assistance. Pilot sites and demonstration sites received active technical assistance from NACCHO and the Green Mountain Institute. They found the assistance very valuable. Other sites generally did not receive the same level of assistance. Areas where interviewees and respondents would appreciate additional technical assistance include the following:

- assistance with data acquisition, analysis, and the development of indicators;
- facilitating the community process;
- integrating PACE EH with other assessment processes or protocols, like MAPP, or other assessment tools like BRFSS and Healthy People 2010; and
- more opportunities to share experiences between and across PACE EH sites. Several interviewees mentioned that they would like to have "*some central way in which all current and future PACE sites could share helpful information and lessons learned.*"

Advice to communities considering adoption. Recommendations offered by interviewees for new sites that might consider adopting PACE EH covered a wide range of issues. Key advice offered included:

- Set realistic goals and timelines. You have to be patient if you want true community engagement.

- Identify staff who have both the time and skills to lead the effort. These skills include a mix of solid scientific grounding in environmental health issues and skills in facilitation and group process.
- Engage the community. To work with community members, interviewees stressed the importance of proactive outreach to identify interested people and engage them in a manner that builds trust.
- Take advantage of technical resources available locally and nationally. New sites were encouraged to connect with other PACE EH sites, tap into the peer assistance network, and use other nationally available assistance through NACCHO.
- Integrate PACE EH into other ongoing activities. Sites that use MAPP, Healthy People 2010, or other assessment activities, should make sure PACE EH is integrated into those efforts. Using existing planning or advisory structures, rather than creating an "extra" team is also good. Integration will help with the 13 tasks, but most importantly, it will help build support for implementing action plans.
- Document successes. Documenting success is useful both to maintain partner engagement and to seek additional resources. "*The book says you need to take time to celebrate your successes and it sounds hokey but you have to do it!*"

Summary and next steps

For some health agencies and communities, implementing PACE EH has been transforming. That is, PACE EH has had a profound impact on the way the agency and its staff carry out its environmental health responsibilities. PACE EH has led them on a journey in which they have moved beyond their regulatory responsibilities to embrace a larger role in which they actively engage with the community in addressing environmental health issues of importance. In so doing, they have broadened their conception of environmental health and have redefined their own role to be more in line with the ten essential services. In a very few cases, this transformation has reached into the community and begun to change residents' perceptions of their environment, the agencies that serve them, and their ability to affect change. These are the sites that offer proof that the vision of the PACE EH development team can be realized.

For some health agencies and communities, however, the journey has been much less profound. A dialogue has begun between agencies and between agencies and the community, but these changes have not had a significant impact. Participants in the process have grown from the experience, both personally and professionally, but this has not resulted in broader changes within the agency or community. These are the communities in which PACE EH is likely to be viewed as a project, and the resulting action plans the final report. The report now sits on a shelf and nobody takes responsibility for its implementation.

The factors that determine which outcome is observed are not clear, but the results of this study suggest that the presence of a "champion" with political clout within the agency is a key factor. Resources also make a difference. The sites in which this transformation is most pronounced have staff who are passionate about the value of community involvement and about redefining the ways in which the agency works with the community. These sites also have resources that they can dedicate towards this end. While few would say that they have all the resources they would like, in these sites they are able to maintain staff focus on the goal and have secured resources for implementation. Agencies with few resources are likely to be able to make only

small steps in the process. These agencies hope to have a blueprint for action—PACE EH action plans—if resources become available.

To support PACE EH implementation, national partners are already engaged in many activities that are valued by implementing sites. Suggested next steps to increase the number of sites that are successful in using PACE EH to transform their activities are provided below.

- Provide detailed case histories and examples of sites that have been particularly successful. In these case histories, provide concrete examples of outcomes that have resulted from PACE EH in the agency and in the community so that others can begin to visualize benefits that might be possible with PACE EH.

- Provide additional tools and guidance in several areas where sites have struggled the most. Some of these areas are technical in nature—how to find and work with data, how to develop indicators. Some of them are process—how to facilitate a community process and promote community development. Experts in community development and in environmental tracking might lend a valuable hand in these developments.

- Provide additional guidance on how to transition from assessment and planning to plan implementation. Many sites approach the end and lose momentum or are unsure how to proceed.

- Articulate better the relationship between PACE EH and the essential services so that communities can assess their progress. This will give evaluation more meaning.

- Help agencies and communities locate sources of funding that can be used to implement action plans.

- Provide additional guidance on methods for securing support for PACE EH from decision-makers.

- Provide mentoring opportunities or funding for roving experts who sites can call on to provide on-site assistance at key steps.

- Bring PACE EH into the environmental health curriculum at the university level so that the next generation of environmental health professionals will see their chosen profession in a new light.

At the same time that it is desirable to encourage and support more sites to implement PACE EH in a way that has far-reaching outcomes, it is also important to recognize even small steps. PACE EH was designed to be flexible and adaptable. In many sites that means it could still be useful even when resources are scarce or when political support is shaky at best. PACE EH has three legs: (1) scientific assessment, (2) community change, and (3) agency capacity building. Advances in all three do not need to occur for the process to have value. Thus another source of support that could be offered is better guidance about how to complete an initial capacity assessment. If agencies are provided with additional tools to help them assess the setting in which PACE EH would be implemented in a more systematic and comprehensive fashion, they might be better at setting realistic goals about what steps forward are most possible, at least within the short term. Thus capacity assessment could be approached not to answer the question "Should we proceed?" but to answer the question "How should we proceed?"

It is important to remember that changes of the magnitude envisioned by the PACE EH development team take time. PACE EH has proven to be a valuable tool for many agencies and communities. However, the model offered is not familiar to many environmental health practitioners and not all are open to its message and approach. Over time this may change. CDC can provide support for this change by continuing to support PACE EH, developing new tools and guidance as new knowledge emerges, and by sharing success stories.

In general, we observed a tension between those who would like to see PACE EH be more prescriptive and streamlined and those who prefer the existing philosophical and flexible approach and feel that prescription could lead to lack of creativity. Some of the observed tension was focused specifically on the *Guidebook* and not just the process itself. Many sites easily embraced its flexible style and added materials of their own as desired. However, others wanted more of a "cook book" approach in which every step is clearly described and templates for materials are readily available. We agree that encouraging flexibility and creativity to adapt the protocol to local conditions is critical. However, we also agree that to better meet the needs of those sites that have limited resources but are still interested in adopting the approach advocated by PACE EH, new templates, toolkits, and on line resources could help them move more quickly. These need not be at odds with one another if the resources are designed to reflect multiple approaches that are successful in different situations.

There was also a tension observed between the differing views about the value of community input. While many embraced PACE EH because of its community involvement emphasis, there were also those professionals who questioned the value of input from community members. Some were concerned that they do not know environmental health issues as well as the professionals; others thought that identifying a community's environmental health concerns is a large responsibility which could place obligations and expectations on the health agency that they are unable to fulfill. Those who hold this view are less likely to undertake PACE EH and, if they do, are more likely to view it as an assessment or strategic planning tool than a tool for community involvement.

To further the idea that multiple approaches are possible and even desirable, additional guidance could be developed to help adapt PACE EH to the local context and to distinct decision-making environments. Examples include integrating PACE EH with other assessment methodologies, adapting it to tribal decision-making structures, and adapting it to environmental health divisions that are not part of health departments or to other environmental agencies that might be in a position to serve as lead agency.

Finally, if PACE EH is to achieve its vision of creating lasting change within public health agencies, additional attention needs to be given to how to develop PACE EH as an ongoing assessment tool rather than as a process for developing priorities at a single point in time. This is new territory, and few sites have yet ventured there. CDC could make a lasting contribution by directing attention to methods and approaches that would support agencies and communities in making community-based assessment an ongoing way of doing business.

Acknowledgments

This work would not have been possible without the support and collaboration of a number of people and organizations. Brian Hubbard, our Technical Monitor at the Centers for Disease Control and Prevention was a source of tremendous support and guidance. His colleagues, John Sarisky and Richard Gelting, also provided expert review at critical steps. Jason Feldman provided valuable assistance in tracking down hard to find respondents. Sharunda Buchanan, Chief, Environmental Health Services Branch, supported the project from beginning to end.

Two consultants were critical to the study: Tim McDonald chaired the Steering Committee that guided the development of PACE EH; Pat Bohan was at CDC during the initial launch of PACE EH. They both provided a grounding in the genesis of the protocol that was invaluable during the study design phase. Other stakeholders who provided valuable insights include Virginia Begay, Harold Bengsch, Carl Osaki, Sam Sanchez, Art Schletty, Susan Sutherland, and Paul Weisner.

Staff at the National Association of City and County Health Officials (NACCHO) who were involved in the development and marketing of PACE EH provided valuable insights into how these activities were accomplished. They also provided data to conduct the survey. We especially thank Jonathan Schwartz, Jennifer Li, and Cheryl Connelly, as well as former staff member, Heidi Klein.

We wish to thank the many individuals who took the time to complete the survey. You remain unnamed, but without you, the study could not have been completed. We are also enormously grateful to the staff and community members in each of our case study sites who welcomed us into their communities and shared their experiences and insights for the benefit of future PACE EH sites. We are particularly grateful to the individuals at each site who helped us schedule our visits, identify respondents, and review our drafts of the site visit summaries. At the risk of forgetting someone, we wish to thank the following individuals: Nathan Ballenger, Tim Banwell, Holly Cucuzzella, Bob Custard, Ricky Elliott, Nancy Farnsworth, Tom Hart, Alan Kalos, Louise Kent, Barbara Lucks, Karen McKinnis, Jill Montgomery, Kevin Odell, Jennifer Pinnow, Julianne Price, Patricia Pushcar, Nicole Rogers, Larry Schaad, George Schroeder, Beth Siddens, Lynn Thompson, Wano Urbonas, Jane Warga, Rick Wietersen, Lila Wickham, and Carlos Yunsan.

On the Battelle staff, many talented individuals contributed to this project. Stephanie Gray programmed the web survey and set up the tracking system. Martha Ryals served as the Survey Coordinator. Fred Dong was our SAS wizard. Andrew Davis was an expert interviewer. Kate Blessing turned our awkward pages into a beautiful final report. Marcia Treece formatted the survey. Many others contributed behind the scenes with the survey. Thank you all.

Table of Contents

List of Tables

List of Figures

1 **Introduction**

The Protocol for Assessing Community Excellence in Environmental Health (PACE EH) consists of 13 tasks to engage the community in environmental health planning and assessment activities. The PACE EH philosophy is tightly linked to the core functions of public health. It seeks to strengthen public health leadership, promote community collaboration, and encourage environmental justice. In the long run, PACE EH seeks to establish a new leadership role for local public health agencies and build sustainable community processes for decision-making. Tasks in the PACE EH process include:

1. Determine Capacity
2. Characterize the Community
3. Assemble Team
4. Define Goals
5. Generate Issues
6. Analyze Issues
7. Develop Indicators
8. Select Standards
9. Create Issue Profiles
10. Rank Issues
11. Set Priorities for Action
12. Develop Action Plan
13. Evaluate Progress

PACE EH was developed in the mid-1990s and was first implemented in ten pilot sites across the country between 1996 and 1999, as chronicled in *PACE EH in Practice*. Eight more sites have served as demonstration sites. More than 1,700 copies of the *Guidebook* have been disseminated to the public and a few dozen communities have previously, or are currently, engaged in a PACE EH process. The Centers for Disease Control and Prevention (CDC), in collaboration with CARE/Peru, has applied PACE EH in two Peruvian communities, and is currently engaged in translating guidance documents for others in Latin America and Spanish-speaking areas in the U.S.

This report presents the findings from a process evaluation of PACE EH implementation which was conducted by Battelle at the request of CDC.

1.1 Background and Objectives of the Evaluation

Historically, public health agencies in the United States have focused on sanitation, food safety, and water quality. Their successes in addressing these issues are among the reasons that life expectancy in the U.S. increased by thirty years from 1900 to 1999.[i] New threats to public health that have emerged over the past 50 years—air and noise pollution, solid and hazardous wastes, ionizing radiation, terrorism inside our national borders, emerging infectious diseases—have

catalyzed a reassessment of the roles and competencies of environmental health professionals, as well as the development of new approaches to anticipating and responding to a wider variety of public health concerns. The list of programs under the domain of environmental health has also expanded and, depending on the location, may include "toxic chemical exposure; emergency medical services; 911 systems; trauma systems; injury control and prevention; tattoo and body piercing safety; sick building syndrome; substandard housing; assurance of compliance with the Americans with Disabilities Act; preparation, response, and recovery related to natural disasters; unintentional events and terrorist acts; and nuisance complaints." [ii] These functions may be consolidated in a single agency or spread across multiple agencies with varying degrees of collaboration and interaction.

Accompanying this expanded domain has been a shift away from service delivery to operating via the core public health functions of assessment, policy development, and assurance. These functions have been defined further and expanded into 10 essential public health services.[iii] This shift requires new attention to strategic problem solving and to developing critical competencies in the environmental health workforce to put these essential services into practice.[iv] Operating in parallel is a growing recognition of the strong link between individual health and community health—"the health of the community and environment in which individuals live, work, and play"—and the key role of community partnerships as effective tools in promoting community health[v]. It is no surprise that among the 10 essential environmental public health services is: "Mobilize community partnerships and action to identify and solve health problems."

The need to engage the community is especially germane in light of the fragmented and limited resources available to address environmental health issues.[vi,vii] Public health agencies lack both the competencies and resources to address effectively all the environmental health problems in the communities they serve. Agency use of public involvement in identifying, prioritizing, and addressing issues of concern in the community has gained momentum as a way to allocate resources and mobilize effective action.

PACE EH is one of a number of recent tools to engage the community in health planning and assessment activities. Among those tools that CDC has been instrumental in developing are: Planned Approach to Community Health (PATCH),[viii] developed in the mid-1980s by the CDC in partnership with state and local health departments and community groups; Assessment Protocol for Excellence in Public Health (APEX-PH),[ix] released in 1991, which guides local health departments through an organizational capacity assessment and a community health assessment process; and Mobilizing for Action through Planning and Partnerships (MAPP),[x] a community-wide strategic planning tool that helps communities prioritize public health issues and identify resources for addressing them. The National Association of County and City Health Officials (NACCHO) was a key stakeholder in developing APEX-PH and MAPP, as well as PACE EH.

Battelle was asked by CDC's Environmental Health Services Branch, National Centers for Environmental Health, to conduct a process evaluation of the implementation of the Protocol for Assessing Community Excellence in Environmental Health (PACE EH). Significant resources have been devoted to developing, testing, promoting and assisting health agencies in the use of the methodology. Some implementation barriers were previously identified through ten pilot and

eight demonstration sites. This process evaluation contributes to the knowledge base by providing additional information about how each potentially interested community evaluates the suitability of the PACE EH methodology for its own situation, the relative advantages and disadvantages each perceives in this methodology compared to other tools and methods available for conducting environmental health assessments, and the range of challenges encountered and strategies used among locations that have elected to implement PACE EH.

The activities that comprise this process evaluation are depicted in Figure 1.1. Initial meetings, interviews, and a literature review were conducted prior to developing a detailed evaluation plan. The first data collection activity consisted of eight in-depth case studies with sites implementing PACE EH. The information from these case studies was used to develop a survey instrument and streamlined interview guides for additional rapid assessment case studies. The results from all these data collection activities are presented in this report.

Figure 1.1 PACE EH Process Evaluation
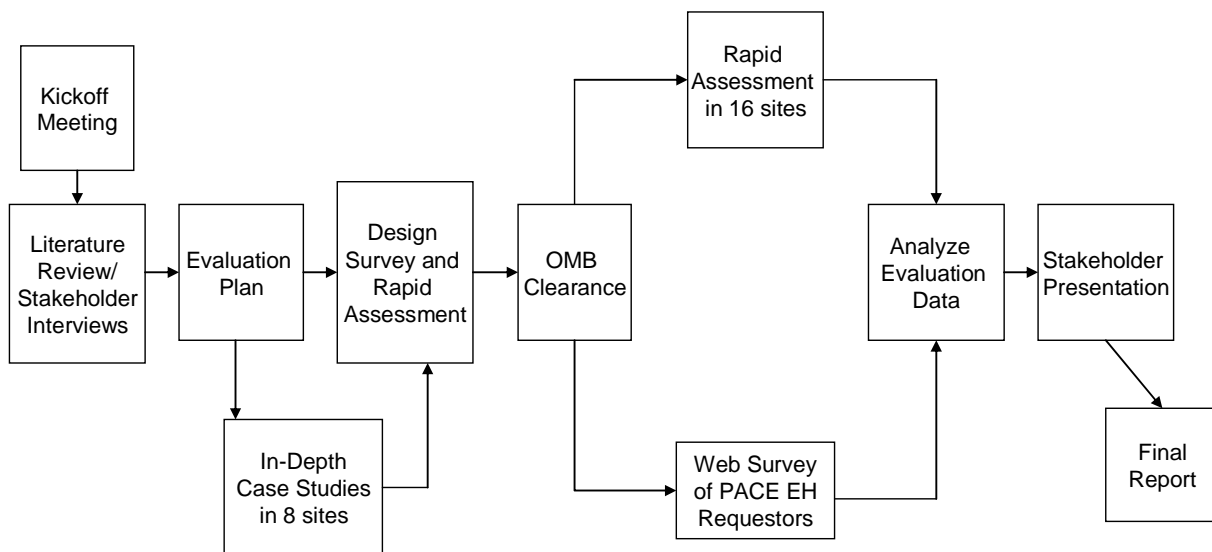
1.2   Evaluation Questions and Data Sources

This process evaluation was designed to answer five principal questions. These questions are:

Q1. **Awareness.** How have potential users been made aware of PACE EH?
Q2. **Adoption**. What factors contributed to the decision to implement PACE EH?
Q3. **Implementation Process.** How is PACE EH being implemented in the communities that have elected to use the method?
Q4. **Intermediate Impacts.** What have been the intermediate impacts of PACE EH on agencies and communities?
Q5. **Recommendations.** What recommendations do local and national stakeholders have for improving the method and/or the guidance provided to implementing sites?

To answer these questions, the evaluation relied on three primary sources of data:

- **Interviews with key stakeholders**, including stakeholders involved in the development and early marketing of PACE EH. We also included individuals who were central in the development of other public involvement protocols.

- **Qualitative case studies,** including 8 in-depth cases to examine PACE EH implementation and key contextual variables, and 16 rapid assessment cases to more clearly define the range of local implementation strategies.

- A **web survey** of all local health agencies that expressed interest in implementing PACE EH.

Table 1.1 provides additional information about the more detailed evaluation questions that comprised this evaluation and the role of each of these data sources in answering both the central evaluation questions and their component parts.

Table 1.1 Evaluation Questions and Data Sources

Evaluation Questions	Data Sources		
	Stakeholder interviews	Case Studies	Web Survey
1. How have potential users been made aware of PACE EH?	■	■	■
2. What factors contributed to the decision to implement PACE EH?			
▪ What motivated lead agencies to consider implementing PACE EH (i.e., tool for public involvement, strategic management, crisis management, or combination thereof)?	■	■	■
▪ What specific factors did potential users consider when they evaluated the feasibility/suitability of PACE EH for their jurisdiction?	■	■	■
▪ What are the similarities and differences between implementers and non-implementers (e.g., jurisdiction size, type of jurisdiction, urban/rural, # of regulatory programs, champion, staff per population, etc.)?			■
▪ To what extent are other public involvement and strategic assessment methodologies being used by implementers and non-implementers? What overlap is there, if any, in implementing these other protocols?	■	■	■
▪ What financial and staffing resources were identified to support PACE EH implementation, and where did they come from?		■	■
▪ When and how did the facilitating organization seek and achieve "buy-in" from elected officials and policy-setting boards?		■	■
3. How is PACE EH being implemented in the communities that have elected to use the method?			
▪ In what ways and to what extent is the local implementation consistent with the PACE EH philosophy articulated in the *Guidebook* (i.e., core functions of public health, leadership, community collaboration, and environmental justice?		■	
▪ How has PACE EH implementation compared with other EH assessment approaches organizations have utilized previously?		■	■

Evaluation Questions	Data Sources		
	Stakeholder interviews	Case Studies	Web Survey
▪ Which components of PACE EH were the hardest to implement?		■	■
▪ What factors impeded or facilitated implementation (e.g., cost, personnel, experience)?		■	■
▪ In particular, how was Task 3 (assembling a community-based environmental health assessment team) tackled?		■	■
▪ What changes have implementers made to the PACE EH methodology (e.g., different steps, alternative sequence, revisiting tasks, changes to tools)? Why?		■	■
▪ Approximately how long does each step of PACE EH take to complete? What factors affect the durations experienced?		■	■
▪ How did the CEHA team know that it had reached point where it could move forward from one task to the next?		■	
▪ How has the implementation process been documented?		■	
▪ What technical assistance and tools have been utilized? What has been their utility?	■	■	
▪ How do the experiences and perspectives of community participants differ from those of the lead agency?		■	
4. What have been the intermediate impacts of PACE EH on agencies and communities?			
▪ Have priorities selected been different than they might have been in the absence of PACE EH?		■	■
▪ How do implementers track the impacts of their efforts?	■	■	■
▪ In what ways has PACE EH served to build capacity in the 10 essential environmental health services?		■	■
▪ What other outcomes have participants observed (e.g., conditions assessed, at-risk populations defined, priorities clarified, databases developed)?	■	■	■
▪ To what extent and how does the use of PACE EH change the way lead agencies address environmental health issues (e.g., create more of a "ground-up" policy development process)?		■	■
▪ To what extent and how does the use of PACE EH change the way communities address environmental health issues?		■	
▪ To what extent and in what ways has the use of PACE EH changed the way that the local health agency understands the community context in which it operates?		■	
5. What recommendations do local and national stakeholders have for improving the method and/or the guidance provided to implementing sites?			
▪ What recommendations do local health agencies and their partners have for improving exposure to the PACE EH methodology?	■	■	■
▪ What recommendations do they have for changes to the *Guidebook*?	■	■	■
▪ What recommendations do they have for improving other technical assistance?		■	■

1.3   Stakeholder Interviews

Key stakeholder interviews were conducted with ten health officials and national steering committee members who played important roles in defining and implementing the PACE EH methodology. These people were nominated by CDC, the National Association of City and County Health Officials (NACCHO), and by the former Chair of the Community-Based Environmental Health Assessment (CEHA) National Steering Committee. In addition, we interviewed three individuals in key staff positions at NACCHO who have a rich historical perspective on early design choices as well as implementation experiences. The key stakeholder interviews were conducted via telephone; the NACCHO interviews were conducted in person. These open-ended interviews were designed to elicit information about the genesis of PACE EH, the anticipated goals of PACE EH from the perspective of its developers, and its relationship to other public involvement protocols. They also provided insight into how it was marketed and the motivations and experiences of early adopters.

1.4   Case Study Methods

A case study design was chosen as one method for this evaluation because it is well suited to examining activities—in this instance, implementation of PACE EH—that are not easily understood outside of the context in which they occur. "Context" is important because successful strategies both reflect and depend on the organizational and cultural setting of the program[xi]. This study used a site—a single local implementation partnership—as the case study unit. Twenty-four cases were selected to represent a range of implementation contexts.

Detailed case study protocols were prepared to ensure that cases were selected using criteria defined ahead of time, that the same core set of questions was asked in all cases, and that data collection and analysis followed a standardized and rigorous approach. The case study data sources included: (1) published and unpublished documents provided by the local CEHA partnership, at its discretion; and (2) interviews with key individuals who were actively engaged in some important aspect of PACE EH implementation or who could provide an important community perspective on its implementation. Limited observations were also conducted of the PACE EH communities and local environmental health conditions.

Eight in-depth case studies were completed in 2004. Information from these case studies was used to develop the survey instrument and a more streamlined approach for an additional sixteen rapid assessment case study sites. The rapid assessment case studies were completed in 2006 after OMB approval for the data collection activity was received.

1.4.1   Site Selection

To be included as a case study site, the following criteria had to be met:

- ***Willingness to participate.*** Sites had to be willing to host a site visit.
- ***Beyond the "start-up" stage.*** Sites were selected in which they had already progressed at least through Step 4, thus assuring that issues had already been resolved concerning

launching the community-based team and building a consensus around goals, objectives, and the scope of the assessment.

- *Urban / rural mix.* A mix of urban and rural sites was selected to better understand experiences with PACE EH in a variety of settings and with varying resources and capacities to undertake this planning process.
- *Visible, acute, environmental health controversies present or not.* PACE EH is designed to be a proactive planning tool. However, visible, acute, environmental health controversies can serve to mobilize community involvement. Yet, when controversy is present, an adversarial climate often develops, and consensus and collaboration are difficult to maintain. A mix of sites was selected using the presence of Superfund and/or Toxic Release Inventory sites as a proxy for visible, acute, environmental health controversies.
- *Geographic diversity.* Sites were selected from every region of the country.
- *Experience with other assessment protocols.* To facilitate data collection concerning evaluation questions about the decision to implement PACE EH, at least some of the sites selected had experience with other public health assessment protocols.
- *Existing documentation.* Experiences of some of the early implementers have previously been documented in the *PACE EH in Practice* volume. To increase the number of implementation cases for which documentation is more widely available, the greater portion of selected sites had not been previously described in the available literature.

Table 1.2 Site Selection Criteria and Selected Sites

	Urban	Rural
Visible EH Controversies (e.g., presence of Superfund and/or Toxic Release Inventory sites) *	**Pilot Sites** - Allentown, PA (7) - Linn County, IA (1) - Northern Kentucky District, KY (2) - San Antonio, TX (1) **Demonstration Sites** - Multnomah County Health Department/Portland, OR (7) **Other Sites** - Burlington County, NJ (14) - Bernalillo County, NM (3)	**Pilot Sites** - Barren River, KY (1) - Island County, WA (2) **Demonstration Sites** - The Muskegon County Health Department/ Muskegon, MI (9) - Rock County Health Department/ Janesville, WI (3) **Other Sites** - Springfield /Greene County, MO (3) - St. Regis Mohawk Tribe, NY (1) - Yellowstone, MT (1) - Port of Alabama, AL (3)
"Normal" Range of EH Issues (absence or low concentration of Superfund and/or Toxic Release Inventory sites)	**Pilot Sites** - Delaware County, OH (0) - El Paso County, CO (0) **Demonstration Sites** - Alexandria Environmental Health Department/ Alexandria, VA (0) - Mahoning County District Board of Health/ Youngstown, OH (0) **Other Sites** - Indian River, FL (0)	**Demonstration Sites** - Blount County Health Department /Maryville, TN (0) - San Juan Basin Health Department /Durango, CO (0) **Other Sites** - Gila River Indian Community, AZ (0) - Johnsonville/Franklintown, AL (0)

* The numbers in parentheses indicate National Priority List sites, used here as an indicator of visible controversies over environmental health issues. Superfund National Priority List sites can be found at a searchable web site, http://www.epa.gov/superfund/sites/npl/npl.htm.

1.4.2 Selection of Respondents

Respondents were selected through multiple means. First, the local contact was asked to complete a table listing potential key informants organized by their relationship to PACE EH (i.e., leader, team member, other community leader). The following list of local stakeholder categories was used to guide their completion of the table:

- State and local environmental health program managers
- Other local government agency representatives
- Representatives of major community-based organizations or local offices of national organizations (e.g., environmental justice groups, senior citizen organizations, youth organizations, church groups, immigrant social and health services organizations, the League of Women Voters, local environmental organizations)
- Technical assistance resource persons (e.g., university and health center specialists)
- Local business and economic development stakeholders
- Federal agency representatives
- Interested citizens

The local contact was asked to provide a list of PACE EH team members. Using the completed table and membership list, the Battelle site coordinator and the local coordinator discussed potential key informants and the perspective each would offer to the case study. Individuals contacted for an interview were also asked to recommend others they felt should be interviewed during the site visit because of their knowledge and diversity of perspective. Through this "snowball" sampling technique, we obtained wider input to the selection process than relying on an a priori list or recommendations from a single individual. The total number of interviews in each site varied.

1.4.3 Interview Guide Development

For the initial eight in-depth case studies, two interview guides were developed. The first was for local health department staff and the second for community members. Both guides had questions about the individual's background, how they became involved with PACE EH, their experiences with implementation, impacts of the process, and recommendations. To streamline data collection during the rapid assessment site visits, four specific interview guides were developed, tailored to distinct roles that individuals might play in PACE EH implementation. One was for the PACE EH Coordinator, who was the main source of information concerning the specific implementation steps undertaken to date. A second guide was for local health agency representatives. The third and fourth guides were for individuals or group interviews with local partners, including representatives from other public agencies, community-based organizations, and university or health care institutions. Including group interview guides permitted the rapid assessment site visits to be completed in one day. Interview guides are provided in Appendix D.

1.4.4 Field Procedures

CDC sent a letter to each potentially eligible site to inform them of the study and to alert them to expect a call from Battelle to discuss the possibility of a site visit (See Appendix B). Battelle staff then contacted each site to ascertain their eligibility, explain the nature of the site visit, and determine interest, providing them with a summary of the project (See Appendix A). After a site consented to participate in a case study, and interviewees were selected, the Battelle site coordinator contacted each selected individual prior to the site visit to schedule an interview appointment. In some sites the local coordinator assumed this responsibility. If key individuals were unavailable during the site visits, interviews were conducted by telephone following the visit.

All of the in-depth case studies were conducted via site visits by a team of two interviewers. Interviews with from 7 to 16 individuals were conducted over a period of three days. Interviews were recorded with the consent of participants. The consent form is provided in Appendix C. Similar procedures were followed for the rapid assessment site visits. However, due to the shorter length of visit (1 day), fewer interviews were conducted per site. Only one interviewer attended each of these visits. In total, 206 individuals were interviewed as part of the 24 case studies. Of these, 89 interviewees were in public health positions and 117 were community members or representatives of community organizations.

Three rapid assessment case studies were conducted entirely via telephone. In two sites, this was by design. In both these locations, there was no active community group and the benefit of traveling to the site to meet with two or fewer staff members did not justify the expense. In a third location, it proved impossible to convene the group because they were no longer actively conducting PACE EH and most of the participants had demanding job-related schedules.

1.4.5 Data Management and Analysis

Each site had a designated Battelle coordinator who was responsible for ensuring that an electronic record of each interview was prepared and that notes, consent forms and audio tapes were properly collected and stored. The audio tapes were not transcribed, but served as a backup record of each interview that was referenced as needed where handwritten notes were incomplete. Interview notes were used to create both an electronic file and paper copy of the interview content. Electronic interview notes were imported to a qualitative data analysis software program (QSR N6®). Once imported, the interview notes were coded according to a systematic coding scheme. Some themes were identified prior to entering the field based on the evaluation questions and additional themes emerged from interviews and other data sources. The codebook contained an abbreviated name for each major theme or idea, along with a definition to guide its use. The codebook is provided in Appendix E.

A team of three researchers coded the data using the codebook. Each text file was read carefully, and each segment of text was coded with one or more codes. The software program indexed the text records from these interviews, and helped to manage and retrieve the interview data. To assure inter-coder reliability, interview notes were coded initially by the whole team of coders

until repeated analysis demonstrated an inter-coder reliability rate of 80 percent or higher. The remaining interview records were then coded by one of the three coders.

All audio tapes, backup files, paper copies of interview notes and consent forms were protected as confidential data sources and were stored in locked filing cabinets. Names were replaced with IDs in the N6 database to protect individual identities. This database was stored separately from the tracking database that contained individual names and contact numbers. Both databases were stored on password-protected computers.

Following the completion of each site visit, the Battelle site coordinator prepared a brief summary of the visit. Each summary briefly described the context in which PACE EH was implemented, the key implementation steps, the impacts of PACE EH, and recommendations offered by interviewees. The summaries were reviewed by the key contact in the respective site before being provided to CDC.

1.5   Survey Methods

A survey of agencies that expressed interest in PACE EH was selected as one of the primary methods of data collection for the evaluation because it provided an opportunity to learn from both implementers and non-implementers about the decision to use or not use PACE EH as a method for community-based environmental health assessment. The primary mode of survey administration was via the web. This method was selected because the audience was primarily health professionals with access to computers and the internet.

1.5.1   Sample Construction

The sampling frame consisted of qualified organizations that requested the PACE EH *Guidebook*. Battelle received several datasets of PACE EH requestors from CDC and NACCHO. Some respondent data was also received on individuals who had participated in PACE EH leadership training (i.e., PACE National Summits). We also ensured that lead agencies for the study sites were included in the survey database. The tracking database was used to ensure that individuals from the same organization were not counted twice.

After de-duplication, 1193 unique organizations were identified. These organizations were grouped into several categories based on information obtained from requestors as shown in Table 1.3. Twenty-six additional organizations were subsequently identified through survey respondents and added to the database. This yielded a total of 1219 organizations in the requestor database.

The sample was further refined by eliminating requestors who were not from the U.S. and systematically excluding those that were considered unlikely to serve as lead agencies for a local PACE EH implementation. Several categories including Academic, Federal Agency, Individual, Non-Profit, or For-

> **Exclusion Criteria for PACE EH Requestors**
> - Non-US organization
> - Not Federal, Individual, Academic, Non-Profit, or Profit Organizations (unless other information to suggest is or was considering being a lead agency)
> - Involved in PACE EH implementation but not lead agency
> - Duplicate of other organization in database

Profit were thus excluded from the initial invitation *unless* information in the requestor dataset indicated that the requestor was considering the implementation of PACE EH (e.g., rather than simply for reference or teaching purposes). For federal agencies, we retained individuals from Indian Health Service area offices, as potentially participating in a local PACE EH effort. Where such information on intended use of PACE EH did not exist, non-profit and for-profit requestors were excluded on a case-by-case basis based on knowledge of the organization (e.g., large research groups or national organizations were excluded as unlikely to conduct a local PACE EH implementation as the lead agency).

In addition, based on knowledge regarding a PACE EH implementation site (i.e., through the case studies), only the lead organization for the effort was included in the invitee list rather than all partner organizations that may have requested the *Guidebook*. In addition, in screening questions, some initially invited participants indicated that they were not the lead agency for a PACE EH effort and indicated another lead organization. These organizations were removed as valid organizations from the invitee list.

Finally, once invited, several respondents contacted us through email or telephone and confirmed that their organization was a duplicate of another organization that had also been invited to participate. After this process was completed a total of 917 organizations formed the number of valid organizations that were invited to participate in the survey. As shown in Table 1.3, the largest percentage of valid organizations (81%) was local public health departments.

Table 1.3 PACE EH Requestors and Valid Organizations by Organizational Type

Organizational Type	Total Requestors	Valid Invitees
Academic	115	12
Federal Agency	23	6
Individual	19	0
Local Agency	13	9
Local Public Health Department	769	742
Non-Profit	95	25
Profit	17	5
State Agency	15	6
State Public Health Department	63	61
Tribal Community	40	36
Other	50	15
Total	**1219**	**917**

1.5.2 Identification of Respondents

Once the valid organizations were identified, Battelle staff selected one individual from each organization to serve as the primary contact (i.e., the individual person who would be invited to participate in the survey). When more than one requestor was listed in the contact database for one organization, we chose the PACE EH Coordinator, the Environmental Health Director, or other individual who held the highest position based on the available job title information.

If the contact information for mail and/or email was incomplete for the selected primary contact, either another respondent in the organization with more complete information was selected as the primary contact, or up-to-date contact information was sought for the primary contact. This information was obtained on the internet or through direct phone contact. If the primary contact no longer worked at the agency, an attempt was made to identify another respondent at the same agency who was, or would likely be, the current lead for a PACE EH effort, or who would be knowledgeable about decisions regarding PACE EH adoption, such as the initial primary contact's replacement or the Environmental Health Director. The majority of missing contact information was collected using the internet.

1.5.3   Survey Development

Development of the survey instrument benefited from the information gained from a literature review and from the initial eight in-depth case studies. The survey was designed in modular fashion covering the following major topic areas shown below. The modular approach facilitated appropriate skip patterns based on type of agency and implementation status.

        A. Health department characteristics
        B. Services provided
        C. Experience with environmental health assessment and community-based planning
        D. Awareness of PACE EH
        E. Adoption of PACE EH
        F. Implementation
        G. Impacts
        H. Recommendations

After the survey instrument was developed, it was programmed for web application. We also developed a hard copy version of the survey, a survey tracking system, and a website to host the survey.

Web survey programming. The survey instrument was designed in SPSS mrInterview web-interview system. This system features an easy-to-use graphical user interface (GUI) that minimized development costs. SPSS mrInterview is a "server-based" product. This means that respondents with any internet browser and internet connection are able to access the survey.

The survey was programmed to utilize automated skip patterns to lead respondents through the modules to ensure data quality. It was also programmed with a variety of complex data validity checks including consistency checks (e.g., not allowing number of staff involved in PACE EH to be greater than total number of staff in health department), range checks (e.g., ensuring that percents cannot add to more than 100%), and a "sum to n" feature to ensure that questions such as "What percentage of..." add to 100 percent. Multiple survey question formats are supported by the software and were utilized in this survey (e.g., grid questions—which are tables containing multiple items with the same answer scale, numeric, text, single choice radio button option, multiple choice radio button option, and drop down lists.)

The web survey software also offered respondents the option to complete their survey over one or more sessions. If a respondent restarted the survey they were automatically linked through their unique username and password to the original survey. Respondents could view and change data entered from previous sessions, as well as continue the survey.

Hard copy survey development. A Battelle graphic designer generated a hard copy version of the survey (See Appendix H). This allowed Battelle to make the web survey available online so that respondents had the option of downloading a printable version of the questionnaire that they could mail. The hard copy version was also sent to respondents who did not have email addresses, or who did not respond to email requests. The hard copy questionnaire duplicated the online questionnaire including complete question content and skip logic.

Tracking system development. Battelle developed a tracking system containing contact information for respondents in Microsoft Access™. The tracking system held information on the universe of respondents and offered screens for contact information, updates to contact information, and any contact between Battelle and the respondent (e.g., initial email contact, follow-up contacts, etc.). Various contact modes were also tracked separately for each respondent (e.g., telephone contact versus mail contact). This tracking system also contained unique identifying information that was transferred into the survey program such as user names and passwords for each respondent to ensure that the response from each respondent was tracked and secure.

Webpage development. In addition to the survey itself, Battelle also developed a webpage from which respondents could access the survey. The webpage also included a frequently asked questions (FAQ) section on the PACE EH evaluation; information on PACE EH and CDC; links to CDC and NACCHO for further information; information on privacy and security of the website; a disclaimer on the use of information on the site; a contact page; and a link to download a hardcopy of the survey.

Testing. Two PACE EH Coordinators from the eight case study sites pilot tested an initial draft of the hard-copy survey instrument. They provided feedback on the length of time it took them to fill it out, and any confusion or difficulties they had in filling out the survey responses. Minor changes in question wording and response categories were made in response to the pilot test.

Once the survey was programmed on the web, Battelle staff tested the survey to ensure that programming was working as intended and that respondents could fill in the survey without problems. Testers specifically checked that the hard copy instrument matched the web survey in content and format. They made suggestions for ease of use of the survey from the user perspective, for instance, whether fonts selected could be easily read, if instructions were clear and easy to follow. They also tested the survey with different screen settings and browsers to test compatibility with a broad range of respondent computer systems. Finally, various answer combinations were tested to check for:

- Verification of subject ID
- Numeric ranges and acceptable values at the level of a single field
- Consistency of skip patterns and 'not applicable' flags
- Logical consistency of related fields in a single form

- Logical consistency of related data across multiple forms.

Any problems with the survey were documented in a Microsoft Access™ database which also tracked the response of the programmer addressing the problem. Testing continued until no further problems were encountered with the survey. Once the programming was completed, the CDC Technical Monitor also conducted a test on the online survey and provided comments.

Some initial screening questions were added to the beginning of the survey to identify organizations that had only requested the database for informational purposes, with no thoughts about becoming the lead agency. Only those agencies that said that they were currently conducting a PACE EH effort as a lead agency, or those that said they had considered doing so, were considered eligible for the survey.

1.5.4 Follow-up and Tracking

Battelle utilized an approach consisting of multiple contact attempts through multiple channels (mail, email, and telephone) to invite, follow-up, and track survey respondents. A diagram of our contact protocol is shown in Figure 1.2 and is described in the following section. Numbers shown on the diagram correspond to the final set of invitees.

Our approach to ensuring a high response rate involved multiple contacts with each invited organization and primary contact through multiple mechanisms (mail, email, and telephone) and careful tracking of those contact attempts to ensure that every possible survey was retrieved. Battelle tracked response and non-response to the survey using a tracking system linked to the survey sample. This allowed the PACE EH Survey Coordinator to identify who responded to the survey at any point in time. This insured that the follow-up procedures at any point in time were conducted with only those who had not responded.

CDC letter. Battelle sent out an initial invitation letter to all survey invitees on CDC letterhead signed by the Branch Chief. The invitation letter explained the purpose of the survey and requested participation. The letter indicated that an email invitation from Battelle would be forthcoming with instructions on how to access the web survey. The invitation letter and all recruitment material are included in Appendix F.

Email contacts. After the CDC letter was sent, respondents were invited to complete the survey via email. The email contained a link to a Battelle webpage that provided instructions for accessing the survey. Respondents received a user name and password to securely enter their responses. A toll-free contact telephone number for the Battelle Survey Coordinator was provided along with an email link in case respondents had difficulty accessing the survey or the webpage. The email also asked the respondent to reply if s/he was not the appropriate person to respond to the survey. They were asked to provide contact information for another person within their organization who was responsible for implementing PACE EH and/or responsible for conducting environmental health assessments for the jurisdiction. This information was also repeated in initial screens for the web survey itself.

Figure 1.2 Diagram of Contact Protocol and Contact Outcomes
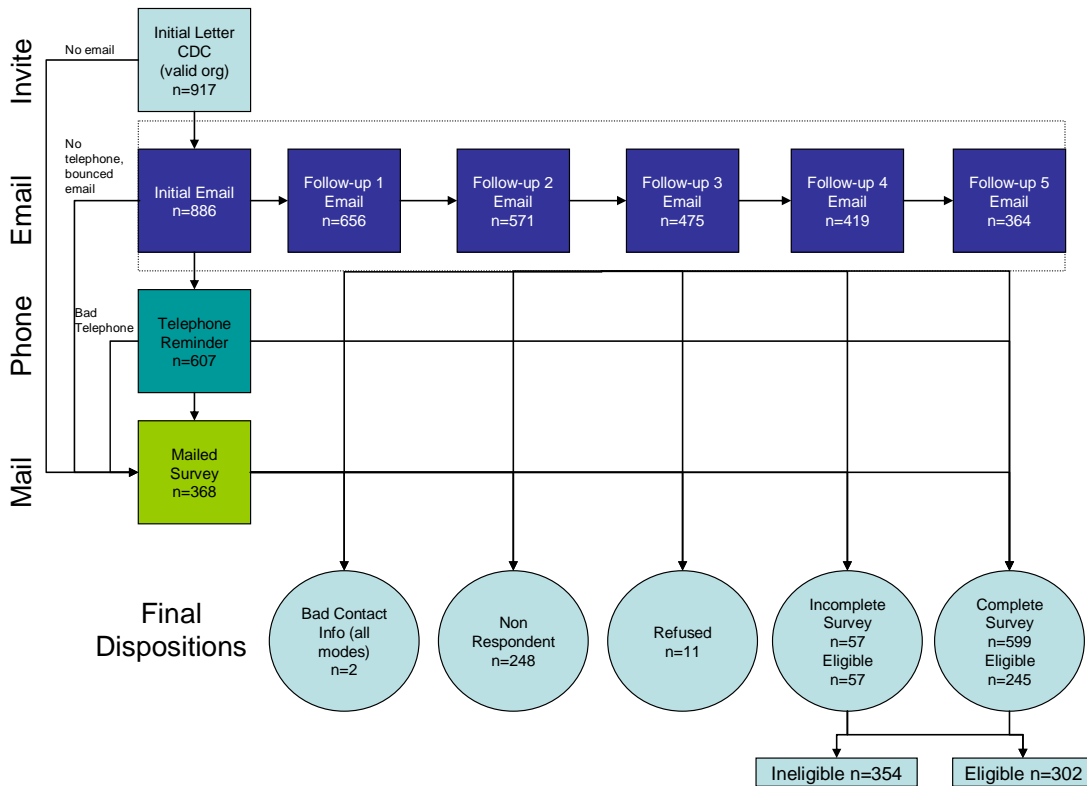
If errant email addresses were encountered (e.g., "bounce backs"), attempts were first made to locate a correct address or alternate contact. Failing this, Battelle sent a letter with text similar in content to that contained in the introductory email and a hard copy survey.

The original follow-up protocol consisted of email reminders at 2, 4, and 6 weeks following an initial invitation email. Because the email invitations continued to be productive (i.e., respondents filled out the survey after receiving the reminder, we sent an additional 2 email reminders to those who had not responded. These reminders were sent at a shorter interval of between 3-6 days.

All primary contacts for organizations that had valid email addresses were sent the initial email invitation letter. If the contact had not completed the survey and the email address remained valid, up to five follow-up emails were sent to that contact. Initial emails or subsequent follow-up emails that returned or bounced were documented in the tracking system. Battelle then checked the organization for an alternate contact with an email address. If a new alternate contact was found, they were mailed an initial CDC letter and emailed an initial invitation letter. The email contact protocol was then started for the new primary contact until either the survey was completed or the follow-up process was exhausted. This process was repeated until no alternate contacts were found.

Due to the high number of respondents who were found to be ineligible based on the web survey screening questions, we subsequently added an option for respondents to respond with a 'NO' to

the follow-up email if they had not considered being the lead organization to conduct PACE EH. This allowed non-respondents to provide us with that information quickly without having to go into the web survey itself. The Battelle Survey Coordinator then completed the survey online as ineligible for that respondent organization.

Telephone contact. One month after initial invitation letters were sent, organizations that had not yet completed a survey were eligible for a single reminder phone call. Battelle initiated calls to the primary contact of the organization (excluding those for whom no telephone contact information was available) to: (1) to remind the respondent to complete the survey, and (2) if possible, to determine the organization's eligibility for the survey. Telephone scripts and call protocols can be found in Appendix G.

If a contact was reached directly s/he was asked eligibility questions similar to those used as screening questions at the beginning of the survey. If the organization was eligible the respondent was given the information needed to access the web survey online. If the organization was determined ineligible, the respondent was thanked for completing the survey. The information was recorded in the tracking system. If the primary contact was not reached directly, interviewers left a voicemail, answering machine message, or message with a receptionist with a reminder about the survey and username and password information. A maximum of three attempts were made, calling on different days and times to increase the odds of reaching someone. If the number was disconnected or incorrect, this information was recorded in the tracking system. We did not attempt to locate new telephone information for disconnected or non-working numbers.

Mailed contact. Mailing a survey to a respondent was considered the final mode of contact if other modes had failed or respondents had not responded to previous contact attempts. In actuality, this meant that respondents were mailed a hard-copy survey at various points in the process and is diagrammed by the arrows to the "mail" box on Figure 1.2. Surveys were mailed out via standard U.S. mail accompanied by a reminder letter providing information about the survey along with the website, username, and password, and a stamped return envelope addressed to Battelle.

First, for any organization's initial primary contact that did not have a valid email address, the organization was mailed a hard copy invitation letter and survey to complete. Second, if an primary contact had a "bounced email" from an email contact attempt and if there was no alternate contact for the organization, or all the alternate contacts either did not have an email address, or did not have valid email addresses, then Battelle mailed the organization's Environmental Health Director a hard copy invitation letter with the access code and password and asked him/her to complete the survey online if possible. Third, respondents with a bounced email that also had a "bad" or no telephone number were automatically sent a survey. Finally, after 5 email attempts, all remaining non-responders were mailed a hard copy reminder letter and the survey.

Tracing. Additional tracing subsequent to the initial respondent identification was conducted for respondents who were found to have bad contact information by one or more modes. After recruitment started, organizations were flagged in the tracking system if they had a returned

mailing or a bounced email for all contacts. Additional attempts were made by Battelle and CDC staff via the internet or telephone to identify new email or telephone contact information or to identify another person in the organization who might be a better primary contact. If new email information could be found, a new round of email reminders was started for the new email address.

1.5.5   Response Rates

Of the 917 total number of verified organizations invited to take the survey, 261 did not respond to the request (28%), 354 recipients responded but had not considered implementing PACE EH and thus were ineligible to complete the survey (39%), and 302 responded, were eligible, and at least partially completed the survey (33%). Of these eligible responses, 245 fully completed the survey and 57 completed part of the survey. Only eleven potential respondents actively refused to complete the survey and two could not be contacted using all methods available. Total responses received (both eligible and ineligible) totaled 72%. A detailed visual of the follow-up steps and responses at each step is shown in Figure 1.2 and described in more detail below.

CDC letter response. Battelle sent the initial CDC letter to all 917 valid organizations. Seventy-one letters were returned as undeliverable or bad address. One organization did not have a mailing address.

Email response. All 917 organizations received an initial Battelle invitation letter: 886 received an email; 31 with no valid email address received an invitation letter and survey via standard U.S. mail. As respondents completed the survey, refused, or were found to have invalid email addresses, the number of follow-up emails was reduced. Two types of follow-up emails were sent—one to those who had not yet started the survey and one to those who had started the survey but had not completed it. The follow-up emails were sent out as follows, the first one to 656 organizations, the second to 571 organizations, the third to 475, the fourth to 419, and the fifth to 364 organizations. Of the 846 organizations where the primary contact was emailed, 132 contacts had bad email addresses, there was no response from 197 contacts, and 4 of those contacts responded to the email with a refusal to participate in the survey.

Telephone response. After one month, the 607 non-responding organizations were contacted via telephone. Of those contacts, 20 phone numbers were bad, 172 contacts were left messages; 20 contacts were unable to be reached with a reminder within 3 contact attempts, and 6 contacts refused to participate in the survey over the phone.

Mail response. A hard copy of the survey was mailed to 368 organizations in one or more of the following categories: no email information for the organization, bad email address for all contacts, primary contact was a non-responder after five follow-up emails. Of those organizations, 20 of the postal addresses were bad, 316 contacts did not respond, and 32 contacts completed the hard copy survey and returned it to Battelle through the US mail.

1.5.6 Data Management and Analysis

After survey responses were received, several steps were followed for data management, preparation, and analysis.

Data management and preparation. For participants who elected to complete and return a paper copy of the survey, Battelle entered the data into the web survey system. All data entered by respondents via the web or by Battelle data entry staff were transmitted directly into a database where variable types were defined and variable definitions included variable and value labels. Decisions made by data entry staff or difficulties encountered during data entry were clearly documented by attaching suitable notations to the source documents and validated by the Survey Coordinator.

As survey responses were entered, mrInterview's online real time reporting feature allowed for tracking of case status. This information was set up in reports, generated using SQL Server Reporting Services, to allow real-time tracking of survey response. Information in the survey tracking system also allowed immediate updating of respondent status in response to initial screening questions so that eligible respondents were tracked separately from ineligible respondents. Other reports also allowed survey staff to see if a respondent recommended another organization as lead for a PACE EH effort or provided updated contact information. This information was then transferred to the Microsoft Access™ Tracking system.

SPSS mrInterview also comes with a feature called InterviewExporter that automatically exports mrInterview survey data to an SPSS.sav file for analysis. These data were transformed into SAS format for analysis. All hard copy surveys that were manually entered were entered directly into the program and checked for accuracy.

Survey analysis. The analysis of the survey data collected was organized around the five high-level research questions outlined in Section 1.2. First, descriptive analyses of the survey responses were conducted. Then a limited set of multivariate statistical analyses were conducted to assess the significance of any covariates/factors that might have influenced PACE EH adoption and factors that might have influenced progress through the 13 tasks. All survey responses were analyzed using SAS software.

In order to analyze multiple factors that might have affected the decision to implement PACE EH, logistic regression was used to model the dichotomous dependent variable (implemented/did not implement). Covariates included in the model included nearly a hundred factors, including answers to survey questions in Section A (agency type, population served, staff size, annual budget and source), Section B (services provided), Section C (previous experience with environmental health assessment), and Section E (adoption decision factors). Since the sample size was not sufficient to support models with so many covariates and we did not have a theoretical basis for paring down the list of covariates, a stepwise selection process with backward elimination was used to identify statistically significant factors. Two variables were identified in this process but after reviewing the results and further investigation it was not apparent whether there was a true causal relationship rather than an artificial statistical

association. Thus, this analysis did not yield any results that allowed us to either confirm or disprove the associations suggested by the descriptive analyses.

Similarly, to examine factors that might influence progress through the 13 PACE EH tasks, we constructed an outcome variable based on an organization's PACE EH implementation progress and attempted to use ordered logit analysis to test these same factors described above (resources, previous experience) in relation to progress. This analysis was restricted to the subset of respondents who indicated that they had implemented PACE EH and for whom sufficient data were present to include in the model. The small sample size did not support independent analyses of the independent variables, relying instead on the results from the previous dichotomous logistic analysis to identify potentially important factors. No significant relationships were detected, therefore, the results from these logit analyses do not appear in this report.

1.6   IRB and OMB Review

Before proceeding with data collection, three detailed data collection protocols were developed to guide our data collection and analysis. All three protocols (in-depth case study, rapid assessment, survey) were approved by the Battelle Institutional Review Board charged with reviewing all projects conducted by our staff for any concerns involving human subject contact. The instruments used in the rapid assessment case studies and the survey were also reviewed and approved by the U.S. Office of Management and Budget.

1.7   Overview of the Report

In the remainder of this report, we present the findings from the analyses of data from all sources organized by research question. First we present the findings related to awareness of PACE EH (Chapter 2), adoption of PACE EH (Chapter 3), implementation of PACE EH (Chapter 4), impacts of PACE EH implementation (Chapter 5), and recommendations provided by respondents regarding PACE EH and its implementation (Chapter 6). We conclude with a summary of findings and recommendations regarding future PACE EH development activities (Chapter 7).

2 Awareness of PACE EH

The Protocol for Assessing Community Excellence in Environmental Health (PACE EH) was developed in the mid-1990s. With support from CDC, the National Association of County and City Health Officials (NACCHO) was responsible for its development and marketing with the active participation of a group of national stakeholders who served on a Steering Committee and a Working Group. In this chapter we present the findings from stakeholder interviews, case studies and a web survey regarding how PACE EH was presented to potential users. The stakeholders include individuals who were active on the Steering Committee and Working Group. Quotes from stakeholders and interviewees are shown in italics.

2.1   Conception and Marketing

Stakeholders indicated that PACE EH originated in part as a response to a 1988 Institute of Medicine report on the Future of Public Health. This report suggested that public health be reorganized around the core functions of public health. This shift requires new attention to strategic problem solving and to developing critical competencies in the environmental health workforce to put these essential services into practice.[xii] There was a strong concern expressed by some practitioners that environmental health agencies were in a highly reactive mode, addressing the "*topic of the week*." They had no relationship with the community that permitted them to identify priorities and engage in problem solving in a proactive manner. To develop a more proactive approach with regard to environmental health and environmental justice issues, it was necessary to create a space for dialogue so that a relationship with the community could be built. This was also a way to open up government processes, and to merge community values together with good science.

PACE EH was also developed to complement APEX-PH by emphasizing environmental health, a domain which it is widely agreed is absent from this previous effort. Early APEX-PH practitioners found the environmental health component of APEX-PH to be weak, and initiated efforts to create an addendum to the process with an environmental health focus.[xiii] Ultimately this effort took on a life of its own and PACE EH was born with an exclusive focus on environmental health. Another noted shortcoming of this and other previous efforts was a tendency to focus on the public health agency rather than the more broadly defined public health system. Environmental health functions were spread across multiple agencies, and relevant outcome measures were typically omitted from existing community health assessments.

About a year after efforts to develop PACE EH began, NACCHO started the process to create MAPP. Although MAPP is very similar to PACE EH, it is broader in its scope. MAPP was designed to retain the emphasis on the important role played by public health agencies yet also recognize the need for establishing partnerships within the larger public health system. MAPP utilizes standard data that are already available within a community to determine where to focus effort, while the design of PACE EH is more open-ended and community focused, utilizing input

from the community regarding what health issues are important. Other differences are that PACE EH places less importance on the public health agency's and the public health system's performance; and it does not draw attention to changes that may affect the community's health status or the ability of the public health agency and its partners to respond to those changes.

After the initial PACE EH *Guidebook* was created, NACCHO and the Working Group selected ten pilot sites across the country to test the protocol. The selection included a mix of urban/rural, large/small, and independent/state run local health agencies. Funding was not provided to the sites because CDC and NACCHO did not want to create the impression that participation in PACE EH required additional resources. At the end of the pilot implementation, NACCHO and the Working Group updated the *Guidebook*, developed a companion piece called *PACE EH in Practice*, and requested proposals for a demonstration phase. Eight local health departments were subsequently awarded $20,000 each to implement the PACE EH program.

PACE EH has been marketed primarily as a tool for promoting community involvement. Marketing messages have focused on its flexibility and adaptability to local situations, emphasizing that all tasks need not be completed in sequence, as long as the community involvement component is not lost. It was left up to local sites to define the community. Although environmental justice was an important concept in the development of PACE EH, promotion efforts have not emphasized its use toward that end. It was not designed to be a strategic planning tool although it is expected to improve the ability of local health agencies to conduct their usual health-related work. It is viewed as a useful tool for opening dialogue and creating lines of communication, although it has also been suggested that it could be adapted for use in financial planning.

The experiences of the pilot and demonstration sites have influenced the marketing strategy. For example, the pilot study made it evident that considerable time and resources are needed to implement PACE EH successfully. Information on resource requirements was not included in the initial marketing of PACE EH, but it is now included in promotion efforts.

The marketing strategy employed by NACCHO has primarily centered on its membership base. Marketing to this audience has included promotion in the NACCHO Newsletter and discussion on the NACCHO website. The *Guidebook* is available for sale on the website, along with its companion volume, *PACE EH in Practice*, a compendium of case studies from around the country (www.naccho.org). Newer additions to the website include a resource tool kit which includes such materials as meeting agendas, invitation letters, surveys, sample press releases, action plans, notes for local community meetings, and assessment instruments. In addition to these resources, the website provides access to a database of Model Practices which includes case studies from NACCHO members regarding their experiences with PACE EH implementation.

Beyond its membership, NACCHO has promoted PACE EH at professional conferences and regional workshops. It has also been promoted through "word of mouth" among environmental health professionals. There has been considerable discussion in recent years about how to expand the reach of marketing efforts. Recent efforts have included NACCHO participation in a 2004 training sponsored by the Indian Health Service in Albuquerque.

2.2   Awareness by Potential Adopters

Case study interviewees and survey respondents were asked how they learned about PACE EH. Sometimes knowledge of the methodology began with participation on the PACE EH Steering Committee or Working Group. As shown in Table 2.1, 8% of respondents reported that they had been involved in the development of PACE EH. In a small number of cases, awareness of PACE EH was due to a connection with a PACE EH pilot or demonstration site. Most respondents, however, learned about PACE EH from NACCHO, CDC, or a professional conference.

Type of jurisdiction appears to have influenced how respondents heard about PACE EH. Health departments at the county, city/municipal, district or regional level were more likely to have received information about PACE EH from NACCHO, while most state health department respondents reported that CDC was their source of PACE EH information. Tribal health departments were more likely to have learned about PACE EH at a professional conference or workshop. Additional sources of information that were reported in the "Other" category include state health departments, having experience with other protocols, and also "word of mouth."

Table 2.1 Source of PACE EH Information* by Jurisdiction Type

Source of Information on PACE EH	Type of Jurisdiction							
	County HD	City or Municipal HD	City/ County HD	Multi-county, District or Reg. HD	State HD	Tribal HD	Other/ Don't Know	TOTALS (n=259)
Involved in Development	9	3	4	2	3	0	1	22
NACCHO	87	24	19	13	4	2	4	153
CDC	42	7	7	11	7	0	5	79
Conference	32	7	4	6	1	4	3	57
Other PACE EH Site	3	1	2	0	0	0	0	6
Local Org Brought to our Attention	6	1	2	0	0	0	3	12
Other	22	2	3	3	0	3	4	37
Don't Know	14	3	0	2	0	1	0	20

*   Respondents could select more than one source of PACE EH information.

We examined the effect of NACCHO membership status on how respondents learned about PACE EH as shown in Table 2.2. Nearly three-quarters of respondents who are NACCHO members reported that NACCHO was the source of their information, whereas non-NACCHO members were equally as likely to have heard about PACE EH from NACCHO, CDC, or a professional conference or workshop. This information confirms stakeholder observations that NACCHO marketing efforts have focused most heavily on its membership base.

Table 2.2 Source of PACE EH Information by NACCHO Membership Status

Source of Information on PACE EH	NACCHO Member		
	Yes (n=174)	No (n=37)	TOTALS* (n=249)
Involved in Development	17 (10%)	1 (3%)	21 (8%)
NACCHO	125 (72%)	11 (30%)	151 (61%)
CDC	56 (32%)	12 (32%)	77 (31%)
Conference	36 (21%)	12 (32%)	55 (22%)
Other PACE EH Site	6 (3%)	0 (0%)	6 (2%)
Local Org Brought to our Attention	7 (4%)	1 (3%)	9 (4%)
Other	21 (12%)	7 (19%)	33 (13%)
Don't Know	11 (6%)	1 (3%)	20 (8%)

* This column includes those who reported "don't know" or failed to respond to NAACHO membership status, as well as those who failed to respond to the question on the source of PACE EH information.

Within the case study communities, many community members reported that they learned about PACE EH when they were asked by someone from the local health department to become involved. This was often due to a particular area of knowledge or technical expertise that they might be able to bring to the PACE EH process. In other sites, PACE EH was advertised in the local media, which brought both the process and the volunteer opportunity to their attention.

3 Adoption of PACE EH

Many factors can play a role in an agency's decision about whether to implement PACE EH. In this section, we present the results of our exploration of the implementation decision using data from both the case studies and the survey. As a first step in the analysis of the survey data, we categorized each respondent as an "implementer," "non-implementer," or "undecided" based on whether the agency implemented PACE EH. We used this categorization to examine a variety of factors that could play into the adoption decision. The 13 survey respondents who reported not knowing their adoption status are excluded from the data presented.

3.1   Characteristics of Implementers versus Non-implementers

Before examining specific factors that might have affected an agency's adoption decision, we looked at characteristics of the agency itself, comparing implementers, non-implementers and the undecided group. To do this, we compared selected health department characteristics by adoption status. The first of these analyses is shown in Table 3.1. The results indicate that the majority of implementers are from large county health departments with a relatively high number of staff as well as higher numbers of staff focused specifically on environmental health issues. The non-implementing groups tend to be agencies which serve a smaller average population and have fewer employees. With regard to funding, the implementing group has a lower percentage of their operating budget coming from local general funds or fee-for-service arrangements, and more from state or federal funds. The group of agencies which is undecided about implementation includes the middle range health departments with regard to average population served, number of staff, and annual operating budgets. All implementation groups include NACCHO members.

Table 3.1 PACE EH Adoption Status by Health Department Characteristics

Health Department Characteristics	Adoption Status		
	Implementer (n=66)	Non-implementer (n=79)	Undecided (n=99)
Jurisdiction Type:			
County Health Department	36 (57%)	50 (63%)	54 (55%)
City/Municipal Health Department	3 (5%)	12 (15%)	13 (13%)
City/County Health Department	6 (10%)	5 (6%)	13 (13%)
Multi-county Health Department	5 (8%)	7 (9%)	8 (8%)
State Health Department	2 (3%)	3 (4%)	5 (5%)
Tribal Health Department	5 (8%)	1 (1%)	2 (2%)
Other health agency	6 (10%)	1 (1%)	3 (3%)

Health Department Characteristics	Adoption Status		
	Implementer (n=66)	Non-implementer (n=79)	Undecided (n=99)
For health agencies:			
Average population served	618,901	366,726	508,512
Average number of staff employed	364	131	245
Average number of contracted employees	12	9	12
Average number of FTEs focused on EH	42	27	23
Average annual operating budget, most recent FY	$29,249,560	$13,396,870	$20,751,034
Average percentage of operating budget from:			
Local general funds	30%	33%	34%
State general funds	20%	18%	15%
Federal funds	21%	17%	15%
Medicaid/Medicare reimbursement	8%	6%	7%
Fee-for-service, including permits and fines	12%	18%	23%
Other	9%	9%	7%
Average percentage of operating budget allocated to EH	24%	28%	26%
NACCHO Membership*:			
Yes	42	64	64
No	7	8	15

* Does not include those who reported "don't know" or failed to respond to NACCHO membership status.

We examined the relationship between adoption status and source of information about PACE EH (Table 3.2). A larger percentage of implementers were involved with the development of PACE EH in comparison to the non-implementers and those who reported they were undecided. Although the numbers are small, the results suggest that conferences and word of mouth from local organizations may be important influences on adoption.

Table 3.2 Source of PACE EH Information by Adoption Status

Source of Information on PACE EH	Adoption Status			
	Implementer (n=66)	Non-implementer (n=79)	Undecided (n=99)	TOTAL* (n=259)
Involved in Development	15 (23%)	4 (5%)	2 (2%)	22 (8%)
NACCHO	32 (48%)	52 (66%)	64 (65%)	153 (59%)
CDC	19 (29%)	22 (28%)	36 (36%)	79 (31%)
Conference	16 (24%)	14 (17%)	26 (26%)	57 (22%)
Other PACE EH Site	2 (3%)	2 (3%)	2 (2%)	6 (2%)
Local Org Brought to Attention	6 (10%)	3 (4%)	3 (3%)	12 (5%)
Other	13 (20%)	5 (6%)	19 (19%)	37 (14%)
Don't Know	4 (6%)	8 (10%)	3 (3%)	20 (8%)

* This column includes those who reported "don't know" or failed to respond to adoption status, as well as those who declined to provide their source of information on PACE EH. Percentages do not total 100 because respondents could select more than one source of PACE EH information.

To see whether the type and extent of environmental protection services provided by each agency was related to the decision to adopt PACE EH, we asked survey respondents to list which of various services were "provided by or through our agency," "provided by other agencies," or "not provided." The results are shown in Table 3.3. Implementers more frequently reported that their agencies provide a wider range of services including occupational and health safety, radiation control, outdoor air quality control, drinking water safety, and lead abatement. For some of these services, non-implementing and undecided respondents were more likely to report that they were provided by other agencies, e.g., occupational health and safety, radiation control, outdoor air quality control.

Table 3.3 PACE EH Adoption Status by Environmental Protection Services Provided*

Services Provided	Implementer (n=66)			Non-implementer (n=79)			Undecided (n=99)		
	Prov.	Other	Not	Prov.	Other	Not	Prov.	Other	Not
a. Food safety inspection	92	28	0	83	18	3	91	18	0
b. Vector and animal control	80	50	2	59	47	9	71	49	1
c. Occupational health and safety	40	45	12	13	58	23	23	61	14
d. Radiation control	38	43	8	17	60	19	23	58	14
e. Indoor air quality control	67	32	10	49	36	21	56	38	11
f. Outdoor air quality control	45	60	3	24	64	12	28	65	7
g. Solid waste management	33	73	0	28	77	3	44	72	1
h. Waste water treatment	47	72	0	49	73	0	51	70	0
i. Drinking water safety	80	52	0	72	59	0	68	61	0
j. Recreational water safety	73	28	6	53	46	8	76	35	3
k. Water pollution control	52	72	2	31	82	1	48	74	1
l. Hazardous waste management	36	78	0	24	83	1	40	76	3
m. Terrorism preparedness	92	42	2	91	40	1	96	43	0
n. Land use planning	30	73	10	22	82	5	30	82	4
o. Lead abatement	67	43	5	53	44	12	59	46	6

* Cells contain percentage of respondents in each adoption status group indicating each response. More than one response was permitted.

3.2   Decision Factors

In addition to the various characteristics of the respondents presented in the above tables, we also collected data in the case studies and survey on the factors that influence the decision to adopt or not adopt PACE EH. Many interviewees cited the community involvement aspects of PACE EH along with its ability to promote environmental health leadership as important factors in the implementation decision. They saw it as an opportunity to engage the community, learn about the community's priorities, and to raise consciousness about environmental health issues. PACE EH was also seen as a way to increase community awareness of the importance of public health within the community, and to gain support for the work of the health department. Interviewees from public health departments often stated their desire for the department to expand its environmental health knowledge and capabilities. They wanted to broaden the scope of the health department by focusing specifically on environmental health. Here is what one interviewee said:

> *We had identified early on that when you go into a community health assessment process and you look at all your issues with the members of the community, and lay them out on the table, and investigate prioritizing and that kind of thing, environmental issues just fall right off the table. So, we felt like, 'Oh, this is perfect, to have something that just focuses on environmental health.' And I still think for the record it's beneficial to deal with environmental issues separately.*

Having access to necessary resources was seen to significantly impact the decision also—this could mean financial resources in terms of the grant money, or staff resources in the form of a person with adequate leadership skills who could take on the role of facilitator. Another motivator in the decision to adopt PACE EH was its utility as a strategic management and planning tool, and its practical application in supporting the basic public health functions. Many interviewees reported that the desire to address issues of environmental justice or the need to respond to an environmental crisis were not reasons they implemented the protocol. However, it should be noted that for at least one site, environmental justice was a factor that was cited by numerous interviewees as a motivation for PACE EH adoption.

Not surprisingly, for almost every decision factor examined, the survey results show that agencies who implemented PACE EH are more likely to view the protocol favorably than those who chose not to implement (Table 3.4). Where no implementation decision was made, respondents are more likely to be unsure and not have strong feelings of agreement or disagreement about the factor in question.

Table 3.4 PACE EH Adoption Status and Decision Factors

Decision Factors	Average Agreement Score by Implementation Status*		
	Implementer (n=66)	Non-implementer (n=79)	Undecided (n=99)
Potential Benefits:			
The benefits of PACE EH were clear	4.4	3.5	3.8
PACE EH could help leverage new resources for the health department	4.1	3.1	3.7
PACE EH could bring in new partners	4.5	3.3	4.0
Benefits of PACE EH seemed hard to demonstrate to political officials	3.0	3.2	3.3
PACE EH could help address existing controversies	3.9	2.9	3.4
PACE EH could help anticipate and avoid future controversies	3.9	3.1	3.5
PACE EH appeared less effective than other approaches available to promote environmental health planning	2.0	3.1	2.7
Resources:			
The time, staffing, and costs of implementing PACE EH were clear	3.6	3.2	3.3
PACE EH would require more staff time than we have available	3.7	4.4	4.2
PACE EH would require more money than we have available	3.6	4.1	3.9
Community partners were committed to providing resources to PACE EH	3.1	2.5	2.8
Feasibility:			
The PACE EH approach fits into the way our department does business	3.8	3.1	3.4
PACE EH could create unrealistic expectations for the health department	2.9	3.5	3.4
Health department leadership did not support PACE EH	1.7	2.8	2.4
PACE EH appeared compatible with the way the health department sets priorities	3.8	3.2	3.4
PACE EH is a method we could try on a limited basis to see if it works for us	3.9	3.0	3.8
Capacity:			
Staff lack the specific skills needed to implement PACE EH	2.7	3.0	3.1
It is difficult to maintain coordination across agencies when implementing PACE EH	3.0	3.3	3.2
The PACE EH guidebook helped us understand a complex process	4.1	3.5	3.6
I knew where to go to get help with implementing PACE EH	4.1	3.4	3.5

*1=Strongly Disagree, 2=Disagree, 3=Neither/Not Sure, 4=Agree, 5=Strongly Agree

More specifically, implementers were more likely to view PACE EH favorably with regard to its potential benefits while non-implementers were less likely to perceive such benefits. Those who are undecided about implementation lie in between the other two groups. Similar results were found when discussing the issue of resources. Implementers were more likely to have adequate staff time and money available for PACE EH, in addition to having community partners who could contribute resources. Agencies which chose to implement PACE EH more often felt that it was supported by their agency's leadership, and fit with the agency's priorities and business style, than did the non-implementing group. Furthermore, they found the *Guidebook* more useful than the other groups, and had more confidence in their knowledge of where to get further help with implementing PACE EH.

3.3   Use of Other Public Involvement and Strategic Assessment Methods

We also asked survey respondents about previous experience with a number of other environmental assessment or community participation protocols. Table 3.5 shows that respondents who reported implementing PACE EH had more previous experience with MAPP and PACE EH than non-implementers or the undecided group. Other than MAPP and PACE EH, the differences between the groups were not large, suggesting that previous experience with other protocols was not a deciding factor in the adoption decision.

Table 3.5 PACE EH Adoption Status by Experience* with Community-based Assessment

Experience with Community-based Assessment	Implementer (n=64)	Non-implementer (n=79)	Undecided (n=99)
Assessment Protocol for Excellence in Public Health (APEX-PH)	14 (22%)	21 (27%)	19 (19%)
Mobilizing for Action through Planning and Partnerships (MAPP)	22 (34%)	13 (16%)	23 (23%)
PACE EH	55 (86%)	0 (0%)	11 (11%)
Healthy Cities/Communities	7 (11%)	7 (9%)	8 (8%)
Healthy People 2010	24 (38%)	36 (46%)	31 (31%)
Turning Point	8 (13%)	11 (14%)	6 (6%)
Planned Approach to Community Health (PATCH)	7 (11%)	4 (5%)	2 (2%)
Other strategic planning processes/capacity assessments	9 (14%)	15 (19%)	10 (10%)
Other community-based planning efforts	10 (16%)	16 (20%)	14 (14%)
Other formal protocols	3 (5%)	10 (13%)	6 (6%)

* Respondents were able to select multiple responses.

In the interviews we conducted as part of the case studies, we heard that a number of sites had previous experience with APEX-PH, and some were conducting PACE EH and MAPP together. Some also had experience with other community involvement processes. We asked them to compare PACE EH with other protocols they had used. Here are examples of what they said:

> *I like APEX better because it is more condensed. For PACE, the committee*
> *pulled in the data in the middle; it didn't work well for us. They floundered a*

little in seeking it out. It was a clumsy piece for us. We almost seemed to get stuck. In APEX, you bring the data to the committee on the first day. You say this is what we know about the community and then build on that. For PACE, I can't remember where it was in the process, but you go through 3-4 steps before we had the group gather the data. That was just hard.

There is a lot of conceptual overlap between the processes [PACE and APEX]. They are both geared toward moving toward action... We wanted to focus more on environmental health. In the prior process [APEX], it didn't emerge as a community priority……the other thing that I liked about APEX that wasn't emphasized enough in PACE, was that APEX goes back to risk factors. Prevention is so hard to sell anyway that it is really nice to bring people back to risk factors and contributing factors. PACE did that to some extent, but not in such a structured way.

The goals with PACE are more clearly defined. The other (APEX) didn't have a way to measure if we were making any progress along the way. The PACE project is an excellent tool which allows you to check off steps along the way. And even if we don't reach all objectives in the action plan, we still have it and can return to it at any time, if this issue comes up again…which it will.

PACE was good for identifying the topic, but more time was needed to focus on the topic chosen. In the Healthy Communities Summit, we were all focused on the same thing at the beginning so we were able to come up with some great things in the time we had. There was a lot of time spent on prioritizing with PACE.

I remember understanding that PACE is different because it's an assessment process whereas MAPP is a complete strategic planning process with assessment as one component. The PACE process zeroes in on environmental health. [The PACE Coordinator] and I have thought along the way about how we could adapt PACE so that it doesn't focus only on environmental health but could be used to address the other strategic planning issues as well.

Some of the sites were implementing different protocols at the same time. Three distinct models emerged for how these protocols relate to each other. In some sites they were seen as being separate but part of the same super structure:

The PACE EH protocol deals with environmental health issues; the APEX protocol deals with physical health issues……PACE and APEX are separate committees, each with its own chair…However, although PACE and APEX are two separate subcommittees, they reported together at the steering committee level.

Other interviewees felt that the different protocols were somewhat, though not entirely, overlapping; that each brought something the other lacked. In this way they were complementary and it worked well to integrate them:

> *When we started MAPP and started to go into the communities, we constantly heard from community members about these environmental health issues, so then that's when we took a look at MAPP and staff here did a side-by-side comparison between MAPP and PACE EH. They found that a lot of the protocols in PACE EH fit MAPP, and that's when we decided to try to combine the two, mainly because MAPP to us just wasn't addressing environmental health problems.*

> *The MAPP process, by bringing in the PACE EH piece with it, became much more robust. So it wasn't just that we were trying to find out indicators of health, like access to care, or livable community, if you can walk certain places and so on. There was also the more underlying issues like concerns about water quality, so they can give you more information about how it worked for them. Once they did the crosswalk between the two, they were convinced that the two of them can work together.*

> *…the MAPP process in the first part focuses on the readiness of the community and such things before you get to the assessment. PACE EH has a little bit of a different focus when you start out. That's why I think they complement each other……Environmental health is a real big issue……so maybe it works for us because the community is well aware of the environment.*

The third application of two different protocols involved using one to feed into the other. In both cases exemplified here, the PACE EH process was used to supplement the results of MAPP.

> *…this coalition [for PACE EH] was built to help the MAPP process answer that strategic issue [How do we provide a safe environment?], so we used the PACE process to drill down on that. We used the MAPP and PACE hand in hand.*

> *We definitely invited the PACE members to participate in the MAPP process. One or two of them did. The end result is going to be that the PACE assessment will be a part of the community health improvement profile, the CHIP, or health improvement plan. Results of PACE will feed into a final MAPP report.*

3.4   Buy-in and Support

The importance of leadership for PACE EH success has been widely acknowledged. We examined the effect of the presence of an advocate or champion on adoption outcomes. The survey data clearly show that the implementing agencies were more likely to have this leadership

(Tables 3.6). Only 6% of respondents from the implementing group reported that there was no "champion" for their PACE EH process. For non-implementers and those who have not yet decided to implement, the results were 57% and 45%, respectively, who report having no "champion." Among the implementing group, the agency's Environmental Health Director, overall Director, or other agency staff were most likely to have served as the PACE EH "champion."

Table 3.6 PACE EH Adoption Status by Presence and Type of Champion

Individual who Served as Champion	Implementer (n=66)	Non-implementer (n=79)	Undecided (n=99)
There was no "champion"	4 (6%)	45 (57%)	45 (45%)
Agency's Environmental Health Director	20 (31%)	16 (20%)	25 (25%)
Agency's overall Director	14 (21%)	8 (10%)	17 (17%)
Other agency staff	12 (18%)	2 (3%)	8 (8%)
Person in key partner agency	4 (6%)	0 (0%)	1 (1%)
Other	8 (12%)	1 (1%)	0 (0%)
Don't know	4 (6%)	6 (8%)	3 (3%)

We also asked survey respondents about who provided advice, consultation and support in deciding whether or not to adopt PACE EH. As shown in Table 3.7, implementing agencies were more likely to report having sources of advice, consultation, or support than were respondents from non-implementing or undecided agencies. Over half of the implementers reported receiving advice from the Director or Chief Executive of the health agency, and a third received advice from NACCHO.

Table 3.7 PACE EH Adoption Status by Source of Advice*

Sources of Advice, Consultation, or Support	Implementer (n=64)	Non-implementer (n=79)	Undecided (n=99)
Director or chief executive of health agency	36 (56%)	28 (35%)	44 (44%)
Health board or policy-setting board	12 (19%)	9 (11%)	15 (15%)
Elected official(s)	11 (17%)	4 (5%)	10 (10%)
Key partner agency	14 (22%)	5 (6%)	7 (7%)
NACCHO	21 (33%)	3 (4%)	17 (17%)
Someone with PACE EH implementation experience	17 (27%)	4 (5%)	10 (10%)
Other	8 (13%)	8 (10%)	9 (9%)

* Respondents were able to select multiple sources of advice

Data from the case studies show that interviewees recognize that PACE EH is an enormous undertaking that is most likely to succeed if there is ample support. When asked about the role of buy-in at their sites, they said that the process of garnering support began early and, in some cases, was very time consuming. "*My boss and I shared this vision…We did spend a fair amount of time working with City Council to explain what we thought this would accomplish.*" In one case study site, support for PACE EH was seen as a prerequisite in hiring a new key leader in the

site: "*When the EH Director who had been here for years retired, I can tell you for a fact that every candidate we interviewed in this office was asked about their interest in PACE EH.*"

Decision-maker support was also important because, as discussed by the interviewees, it was clear during the grant-writing process that buy-in from health department leaders could impact whether they were successful in obtaining funding. Once the protocol was started, it was also important because there was a need to justify the expenditure of scarce agency resources.

As a result, much energy was expended by the sites in soliciting support from the Regional and State Health Directors, Environmental Health Director, City Council members, the State Board of Health, Department of Environmental Services, Tribal Council, local city, state, and county officials, as well as stakeholders employed at local non-governmental organizations.

When discussing the role of buy-in at their sites, many interviewees said that the process of garnering support extended outside their agency to invited partners.

> *I created marketing materials, researched every organization, and then approached the CEO to present our information and explain how their participation would meet their organization's goals. It was very professionally done…There were about 30-40 groups approached. We got 21 people willing to participate.*

4 Implementation Experiences and Strategies

The Protocol for Assessing Community Excellence in Environmental Health (PACE EH) consists of 13 tasks to engage the community in environmental health planning and assessment activities. In this chapter we present the implementation experiences and strategies of communities that have implemented these tasks. The data are drawn from the 66 survey respondents who indicated they were implementing PACE EH. Additional insights are provided by interviewees who participated in PACE EH in the 24 case study sites and, to a limited extent, national stakeholders who observed and commented on practices in the field. First we summarize their experiences with PACE EH as a whole, and then we provide implementation detail regarding each task. We also summarize the technical assistance received by the case study sites.

4.1 Resources Expended

PACE EH is generally described by its implementers as a resource-intensive undertaking, especially with regards to staff time. The survey asked all health agency implementers to list the types of staff that contributed to PACE EH and the hours per week of their collective time that was spent on activities related to PACE EH. As shown in Table 4.1, most sites invested much of the responsibility for PACE EH implementation in a designated coordinator, and this coordinator provided a large share of the total staff time that was allocated to PACE EH during the most recent active year. The average hours devoted to PACE EH by a coordinator or coordinators ranged from 0.5 to 0.75 FTE. Other staff also contributed their time, most often the Environmental Health Director and/or other environmental health staff. Total time investment ranged from about 0.75 FTE in sites that have completed the process to approximately 1.0 FTE in sites that are currently implementing, and over 1.3 FTE in the implementing but inactive category. It should be noted that only 4 of 9 implementing but inactive sites chose to answer this question, so caution is urged in interpreting this number. It may be that those who answered were the minority who found it especially burdensome, or it may be that this group as a whole found it especially burdensome and that this contributed to their decision to suspend activity.

Financial resources to support PACE EH came from a variety of sources as shown in Table 4.1. In all categories of implementers, internal discretionary funds were an important source of funding for PACE EH, ranging from approximately 1/3 to 2/3 of all funding. Remaining funds came from state or federal grants, or grants from other sources. Contributions from partner agencies were not a significant source of funding. Implementing but inactive sites had the fewest outside resources to devote to PACE EH. Lack of funding may have played a role in their decision to suspend PACE EH activity.

Table 4.1 Summary of Resources Required to Implement PACE EH by Implementation Status

Resources	Currently implementing (n=16)	Began implementation, inactive (n=13)	Completed process, inactive (n=14)	Completed process, active (n=21)
Average Hours per Week in Past Year:				
PACE EH Coordinator	17	30	21	19
Environmental Health Director	7	16	3	5
Health Department Director	2	6	<1	2
Other Environmental Health Staff	12	1	3	5
Other Health Department Staff	3	2	2	2
Average Hours per Week, Total	41	54	29	32
Funding Percentages:				
Internal agency discretionary funds	30%	65%	32%	39%
State agency grant	24%	19%	48%	17%
Federal agency grant	25%	10%	20%	16%
Grant from other source	9%	5%	0%	6%
Contributions from partner agencies	12%	2%	0%	7%
Other	0%	0%	0%	16%

One major source of variation across sites was the role of staff vis-à-vis community members. Two distinct models emerged. One can be described as staff-directed, the other as community-directed. Only a few sites truly embodied one or the other of these models, most were somewhere in between.

Staff-directed. In some sites, staff did most of the groundwork and used the committee more as an advisory board. "*We didn't feel that we could put that level of work and responsibility on that group and keep them coming back. We wanted to keep them involved but didn't want to make too many demands.*" In this site, community volunteers were comfortable with the level of burden placed on them. They felt that the strong leadership provided by the health department was appropriate and that they would not have wanted to commit more time to the process. They viewed their role as advisory to a large extent, although they stated that they felt empowered to set priorities as they saw them.

A variation on this model was a staff-directed approach that involved multiple governmental agencies. This model built strong collaboration between agencies but used the public more as a data source (e.g., through a survey of their priorities or through a community meeting process) than as a collaborator. This approach was described as more efficient and one that could be completed in a shorter time frame. With this model, meetings could be held during work hours rather than in the evenings.

Community-directed. In other sites, PACE EH was interpreted as a community-led process. In this model committee members were almost exclusively citizens and they were asked to make decisions at every step along the way and to roll up their sleeves and prepare documents, such as issue profiles. This model emerged when the lead agency was deeply committed to the approach,

but it also emerged where distrust of the government is high: "*I think most people feel that the government is not going to help us out – it's up to us to do it ourselves.*" Even in this model, however, participants point to the necessity of having a paid coordinator to keep it all moving. In several sites using this model, the process stalled dangerously when the coordinator left his or her position and only resumed once the position was filled. A lesson learned, we were told, is that community members cannot on their own sustain the process without someone organizing meetings, preparing agendas and minutes, and ensuring that the process moves forward. In this model, it is very important that the staff person leading the process have facilitation skills to supplement their scientific skills, a combination that was described as all too rare among environmental health professionals.

In a few sites using this model, staff described their efforts to spin off the committees to become mostly or completely community operated. In one site, they were considering a 501(c)(3) organization; in others, implementation committees began to operate more independently, raising the possibility that staff efforts could be redirected to either new priority topics, or new communities within their jurisdiction. Others were hopeful that this would happen, but had to be honest in their assessment that the committee had not yet stepped up to a new level of ownership.

Regardless of the model used, staff support is critical to the process. Nearly every site indicated that PACE EH was more time-intensive than expected. It is clear that PACE EH cannot easily be added to a staff person's list of duties. Dedicated staff time is essential.

4.2   PACE EH Philosophy

At the beginning of the Guidebook, the philosophy underlying PACE EH is presented. The four underlying principles listed are:

- A community-based environmental health assessment supports the **core functions of public health**.
- Strengthening **leadership** abilities in the field of environmental health will make local health officials more effective in ensuring the health of the community.
- **Community collaboration** is the cornerstone of a useful environmental health assessment process and of effective community planning.
- Principles of **environmental justice**, whether explicit or implicit, underlie the practice of sound local public health and environmental health.

Case study interviewees were asked whether these principles were discussed and if they thought each was important to their local effort, or if some principles were viewed locally as more central than others. NACCHO staff and other stakeholders were also asked to comment on the philosophical underpinnings of PACE EH.

Interviewees in most sites indicated that there was at least some discussion of these principles, although some community members felt that these issues were discussed more within the health agency than with the group as a whole. Many also felt that all of the principles were present in their work even if they did not explicitly discuss them. In some sites, however, the principles were discussed openly as a group.

One site described the philosophies as having different weights at different points in time:

> *First thing we went to was leadership [community leaders]. From there we went to strengthening the core principles and showing what we can do… Once you've got the leaders, they got it going and started planting seeds. They got people involved and as it started to grow people bought into it.*

Community collaboration. In all sites, community collaboration came to the forefront, either being defined as the most important principle or at least equal to other principles. This emphasis is in keeping with the comments of NACCHO staff that it is the principle that they stress most highly during training. NACCHO emphasizes "*flexibility in the tasks… so long as it is driven by community involvement.*" Many of the sites specifically mentioned adopting PACE EH because it is a vehicle for community engagement. "*Community collaboration—we were really looking for a community process.*"

One local champion described the community piece as the element that had been missing in environmental health in recent years and the importance of reinserting community at the heart of public health. When he encounters people that are suspicious, he tells them "*who are you going to trust, politicians or the community? Now you've just turned it over to the politicians.*" He believes, and was not alone in this belief, that PACE EH helps engage the community and makes them partners in addressing concerns. The community can then become your best ally to generate programmatic support to address those concerns.

Leadership. Leadership was interpreted in diverse fashions within the case study sites. Some viewed PACE EH as an opportunity to create leadership within the lead agency by being proactive instead of reactive to environmental health issues. Other sites talked more about the need to develop community leadership around these issues. The relative weight of these two approaches varied across sites, although many did mention both aspects.

Core functions of public health. This concept was most salient to public health professionals and least salient to community partners. For many sites, however, giving greater attention to assessment functions was a driving force behind the adoption of PACE EH. "*Core functions of public health were met by the work that we do, this being an assessment model. That was already implicit.*" Many interviewees see community collaboration and core functions as inextricably linked, pointing to the "green" section of the 10 essential environmental health services that focuses on "Inform, Educate and Empower" and "Mobilize Community Partnerships."

Environmental justice. In most sites, environmental justice was the least discussed principle. In some, they never discussed it and were uncertain what it meant. In others environmental justice was associated with urban Superfund sites and interviewees did not see how it applied to their community. In only a small number of communities did the principle figure prominently in local discussions. Interestingly, the prominence of environmental justice as an operating principle does not seem to be correlated with either rural/urban status nor with the presence of EPA Superfund sites. It does, however, appear to be correlated with selection of a particular neighborhood or community as the focus of efforts. In these sites, community selection was explicitly driven by

what can be termed environmental justice criteria—communities that are low income, minority, and disenfranchised. Communities where PACE EH could lend a helping hand to "*give them a voice*." However, even in these sites, interviewees stressed the importance of community collaboration and leadership as the salient principles, although they tended to define leadership as community leadership.

NACCHO staff described environmental justice as the least well integrated into PACE EH. This philosophical element was important to many of the developers, but PACE EH does not explicitly incorporate environmental justice into the individual tasks. One place where it does emerge is in the selection of the community environmental health assessment team. Interviewees in several sites explicitly mentioned team composition as the step in which the concept did weigh into their discussions.

4.3   Completion and Sequence of Tasks

The PACE EH *Guidebook* presents a framework for community environmental health assessment that promotes local flexibility. Although the *Guidebook* presents 13 tasks to lead sites through the assessment process, it is designed to be flexible. It was not anticipated by the developers that sites would necessarily conduct every task as presented, nor that they would strictly follow the sequence.

The 66 implementers among the survey respondents varied widely in the total number of tasks they have completed as shown in Table 4.2. Responses ranged from none (n=3) to having completed all 13 tasks (n=18).

The number of tasks completed varied by implementation status. Those who were currently engaged in PACE EH had made progress to various points in the task sequence. On opposite ends of the spectrum, a few had just begun the process and had not completed any tasks. One had completed all tasks. Those who were implementing PACE EH but who were currently inactive had generally made it to Task 5 (whether or not they had completed all previous tasks). A few skipped from Task 5 to Task 9, 10 or 11.

Among those who indicated that they had completed a PACE EH cycle (once through the steps), surprisingly, about half had not completed all of the tasks. Five of these respondents indicated that they had completed all tasks but Task 13, evaluate progress. However, others had either ended in the middle of the process (two respondents ending at Task 5) or skipped steps in the middle of the process. Tasks that were commonly skipped were Tasks 6, 7, and 8. Two completers skipped Task 9 and one skipped Task 10. One completer also skipped Task 3 and did not assemble a team.

Table 4.2 Steps Completed by Completion Status

Number of Steps Completed	Number of Implementers by Total Steps Completed	
	All Implementers (n=66)	Completers (n=35)
Missing/Refused/DK	8	4
No Tasks completed yet	3	0
1	0	0
2	1	0
3	4	0
4	3	0
5	6	3
6	0	0
7	2	0
8	3	1
9	3	1
10	4	2
11	2	0
12	9	7
13	18	17

When examined by individual task (Table 4.3), as might be expected, more implementers completed earlier PACE EH tasks than later ones. Most of the implementers completed Tasks 1 and 2 (88% and 91% respectively). At the low end, only 40% of respondents had completed Task 13. Because some respondents are currently implementing, more may complete additional tasks in the future.

Table 4.3 Summary of Completion of 13 PACE EH Tasks by Implementation Status

13 Tasks	Number Completing each Task, by Implementation Status					
	Currently Implementing (n=16)	Began implementation, Inactive (n=13)	Completed process, inactive (n=14)	Completed process, active (n=21)	Implementer, Status Unknown (n=2)	Total (n=66)
1. Determine community capacity	12	9	11	19	2	51
2. Define and characterize the community	12	10	12	19	2	53
3. Assemble a community-based environmental health assessment team	11	8	12	18	1	49

13 Tasks	Number Completing each Task, by Implementation Status					
	Currently Implementing (n=16)	Began implementation, Inactive (n=13)	Completed process, inactive (n=14)	Completed process, active (n=21)	Implementer, Status Unknown (n=2)	Total (n=66)
4. Define the goals, objectives, and scope of the assessment	9	8	12	19	1	48
5. Generate a list of community-specific environmental health issues	8	10	12	19	2	49
6. Analyze the issues using a systems framework	6	4	12	15	0	37
7. Develop locally appropriate indicators	5	2	9	16	0	32
8. Select standards against which local status can be compared	5	2	10	15	1	32
9. Create issue profiles	5	4	11	15	1	35
10. Rank the issues	6	4	11	16	1	37
11. Set priorities for action	5	3	11	16	1	35
12. Develop an action plan	3	2	11	16	1	32
13. Evaluate progress and plan for the future	2	0	8	12	0	22
None completed yet	1	2				3
Missing/DK/Refused	3	1	2	2		8

Seven survey respondents also provided one or more "Other" tasks they have conducted in completing the PACE EH process. These included implementing one or more action plans (n=3), conducting PACE EH in another community (n=2), restarting the PACE EH process for a second round of planning (n=1), comparing PACE EH with the 10 essential services (n=1), leveraging resources to support quantitative data collection (n=1), and interacting with elected officials to garner support (n=1).

4.4   Timeline for PACE EH Tasks

In the survey, while a few implementers indicated that they had completed "later" key PACE EH activities prior to "earlier" tasks, most seemed to indicate a relatively linear sequence of activities. Implementers took an average of 7.2 months from hearing about PACE EH to deciding to adopt. It then took an average of 5.7 months to convene a first meeting of the CEHA team and

an additional 5.7 months to generate a list of community-specific environmental health issues (Task 5). An average of 6.0 additional months was taken to develop a first action plan. The average length of time from PACE EH adoption to the approval of their first action plan was 17.1 months. Eight respondents indicated that they ceased activity and then resumed. For most programs, this delay was relatively short, averaging less than 1 month.

Communities implementing PACE EH learned about it steadily through its 10-year history, peaking in 2003. Table 4.4 shows the year in which implementers first learned about PACE EH, the year in which it was adopted, and the year in which key tasks were completed.

Table 4.4 Dates of Key Steps in Implementation

Year	First learned about PACE EH	Adoption of PACE EH	First CEHA Meeting	Generate Issues	First Action Plan Approved
1995	3		0		
1996	1	4	3	2	1
1997	1	0	1	3	1
1998	3	0	1		3
1999	8	2	2	4	1
2000	5	5	1		1
2001	8	9	8	5	3
2002	7	7	8	8	7
2003	10	11	11	11	8
2004	7	9	6	12	11
2005	1	4	6	2	7

The pattern of implementation differs slightly by implementation status. Those who have completed PACE EH and are revisiting plans or implementing actions heard about PACE EH an average of two years earlier than those who are currently implementing PACE EH. The group of implementers who are currently inactive (whether completed or not), heard about PACE EH on average 1 year before those who are currently implementing.

4.5   Comparative Difficulty of Tasks

Survey respondents were asked to rate the relative difficulty of the tasks they had completed. As shown in Table 4.5, all tasks were found to be difficult by at least some respondents. Of those completing each task, less than 25% of respondents found Tasks 1, 2, 5, 10, and 11 difficult; while over 40% found Tasks 6, 7, 8 and 13 difficult.

Table 4.5 Distribution of Difficulty Rankings by PACE EH Task

Task	Easy		Neither Easy nor Difficult		Difficult	
	#	%	#	%	#	%
1. Determine community capacity	31	61%	9	18%	11	22%
2. Define and characterize the community	31	60%	10	19%	11	21%
3. Assemble community-based EH assessment team	15	32%	14	30%	18	38%
4. Define goals, objectives, and scope of assessment	14	30%	19	41%	13	28%
5. Generate list of community-specific EH issues	25	52%	12	25%	11	23%
6. Analyze issues using a systems framework	7	21%	10	30%	16	48%
7. Develop locally appropriate indicators	8	29%	5	18%	15	54%
8. Select standards against which local status can be compared	4	14%	10	36%	14	50%
9. Create issue profiles	6	20%	13	43%	11	37%
10. Rank the issues	16	46%	13	37%	6	17%
11. Set priorities for action	15	45%	10	30%	8	24%
12. Develop an action plan	14	45%	6	19%	11	35%
13. Evaluate progress and plan for the future	3	15%	9	45%	8	40%

For those tasks they rated difficult, survey respondents were then asked to indicate which of several factors contributed to that task's difficulty. These ratings are shown in Table 4.6, with shading used to indicate tasks with an average difficulty rating of 2 or lower. In general, across tasks, respondents found that internal site factors were more important contributors to task difficulty than were concerns about the *Guidebook*. Across tasks, lack of staff time was a very important or somewhat important factor contributing to the difficulty of most of the tasks, particularly Tasks 3 and 9. In contrast, the *Guidebook* being either too complicated or lacking sufficient explanations was not considered to be an important contributor to task difficulty. Other factors were more variable in their importance depending on the task. For example, lack of staff skills and difficulty in reaching consensus were not generally considered important factors, but were more important related to Tasks 1 and Task 10. Lack of data resources was found to be an especially important factor for Tasks 1, 7, 8, 9, and 10.

Table 4.6 Factors Contributing to Difficult Rating by PACE EH Task

Factor	Importance Score* by PACE EH Task												
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
Guidebook had insufficient explanations	2.7	2.6	2.5	2.4	2.5	2.6	2.5	2.5	2.6	2.2	2.7	2.4	2.6
Guidebook too complicated	2.5	2.7	2.6	2.5	2.8	2.6	2.7	2.7	2.6	2.7	2.7	2.5	2.9
Staff lacked necessary skills	2.0	2.5	2.3	2.5	2.5	2.5	2.3	2.6	2.2	2.0	2.4	2.5	3.0
Community members lacked the necessary background	1.9	1.9	2.1	2.1	2.1	2.0	1.9	2.2	1.7	1.5	2.4	2.5	2.7
Community was not sufficiently committed	1.7	2.0	1.8	2.2	2.3	2.2	2.1	2.4	1.7	2.2	2.3	2.4	2.4
Outside technical assistance insufficient or unavailable	2.0	2.5	2.3	2.5	2.5	2.4	2.2	2.5	2.3	2.3	2.9	2.5	2.3
Data resources insufficient	1.9	2.2	2.0	2.4	2.1	2.2	1.5	1.5	1.9	1.8	2.9	2.3	2.1
Financial resources insufficient	1.5	1.9	1.7	2.2	2.2	2.0	2.4	2.1	2.1	2.3	2.7	2.4	1.7
Staff time insufficient	1.5	1.7	1.4	2.3	2.0	1.6	1.9	2.1	1.4	1.8	2.0	1.9	1.9
Difficult to reach consensus	1.9	2.2	2.1	2.5	2.2	2.3	2.3	2.3	2.1	1.8	2.4	2.4	2.8
Other	1.8	2.0	1.8	1.9	2.0	2.0	2.1	2.1	2.0	1.8	1.8	1.9	1.8

* Average Rating on Importance Scale (1=Very, 2=Somewhat, 3=Not Important)

Respondents listed several other factors that contributed to task difficulty. These are summarized by task in Table 4.7.

Table 4.7 Other Factors Contributing to Task Difficulty

Task	Other Factor
1	- Participation by only a small group with existing agendas - Initial interest, but lack of agency time commitment
3	- Implementation across a large area, hard to find common EH priorities - Community members had other priorities - Team needed Board of Health (elected official) approval - Limited participation
4	Maintaining community involvement
6	Committee member time constraints
7	Limited data or reference materials
13	- Staff turnover - Leadership turnover

4.6 Experiences and Strategies for Completion of Specific Tasks

The PACE EH *Guidebook* promotes local flexibility. Thus there is considerable variation in how sites approached each task. The following sections rely heavily on the qualitative case study data to describe the details of the approaches that different sites took to completing each task. These qualitative results are supplemented by data, where available, from the web survey. For reference

purposes, the brief summary of each task's activities provided in the *Guidebook* is reproduced beside the description of each task.

4.6.1 Task 1 Determine Community Capacity to Undertake the Assessment

Task 1, Determine Capacity, was intended as a first step toward understanding the capacity available in the lead agency and the community to undertake a PACE EH effort. As shown in Table 4.3, 51 survey implementers (77%) indicated completing this task.

> Task 1 Determine Capacity: Determine Community Capacity to Undertake the Assessment
> - Specify the resources, skills, and capacities needed for the assessment
> - Specify the available resources, skills and capacities
> - Review possibilities for collaboration
> - Determine ability to carry out the assessment

Case study sites had several approaches to conducting this task. Most of them reported completing this task with the PACE EH Coordinator and other lead agency staff prior to developing a PACE EH team. In some cases this was a formalized process of compiling resource lists or conducting asset mapping of the community. In other cases, sites looked specifically at the capacity of the lead agency to undertake PACE EH in terms of leadership support, staffing, time, existing community connections, and willingness to undertake the process. Depending on the site, this was either done as a formal or an informal process. Prior to adoption, one site conversed with the coordinator of a nearby site that had already conducted the process in order to gain information related to staff time and the benefits of undertaking PACE EH.

Not all case study sites completed Task 1 during the PACE EH process. Three sites conducted Task 1 in a previous assessment process (e.g., APEX-PH, MAPP) and did not repeat it specifically for PACE EH. These sites reviewed results with their teams when assembled. Two others reviewed capacity in developing the application for demonstration site grants. One interviewee thought that the site made the decision to adopt PACE EH without conducting a capacity assessment. This interviewee wondered whether his site would have conducted the process at all had they done this step, because they subsequently found they did not have the capacity to complete the process.

Changes to task. Two sites convened their team first and worked with the team to assess community and member agency capacity. Several interviewees thought that Task 1 was an ongoing step that had to be repeated throughout the process. One remarked, "*It's not a linear process. You have to keep assessing whether your capacity is there to meet your goals.*" Another noted that capacity must be re-assessed for conducting each task.

4.6.2 Task 2 Define and Characterize the Community

Task 2, Characterize the Community, encompassed defining the "community" for the PACE EH assessment and describing its characteristics along a variety of dimensions.

> Task 2 Characterize the Community: Define and Characterize the Community
> - Define the community
> - Describe the community's characteristics, composition, organization and leadership
> - Refine the definition of community as needed

This task was completed by 53 (80%) of the survey implementers. PACE EH implementers in the survey and case

---

study sites tended to define the "community" as a geographic area for the focus of PACE EH implementation. Areas selected for implementation, as reported by survey "implementers" and case study sites, are shown in Table 4.8. The scope of the geographic area varied quite widely among implementers. Two respondents reported statewide implementation efforts while a few selected one small local area/neighborhood for implementation. Seventeen of the case study sites (most of those selecting county, multi-county/region, or city) did so to parallel the area covered by the health department serving as the lead agency for the effort; others selected smaller areas than the health department catchment area. One case study site defined community in another way—by occupation—selecting K-12 teachers as its focal group.

Table 4.8 Types of Geographic Areas Selected for PACE EH Implementation by Survey and Case Study Sites

Area Selected for the PACE EH Process	Survey Respondents (n=66)	Case Study (n=24)
State	2	0
Multi-County/Region	4	2
County	28	12
City	4	3
Multi-community	4	1
One Community/Neighborhood	13	3
Tribal Community	5	2
Missing/Refused/DK	6	0
Other	0	1

Several sites indicated that they spent significant time defining the community, while in other sites, part of the decision to adopt PACE EH included the decision to implement it in a pre-selected community (i.e., an area in which the health department wanted to affect change).

Case study sites that selected counties or other existing political units as their "community" were able to gather a large amount of data related to demographics, presence of environmental hazards, economics, social conditions, growth trends, language, employment patterns, traffic/commuting patterns, rural/urban/suburban patterns, and environmental area (e.g., river, pinelands). One site also gathered information on media outlets across the area. Those that selected smaller geographic areas were sometimes unable to gather existing data on the particular neighborhood selected although they could gather information on larger units that encompassed the selected area.

Several sites set criteria for selection of a particular geographic area. Across sites, these criteria included areas with high poverty, higher minority status, rural areas with no existing health department program, and interest by the selected community.

In many of the case study sites, existing data were gathered together by the health department to characterize the community prior to forming the PACE EH team. In one case, the site conducted extensive GIS mapping of data to show environmental health issues in different parts of the health department catchment area. These maps helped the team to select a focal area. A few sites

had characterized the community during prior, or concurrent, assessment efforts (e.g., MAPP) and these data were used in the PACE EH process. In a few sites, new data collection was conducted to assist in characterizing the community. This consisted of interviews with community leaders, community meetings, or through a walking tour of the community in which the coordinator wrote down all of the businesses and organizations present in the community.

4.6.3 Task 3 Assemble Team: Assemble a Community-based Environmental Health Assessment Team (CEHA)

Task 3 deals with assembling a community-based environmental health assessment (CEHA) team. This task deals with identifying what is expected of team members, identifying and inviting members to participate in the process, and determining rules and a structure by which the team will run. This task was indicated as complete by 49 (74%) of the survey implementers.

Survey data from implementers give us a window into how CEHA team members were identified for inclusion on the team. Respondents were asked to report on all of the ways in which they identified and invited team members as shown in Table 4.9.

> Task 3 Assemble Team: Assemble a Community-based Environmental Health Assessment Team
> - Clarify expectations of team members
> - Identify and invite individuals to help design and carry out the assessment
> - Determine a governing structure, decision-making structure, and ground rules

Popular methods of recruitment by those answering this item included connections with lead agency staff, and through existing partners (73% respectively). Public announcements were used by 39% of the sites, and in 21% of the sites an existing group took on the PACE EH process. Other recruitment methods included identifying community leaders or activists, invitations from other CEHA members, grassroots networking, community meetings, and connections with other government agency staff.

In addition, case study respondents reported strategies of appointment or invitation/approval of team members by government leaders or boards of health and more targeted recruitment efforts. One site described filling in members from a complex matrix to ensure diversity along several criteria. Others described brainstorming stakeholder agencies/organizations and then sending invitations to the agency to nominate an individual member.

Table 4.9 Methods of Identifying Members for CEHA Teams by Implementation Status

Method of Inviting/Identifying Potential Members for CEHA Team	Number of Respondents, by Implementation Status					
	Currently implementing (n=16)	Began implementation, inactive (n=13)	Completed process, inactive (n=14)	Completed process, active (n=21)	Implementer, Status Unknown (n=2)	Total (n=66)
Connections with lead agency	8	7	9	16	1	41
Through existing partners	7	6	9	18	1	41
Public announcement	4	2	4	12	0	22
Existing group or committee	4	2	0	6	0	12
Other	2	1	4	5		12
Missing/DK/Ref	4	4	1	1	0	10

* Limited to sites that had formed a CEHA team

Survey implementers provided information on the number of agencies and individuals involved in their CEHA teams. Average numbers are shown in Table 4.10. Those who completed the process and are still active tended to have larger teams in terms of both individual members and agency membership. Currently active teams as well as those that completed the process but are currently inactive had the smallest teams.

Table 4.10 Number of Agencies and Individuals involved in CEHA team by Implementation Status

Members	Number of Respondents, by Implementation Status					
	Currently implementing (n=16)	Began implementation, inactive (n=13)	Completed process, inactive (n=14)	Completed process, active (n=21)	Implementer, Status Unknown (n=2)	Total (n=66)
Average number of **agencies** involved	9	11	9	23	4	14
Average number of **people** involved	16	25	17	37	12	25

Survey implementers also provided feedback on the level of involvement by different organizational member types (Table 4.11). Over 50% of implementers did not have representation from insurers/managed care organizations, local medical/dental societies, chambers of commerce, senior citizen groups, agricultural associations, individual farmers, branches of local environmental organizations, environmental justice organizations, minority serving service delivery organizations, military, and research institutes/agencies. Over 70% of implementers who answered these questions had modest or substantial representation by boards of health or other policy setting boards, industry representatives, local businesses, other civic groups, individual participants, local environmental advocacy groups, governmental environmental protection agencies, and health and human services agencies.

In addition to these groups, higher average levels of participation (2 or higher) were found for neighborhood associations, faith-based organizations, and universities or colleges. Average

participation levels were not substantially different for different implementation statuses. Other partner types included physician, legal (environmental attorneys), public utilities, school teachers, hiking and trail maintenance groups, economist, and emergency services agency.

Most case study sites strove for diversity in recruiting members whether along geographic, demographic, environmental interest, or organizational affiliation lines. Several sites specifically noted using the *Guidebook* to ensure that they were not omitting any specific organizational or member type in their recruitment efforts. Case study interviewees were generally pleased with the level of participation of the team members and did not note many gaps. However, several groups from whom they would have liked more participation included:

- Minority participants
- Agricultural producers
- Business and industry representatives
- Elected officials
- Community residents
- Women

Table 4.11 Partner Type by Level of Involvement on PACE EH CEHA Teams

Organizational Types	Level of Involvement						Average Participation Level*
	None		Modest		Substantial		
	N	(%)	N	(%)	N	(%)	
Health							
Hospitals and health centers	15	(33)	20	(43)	11	(24)	1.9
Insurers and managed care organizations	35	(80)	9	(20)	0	(0)	1.2
First responders	22	(46)	21	(44)	5	(10)	1.6
Local medical/dental societies	29	(62)	13	(28)	5	(11)	1.5
Boards of health or other policy board	13	(28)	13	(28)	20	(43)	2.2
Health advocacy organizations	17	(36)	17	(36)	13	(28)	1.9
Business/Industry							
Chamber of commerce	25	(53)	14	(30)	8	(17)	1.6
Industry representatives	14	(29)	22	(45)	13	(27)	2.0
Local businesses (e.g., realtors)	12	(25)	24	(50)	12	(25)	2.0
Civic							
Senior citizen groups	24	(51)	15	(32)	8	(17)	1.7
Neighborhood associations	17	(35)	11	(22)	21	(43)	2.1
Faith-based organizations	15	(31)	18	(38)	15	(31)	2.0
Other civic groups	10	(21)	24	(51)	13	(28)	2.0
Individual citizens not affiliated w/ any group	3	(6)	22	(46)	23	(48)	2.4
Agriculture/Farming							
Agricultural organizations	23	(48)	20	(42)	5	(10)	1.6
Agricultural Associations	36	(75)	9	(19)	3	(6)	1.3
Individual farmers	32	(68)	13	(28)	2	(4)	1.4

Organizational Types	Level of Involvement			
	None	**Modest**	**Substantial**	**Average Participation Level***
Environment				
Branches of national orgs.	30 (63)	15 (31)	3 (6)	1.4
Local environmental advocacy groups	11 (22)	26 (53)	12 (24)	2.0
Environmental justice organizations	27 (59)	13 (28)	6 (13)	1.5
Minority-serving Groups				
Minority advocacy groups	21 (45)	18 (38)	8 (17)	1.7
Minority-serving service delivery orgs.	26 (55)	12 (26)	9 (19)	1.6
Government - Federal, state and local				
Natural resource agencies	20 (42)	21 (44)	7 (15)	1.7
Environmental protection agencies	12 (24)	23 (47)	14 (29)	2.0
Land use planning agencies	19 (38)	23 (46)	8 (16)	1.8
Health and human service agencies	12 (24)	19 (39)	18 (37)	2.1
Law enforcement agencies	21 (48)	15 (34)	8 (18)	1.7
Elected officials	17 (35)	22 (45)	10 (20)	1.9
Military	40 (91)	2 (5)	2 (5)	1.1
Research Organizations				
University or college	18 (36)	15 (30)	17 (34)	2.0
Research institutes/agencies	29 (58)	17 (34)	4 (8)	1.5

* Participation Level Responses: 1=None, 2=Modest, 3=Substantial

Committee structures. In setting committee structures, survey implementers were asked whether they created subcommittees within their PACE EH team. Most (47) of the implementers answered this question. A majority of those answering (53%) created subcommittees. Of those who created subcommittees, 60% had committees that were divided by specific environmental health issues (e.g., air, water, land committees), 32% were responsible for specific tasks that crossed issues (e.g., public education committee), and 2 had other subcommittee structures. One had subcommittees by region and one had subcommittees around three sets of grouped PACE EH tasks (community involvement, assessment, and action). The number of subcommittees ranged from 1-6, with a median of 4.

The task during which each subcommittee was created varied amongst those with subcommittees (and by subcommittee). Most created subcommittees during Task 6 when analyzing issues, other popular tasks associated with creating subcommittees are Task 5 (generating issues), Task 12 (developing action plans), and "Other Task". Those who selected "Other" generally indicated that this occurred during implementation of action plans. Some site also established subcommittees at Task 3 when the team was formed (Table 4.12).

Table 4.12 Tasks at which Subcommittees were Created

Task	Number of Sites
1. Determine community capacity	2
2. Define and characterize the community	3
3. Assemble a community-based environmental health assessment team	5
4. Define the goals, objectives, and scope of the assessment	4
5. Generate a list of community-specific environmental health issues	6
6. Analyze the issues using a systems framework	14
7. Develop locally appropriate indicators	1
8. Select standards against which local status can be compared	0
9. Create issue profiles	4
10. Rank the issues	2
11. Set priorities for action	1
12. Develop an action plan	6
13. Evaluate progress and plan for the future	2
Other task	6
Missing	16

4.6.4   Task 4 Define Goals: Define the Goals, Objectives, and Scope of the Assessment

Task 4 focuses on defining the goals, objectives, and scope of the assessment including the definition of environmental health that will be used by the team (i.e., what topics will be addressed and which will not). Forty-eight survey implementers (73%) indicated that they completed this task.

> Task 4 Define Goals: Define the Goals, Objectives and Scope of the Assessment
> - Establish goals and objectives for the assessment
> - Describe the vision that will guide the process
> - Describe the scope of issues to be addressed by the assessment
> - Define key terms

Case study respondents provided insight into how this task was conducted. Several sites noted defining goals prior to assembling their team, e.g., in grant applications to NACCHO or as introductions given to the CEHA team at the first meeting or in introductory letters.

Examples of goals developed by PACE EH sites include the following:

> *To have better outreach into the community*
>
> *To have the community have more input into the environmental health program*
>
> *The end goal is to get a holistic picture of the issues and context in which they need to be resolved, and specific actions for trying to resolve them.*
>
> *To get the community involved and to protect the environment*

Sites spent differing amounts of time on this task. Some sites found that it took several meetings and much back and forth to define the scope of the assessment, "*Getting a good definition of environmental health was a process all to itself. We struggled with that....*" While others moved forward readily, "*I presented the goals to them, and they were able to change and tweak them,*

but we didn't spend a lot of time sitting around defining goals." Several sites noted Task 4 as a particularly useful task. As described by one interviewee, *"if you don't know what you want to end up with, it's tough to find a path there."*

Changes to task. As noted earlier, some goal setting was conducted by the lead agency prior to convening the PACE EH team (Task 3). One site also noted returning to Task 4 in order to refine goals after they were further along into issues analysis (Task 6). One site did not set goals at all until after the analysis step (Task 6). This site found that one of its subgroups was unable to come to consensus about the scope of the assessment for their topic, so convened community meetings in order to gain a broader perspective than was present in the group. In one case, defining the scope of the assessment allowed the team to define subcommittees around the goals selected.

4.6.5   Task 5 Generate Issues: Generate a List of Environmental Health Issues

Task 5 was the main assessment task in PACE EH, where sites were to gather data on the issues of concern in their community and compile a manageable list of issues that would move forward during the PACE EH process. Forty-nine (74%) of PACE EH survey implementers noted completing this task.

Case study respondents provided further information on the ways in which they generated issues to complete Task 5. These interviewees utilized a variety of assessment methodologies including:

> Task 5 Generate issues: Generate a List of Environmental health Issues
> ▪ Evaluate and select data-gathering method(s)
> ▪ Collect data on community concerns
> ▪ Collect data on community knowledge, attitudes, behaviors and perceptions
> ▪ Create a manageable list of issues.

- **Surveys.** A number of sites conducted surveys of community residents or target audience members. Surveys were the most common assessment method. They varied in scope from inserting environmental health questions into the county BRFSS, to an area probability sample of households, to convenience samples of as many community residents as could be reached. Sites implementing PACE EH early (e.g., pilot and demonstrations sites) often spent considerable time designing and developing a community survey. Sites implementing PACE EH later often used or adapted surveys developed by other PACE EH sites. In many cases, PACE EH team members helped to administer the survey to ensure that it was broadly disseminated. PACE EH sites also conducted surveys in a variety of modes including door-to-door surveys, written surveys, mailed surveys, telephone surveys, and web surveys.
- **Stories by community members.** One site had community residents tell stories to highlight environmental health problems they had experienced and to explain how these issues had been dealt with in the past.
- **Interviews with community leaders.** Several sites conducted interviews with community leaders to gain perspectives on important issues.
- **Focus groups/interviews with community members and key stakeholder groups.** A few sites held focus groups or interviews with community members and groups. In one

site, focus groups were held in each PACE EH defined region while in a few other sites, interviews were conducted with specific types of community members (e.g., youth).

- **Community meetings/health fairs.** Several sites held community meetings to gather feedback on issues in the community or to administer a community survey. One site put on a community health fair offering free catfish plates to those who would fill out a survey.
- **Brainstorming by CEHA team on issues.** Several sites generated issues through brainstorming of the CEHA team without further data collection activities. Some sites used brainstorming of issues by team members as a strategy to develop a survey instrument.
- **Examination of existing data/prior research.** Several sites generated issues through examination of existing data or prior research without further data collection activities. Some sites used an examination of existing research to develop a survey instrument.

Based on the results of the issues generated, many sites grouped issues in order to make the number manageable. Some created subcommittees around these grouped issues.

Changes to task. Task 5 was considered the "meat" of the PACE EH process and most sites completed this task in roughly the order suggested in the *Guidebook*. In some sites, assessment activities were conducted at various points in time and in multiple tasks. In one site, selected environmental health issues were examined during Task 2 as part of the community characterization task. However, the most salient issues that arose through this examination of the data were not the same ones selected by the community when a community-based assessment was completed. In another site, community interviews and a survey were conducted as the first step in the process prior to the development of a PACE EH team.

4.6.6   Tasks 6-9

This set of tasks, Analyze Issues (6), Develop Indicators (7), Set Standards (8), and Create Issues Profiles (9) was often either grouped or these steps were omitted in whole or part. Task 6 was completed by 37 survey implementers (56%), Task 7 and Task 8 each by 32 implementers (48%), and Task 9 by 35 implementers (53%).

Several sites skipped these steps completely and moved from Task 5 to Task 10. Because community surveys showed a consensus of community opinion about the relative priority of a small number of environmental health issues, these sites took those as the top ranked priorities and did not conduct further analyses or review of these issues. In addition, because these sites chose infrastructure development projects (e.g., water or sewer systems development), they did not feel that indicator development or standard setting were appropriate steps.

One site chose to conduct all of these steps together. The team grouped priority areas based on Task 5. The PACE EH Coordinator then developed an issue profile for each area that incorporated indicators available, standards, and other information. One issue profile was distributed and discussed per topic area at one team meeting. Another site took a similar approach to these tasks and divided into subcommittees around major issues identified in Task 5.

Another divided based on region. Each subcommittee then worked through Tasks 6-9 for that one issue or area.

Task 6 Analyze Issues. Few case study sites indicated completing this task by analyzing issues in a systems framework as advocated in the *Guidebook*. Instead, analysis of issues for several case study sites consisted of analyzing survey responses conducted in Task 5. In others it was characterized as how the site broke down the list of issues into a more manageable and prioritized list (In the *Guidebook* this is considered to be part of Task 5). Several sites skipped this step as too complex and moved directly to Task 7 after Task 5. Interviewees in one site found this task to be the most

> Task 6 Analyze Issues: Analyze the issues with a Systems Framework
> - Understand the framework
> - Identify the connections among health status, affected populations, exposure factors, environmental agents/conditions, contributing factors and behaviors, and public health protection factors for selected environmental health issues.

useful, but also found it to be time consuming due to the amount of time it took to educate team members about the process. Interviewees in several other sites who attempted to complete the systems framework analysis found that this process was confusing and difficult to complete. As one interviewee noted, "*the flowchart [in the Guidebook] didn't work and we got hung up here for a long time. The analysis turned into people listing the topics on a board; then we prioritized and discussed them.*"

Task 7 Develop Indicators and Task 8 Select Standards.
Most of the case study sites reported developing indicators and trying to select standards for their top priority areas. A few sites completed Task 7, but skipped Task 8. Sites found these tasks particularly challenging to complete, particularly if their priority issue was not one that had existing national public health standards, e.g., from Healthy People 2000 or 2010.

> Task 7 Develop Indicators: Develop Locally Appropriate Indicators
> - Develop list of potential indicators
> - Identify key indicators based on selected criteria

Several sites received technical assistance on indicator development from the Green Mountain Institute (Technical assistance is described in greater detail in Section 4.8). Others had the PACE EH Coordinator or students research indicators and standards and bring them back to the group. Some groups that tried to have CEHA team members develop indicators found that it was difficult for team members to truly identify

> Task 8 Select Standards: Select Standards Against Which Local Status Can be Compared
> - Identify externally driven standards
> - Agree upon locally appropriate standards.

an "indicator" as something that was measurable. One site found that the lack of environmental data was a problem in conducting the PACE EH process. This site initiated a statewide indicator development project to identify a core set of environmental indicators. Some of these indicators are now in use, but others still do not have data to support them.

Task 9 Create Issue Profiles. Several case study sites completed extensive issues profiles for major issues identified in Task 5. Others did some preliminary ranking of issues and then only completed profiles for those issues that rose to the top. One site prepared an environmental report card that served as the issue profiles for that site. A number

> Task 9 Create Issue Profiles
> - Adopt a standardized format for organizing information
> - Gather information
> - Collect data for locally developed indicators

of sites did not complete issues profiles at all, but revisited this type of information in completing action plans.

Across case study sites that had completed them, profiles had a variety of components including:

- Indicators available
- Standards
- Populations affected
- Why the topic its important issue in the community
- Potential actions that could be taken
- How the area could be evaluated
- Policy implications
- Recommendations

Sites also varied in who had responsibility for creating issue profiles. Several sites had profiles created by the CEHA team members or subcommittees, while in others the responsibility rested with the PACE EH Coordinator or student interns. In one site, health department staff provided a template (from the *Guidebook*) with whatever data were available on that topic. The PACE EH team members with that background then filled in the rest.

Sites found this step to be of variable utility. In one site, the health department staff noted that "*[the process] has helped us out quite a bit because we have our profiles and we have taken those out for our daily work. We have shared them with staff…We sat down and studied this…that will help us to develop policy in the future.*" However, in another, an interviewee thought that "*creating the issue profiles seemed to be a really hard task for the group to get around as to what is the issue of function of the profile… I didn't find that an overly productive use of a lot of time.*" Yet a third site that had skipped the profile step initially, thought that they may go back to it, "*For a long time when I read the part about the profiles [in the Guidebook], I was wondering why I needed to do it, but then I realized that it would really help to make the case for funding.*"

Changes to task. This set of tasks was where case study sites made the most modifications to the process in terms of omitting these steps in whole or part, or conducting these tasks in less detail than specified in the *Guidebook*.

4.6.7   Tasks 10 and 11: Rank Issues and Set Priorities for Action

Tasks 10 and 11 were often conducted together in case study sites. Respectively, 37 (56%) and 35 (53%) survey implementers reported completing these tasks.

Several of the case study sites had not yet gotten to these steps or were in the midst of them at the time of the interviews. Others did not conduct these steps in their PACE EH team, but rather conducted a survey of community residents during Task 5 which asked them to prioritize their top areas of concern. These

> Task 10 Rank Issues
> - Determine purpose of ranking
> - Decide on ranking criteria
> - Select a method for ranking
> - Rank the issues
>
> Task 11 Set Priorities for Action
> - Determine local priority-setting criteria
> - Select a method for prioritizing

rankings were compiled and the top issues found in the survey were accepted by the committee as the top priorities for the PACE EH team. The PACE EH team then identified actions and developed action plans for these priority areas.

Other sites essentially combined these two steps in their PACE EH process. As one interviewee noted, "*Ranking and prioritization are hard to differentiate.*" Top ranked issues in these sites became the priority areas. In addition, some sites included prioritization criteria in their ranking process so that highly ranked issues in part reflected decisions about prioritization. Several teams conducted a quantitative ranking and prioritization process where issues were ranked and rated using various scales as suggested in the *Guidebook*. This type of process worked for several teams, but not others. A few teams tried the *Guidebook* tools, but ultimately decided to use a more informal process of group consensus. As one interviewee noted, "*What was difficult was ranking the issues. We tried doing that through a mathematical formula, but that didn't really reflect what people were thinking. It didn't work. So then we narratively ranked the issues and set priorities.*"

A few sites split these two steps. One site conducted a ranking process with their PACE EH team but then planned to conduct priority setting in a community meeting. Several sites did not rank issues since they had few issues and wanted to retain them all, but did prioritize amongst them.

The main strategies used by PACE EH sites in conducting ranking and prioritization included:

- Using the survey priorities
- Voting of committee through show of hands
- Formalized quantitative ranking by committee or subcommittee members along various criteria at team meetings or through a mailing to team members—individual rankings compiled to find group priorities
- Setting team and community priorities separately and then reconciling them
- Consensus of team or subcommittees

Case study respondents reported a variety of criteria used to rank and prioritize issues in either formal or informal ways. Criteria used for setting priorities included:

- High priority of the community
- Feasibility
- Achievability
- Desirability
- Importance
- Effect on health outcome
- Aesthetics
- Economic impact
- Fairness
- Future generations
- Health effects
- Peace of mind

- Ecological effects
- Scale (geographic)
- Recreation
- Sustainability
- Ethical/Moral/Social responsibility
- Sense of community
- Could be done in the short term and in the long term
- Issue not addressed by others already
- Issues where a difference could be made quickly
- Feasible to address on local level
- Ease of addressing issue
- Numbers affected
- Severity
- Political Support
- Community support

Several sites found these tasks challenging and time-consuming. These tasks were particularly challenging if there were differences in opinions between various groups, if the team started with too many issues to rank, or if there were insufficient data on certain priorities.

> *When we got down to the rankings, that seemed to take a long time. Then, how to take what the data says, what the citizens say, and how our group feels— reconciling these took a long time.*

> *If we [had] started with a limited number [of issues], than people could pick. As it was, it was hard (and seemed to take so long) to get it to the point where we were ranking, prioritizing and creating action plans. Maybe we would have stood a better chance of getting there with more limited issues.*

> *Information and data are really what are lacking for many of these issues. A lot is subjective for the PACE program and we asked them to just say their gut reaction.*

However, others found that these tasks were particularly useful as well for both the health department and the community.

> *Anytime a department is running with what they assume is an issue, they are throwing a dart, not sure what the target is. PACE has given the Environmental Health division a focus on what they want to do and a sense of pride that they can stand behind what they have selected.*

> *The way we do things here is not be splitting people up, where somebody wins. Instead, we work by bringing people together.. We get it all on the table, duke it out, work through it, and come to something that everyone can agree on that's better than where we are… [O]nce we get the momentum going, then we can make some real progress for the whole community…*

Changes to tasks. As noted, most sites that conducted these two tasks combined them. However, most of these sites did conduct these activities toward the end of the process after issues had been generated, but before development of action plans. In one site, ranking and prioritization was conducted prior to development of issues profiles. These profiles were then developed only for the priority areas.

4.6.8   Task 12 Develop Action Plans

This task consisted of identifying actions/interventions that could be taken to address the priority issues developed through the PACE EH process and developing a plan to accomplish them. Not all PACE EH survey implementers have reached this step. Only 32 survey implementers (48%) indicated completing this task. Among those who indicated they had completed PACE EH, 77% indicated completing this task.

Case study sites provided more information on this process. Several case study sites had not yet gotten to the action planning step or had ended the process prior to developing action plans.

This step was fairly concrete and was understood by most case study sites. For sites that conducted this step, some developed action plans for all tasks that were prioritized. Others developed action plans for only a portion of priority activities. For example, some sites split into subcommittees around specific issues and then the process continued in each subcommittee separately for each issue. Some subcommittees were able to create action plans while others were not. In other situations, teams brainstormed about actions, but the actual writing of action plans was the responsibility of the PACE EH Coordinator or health department staff.

> Task 12 Develop Action Plans
> - Develop goals and objectives
> - Identify contributing factors
> - Identify possible interventions and prevention activities
> - Identify community assets
> - Identify potential barriers
> - Select and intervention(s)/activity(ies)
> - Determine resource needs
> - Identify potential partners
> - Provide training
> - Develop timeframe
> - Determine measures of success

Some teams developed detailed written action plans and were moving forward with implementation in terms of identifying resources, timelines, project planning, and how the implementation process would proceed. Some teams were moving forward with implementation of actions emerging from the PACE EH process, but had not written an explicit action plan. For example, in one site, team members brainstormed potential actions and were tasked with identifying the feasibility of these ideas between meetings. Team members would report back to the team, and then selected feasible activities were undertaken. In a few sites, once action plans had been developed, a new team was formed to undertake implementation and further develop the plan.

Changes to task. A few sites had a slightly different approach to action planning. One site had team members work on developing interventions early in the process to help engage them in the process, *"We started action plans early on purpose; people were very enthusiastic and wanted to do something."* Another site included potential actions in its issues profiles so that team members would start to focus on what could be accomplished earlier in the process. These actions were

then revisited at the actual action planning step to make decisions about which to select and how to accomplish them.

4.6.9   Task 13 Evaluate Progress

This task was to evaluate progress in terms of conducting the PACE EH assessment and also the evaluation of the activities implemented from PACE EH. Relatively few (22) PACE EH survey implementers reported completing this task (33%). Fifty-seven percent (57%) of those who indicated they had completed PACE EH indicated conducting this task.

Case study sites provided information on this task as well. Several sites indicated that they had conducted formal or informal evaluations of their process in conducting PACE EH. Some felt that documentation of the PACE EH process for NACCHO grants aided in evaluating their progress.

However, only one site to date indicated conducting some evaluation activities around implementation of a PACE EH action plan. This evaluation was around monitoring of use of a website created to disseminate educational information on a particular priority topic area. Regarding evaluation, interviewees from different sites noted,

> Task 13 Evaluate Progress: Evaluate Progress and Plan for the Future
> - Agree on the questions to be answered by the evaluation
> - Evaluate the success of the assessment process
> - Begin preparations for ongoing community-based environmental health assessment activities

> *The evaluation that we did was like at the end of certain parts, we evaluated how well we ranked the issues, or how well we set priorities... We haven't really done any evaluation of the implementation of our action plan.*

> *We evaluated the quality of the seminars,... but not the plans of the key committees.*

> *Evaluation of progress, we did that to a point... but not in the true sense of developing the progress of an action plan since we didn't get to that point.*

Several sites indicated that they were currently at Task 13; planned to conduct additional outcome evaluation after more progress was made on implementation of action plans; or would revisit this step as they recognized the need for more outcome data to demonstrate to potential funders and policy makers. Respondents in several sites noted that the importance of collecting evaluation data had been impressed upon sites during recent PACE EH leadership summits. One site thought that when an environmental report card was instituted, one of the actions developed through the PACE EH process, it would help to evaluate progress on PACE EH priorities by tracking environmental indicators over time.

Changes to task. Few sites conducted this task particularly in terms of evaluation of progress of action plans. Additional sites might conduct this step in the future as implementation of action plans proceeds.

4.7 Priority Environmental Health Topics

As an outcome of completing the 13 tasks (or some portion thereof), PACE EH sites selected priority environmental health issues. Survey respondents were asked to list, in an open-ended response format, the specific environmental health topics chosen as priorities for action within their sites. As summarized in Table 4.13 below, respondents listed a total of 143 priority areas including topics falling under broad environmental categories such as air quality, water quality, and waste management as well as priorities targeted to more specific health issues such as injury prevention, lead contamination, food safety, and physical activity. There is some overlap between categories due to the fact that sites may have chosen to conceptualize and target their actions in different ways. For example, physical activity, land use/sprawl, physical infrastructure, and pedestrian safety may all be priorities targeted to an objective of improving the built environment in order to improve the physical health of the community through increased opportunities for exercise. On the other hand, land/use sprawl may be more closely aligned with the objective of improved water quality in that higher density areas with more paved roads and parking lots are likely to put an increased burden on the water resources of a given area.

For each priority topic, respondents were asked to indicate whether it was already a priority for the local health department or whether it was a new priority resulting from PACE EH. Priorities were split roughly in half in terms of whether they were new or existing priorities for the health department.

For each priority topic, respondents were also asked to indicate whether specific actions related to the priority topic area had begun. As indicated in Table 4.13 below, implementation has begun for the majority of action plans related to these priority environmental health topics.

Table 4.13 Priority EH Topics Indicated by Respondents

Priority EH Area	Listed as a Priority	Priority New/Existing within HD			Implementation for Priority Begun		
		N	E	UK	Y	N	UK
Air Quality (outdoor, indoor, asthma, allergies)	17	9	6	2	9	1	7
Waste Management (illegal dumping, litter, recycling, landfill issues, hazardous waste including household hazardous waste, hazardous waste spills)	21	14	7	0	11	4	6
Water Quality (well water, surface water, ground water, drinking water)	22	6	16	0	15	3	4
Water Management (drainage of water and rain, roadway flooding problems)	2	0	1	1	0	0	2
Sewer/Septic (installation, failing or illegal septic systems)	7	1	6	0	3	1	3
Physical Activity (walkability for low-income residents, kids walking to school, adult leisure walking, greenways, walking and biking trails)	3	3	0	0	3	0	0
Land Use/Sprawl (smart growth)	5	4	1	0	2	0	3
Physical Infrastructure (street lighting, historic signage, street name change, speed bumps, sidewalks, paved roads, bus stops, parks, fire hydrants, bullet-proof casings for street lights)	10	6	2	2	8	1	1

Priority EH Area	Listed as a Priority	Priority New/Existing within HD			Implementation for Priority Begun		
		N	E	UK	Y	N	UK
Pedestrian Safety (raise awareness)	1	1	0	0	1	0	0
Injury Prevention (violence prevention, residential injuries, workplace safety, accidental injuries in children)	5	3	2	0	3	0	2
Housing (upkeep, safety, empowering residents to raise housing issues)	5	2	0	3	4	0	1
Lead Contamination (lead poisoning, lead contamination)	3	2	0	1	1	0	2
Abandoned Structures (vacant houses, cars, buildings, lots)	5	3	2	0	0	3	2
Industry Safety (food safety, clean and safe pools, motels, and daycare)	7	0	7	0	3	4	0
Household Cleaners, Fertilizers and Pesticides	2	2	0	0	0	0	2
Carbon Monoxide Poisoning	1	1	0	0	0	0	1
Animal Control (unleashed dogs)	3	2	0	1	0	2	1
Pest Control (vector borne diseases, rodents and insects, mosquitoes)	7	0	6	1	3	0	4
Overgrowth (weeds and overgrowth, overgrown ditches)	2	1	0	1	1	0	1
Coalition Building (lack of communication within community)	1	0	1	0	0	0	1
Education (fish contamination, environmental education, community health fairs)	4	2	2	0	4	0	0
Physical Health Issues (teen pregnancy, substance abuse, cancer, birth defects)	7	3	2	2	5	1	1
Emergency Preparedness	1	0	1	0	0	0	1
Noise Pollution	1	0	1	0	0	0	1
ATV use	1	0	0	1	0	1	0
Total	**143**	**65**	**63**	**15**	**76**	**21**	**46**

4.8   Technical Assistance

Case study interviewees were asked about the kinds of technical assistance (TA) they utilized while going through the PACE EH process. Interviewees used a variety of technical assistance including: direct contact with NACCHO, CDC, and the Green Mountain Institute; attending PACE EH trainings and conferences; networking with other PACE EH sites; utilizing expertise within the CEHA team; utilizing outside experts.

4.8.1   Technical Assistance to Pilot and Demonstration Sites

PACE EH pilot sites received a different level of TA compared with demonstration sites and later sites that were part of neither the pilot nor the demonstration projects. By definition, PACE EH pilot sites were implementing PACE EH in an early stage of development before the *Guidebook* in its current format even existed, this means that they did not have the same resources and tools as later sites.

> *They gave us lots of technical assistance. It was a lot of different varieties and I couldn't even begin to remember it all. It was a learning process for them too, I'm*

sure. They tended to have some technical assistance planned and then we would clamor for this or that and they would knock themselves out to get it for us. So, I have no complaints at all about NACCHO's support for us.

Part of the true difficulty in being a pilot site is that we didn't have a lot of direction. We were committed to a timeline of 18 months. ... Because we were a pilot, not all the tools were there yet. We didn't have some of the templates and directions that are in the Guide now. We were feeling our way along.

Several interviewees indicated that NACCHO had a contract with the Green Mountain Institute to provide training to the pilot sites. Each of the pilot sites was offered training and could pick the type of training that they wanted. The kind of training chosen ranged from risk assessment, to conducting focus groups, to ranking issues, to whatever was needed. Interviewees from pilot sites, demonstration sites and other sites were universally appreciative of the TA they received from Green Mountain Institute.

I feel like the people providing technical assistance gave us lots of good information. We started with nothing and built up from there.

Through PACE, I got to attend three different conferences, one focused just on risk assessment, through Green Mountain Institute. I feel that I am more informed, and this is because of PACE. Because of my level in the organization, I don't get too much professional development, so I am grateful for the training opportunities that our participation in PACE afforded me.

We brought in Green Mountain. They just adopted us. They were so kind to us.

Interviewees reported contacting NACCHO for technical assistance related to the process (e.g., technical assistance on the focus groups) and using CDC for other technical questions. Pilot and demonstration sites were especially appreciative of the support they received from NACCHO and CDC throughout the process. Interviewees from one demonstration site in particular went on to say that the site visits they received from NACCHO and CDC were "*some of the best technical assistance we've ever had in any process.*"

4.8.2   Additional TA from NACCHO, CDC, and other TA Resources

In response to feedback received from PACE EH pilot tests, NACCHO has developed a number of additional TA resources. An informal Peer Assistance Network was established for technical assistance and information exchange, and inquiries about implementing PACE EH are sometimes referred to people in the network. NACCHO also compiled a record of case studies called *PACE EH in Practice*. The pieces in this compilation are generally fairly short, to keep them from being unwieldy. NACCHO also created a "resource tool-kit," consisting of materials such as meeting agendas, invitation letters, surveys, sample press releases, action plans, speaker notes to go to local community meetings, and assessment survey instruments.

Interviewees reported direct contact with CDC, NACCHO staff, and other TA specialists.

There were two guys who came from the CDC - that was a real plus. I'd recommend that in the future. It put a real face on the process.

[Our NACCHO contact] did a workshop of her own. She is good. In terms of other outside support, we had a contact at Turning Point. We had these relationships at NACCHO and we had our CDC fellow and his contacts at CDC.

4.8.3   PACE EH Training Sessions

Many interviewees reported attending PACE EH training sessions prior to beginning the PACE EH process themselves. They said that this training was valuable in getting them to think about how PACE EH could work in their communities. NACCHO has a senior analyst who focuses his activities on tracking progress of NACCHO funded PACE EH sites and reporting on their experiences. He has been a primary presenter for PACE EH training activities, conducting training sessions ranging from an hour-long overview to more intensive efforts lasting up to a day or more. Interviewees typically reported having attended some type of training or presentation prior to implementing PACE EH. Much of this training was organized through NACCHO but training was also coordinated on a regional level and was occasionally targeted to adaptations of the PACE EH process.

I was fortunate enough I got to participate in one of the NACCHO training programs on PACE and went to Washington, DC that year and got to listen to some of the demonstration sites give project reports and talk about that. That was very good from my standpoint.

[A PACE leader] was the facilitator of the training session and there was another PACE site present at the training. The training started us thinking about the process. The first step about engaging the community got my interest.

Communities in Montana attended a training on PACE EH tailored for use in conducting local needs assessments. These sites also had technical assistance available to them that could help them through the PACE EH steps if needed. One interviewee reported that this type of TA was particularly useful for targeted questions or when there was a specific issue they were trying to resolve.

The state of Alabama is another example where an effort was made to coordinate implementation of PACE EH in multiple sites across a single state. The University of Alabama-Birmingham (UAB) coordinated with the state health department to identify 10 environmentalists who could serve as local PACE EH project developers. Prior to implementing PACE EH, most of the interaction these environmentalists had had with the community was around enforcing regulatory issues or conducting inspections and not public health practice. UAB developed a four day training to address these gaps and cover training on the PACE EH curriculum. Each project developer had a university partner in Birmingham who was able to assist them in getting their project up and running and provide technical assistance throughout the process.

4.8.4   Contact with Other PACE EH Sites

The opportunity to learn about other PACE EH sites experiences implementing PACE EH through PACE EH conferences and other networking opportunities was frequently lauded, by implementing sites, as a key resource for technical assistance. PACE EH trainings was one venue that afforded the opportunity for sites implementing PACE EH to hear about other sites' experiences and develop relationships with other sites that they could tap into if they "got stuck" implementing PACE EH.

> *I went to a PACE training in Vegas I believe. A woman from [other state] was a part of the training. She was excellent and she did an overview of what they did. She was a lot of help as I went through the process. I think that might have been with the indicators, [that I spoke with her over the phone].*

> *We certainly got some advice from those who had used PACE EH in piloting. Initially I had the feeling that we were exploring new ground. I think it has been tremendously helpful for those involved to have opportunities to attend regional workshops.*

> *I went to a meeting in Kentucky for PACE and there was a person there from Florida who was a full time person. I was amazed at how much they had been able to achieve.*

Many sites reported working closely with other sites implementing PACE EH in their same geographic region or state to share resources and strategies.

> *To have people who have been involved previously in PACE EH in your start-up is a big help. It is a big help to have such persons at least serve in an advisory capacity.*

> *[A PACE EH leader] came down from [a neighboring state] when we were just getting started. As we moved forward, [he] provided guidance for us until we felt we could move ahead on our own. [He] especially helped us engage people in the planning process and move beyond the planning stages.*

Although many implementers looked to other sites as a source of technical assistance and information while implementing PACE EH, not all implementing sites did so or found this a fruitful resource.

> *We didn't have any contact with other PACE EH sites. We did get a few emails sent to us, but it really didn't apply to us. They did it a different way and were at a different step in the process. I often thought that it might be helpful to contact other groups, but I never did. I was caught up in just keeping up with our group.*

We talked to some people who talked about what they did, but they talked about in such far away detail I didn't understand it. I'm the kind of person that I need instructions.

4.8.5   Expertise within CEHA Teams

Interviewees frequently reported that they had all the needed expertise within the committee itself and didn't need to seek outside sources for additional technical assistance. Expertise reported within the committee included expertise in groundwater, air quality, food safety, solid waste collection, septic, air pollution, stream sampling, and technical expertise in identifying datasets, among other things.

Several people on the group are very technically competent. These include a food safety consultant, EPA staffer, people from other city agencies with specialized knowledge. We probably have more technical expertise at table than just regular citizens.

We fortunately had some people to assist us on the validity of the survey...to make sure your outreach or your survey is going to get a representative sample. Fortunately, we had some people involved who do that for a living kind of looking over our shoulder. So, it seemed to work out for us. If we didn't have some of those folks sitting at the table, I'm not sure we could be sure about the validity of some of this stuff.

The technical assistance was coming from within the group. We needed to have statistics expertise and survey development, and it just happened.

Everybody brought something to the table-at least most of the people who were in government or in business or something had something to give the group.

4.8.6   Presentations from Local Experts on EH Issues

Many sites reported bringing in outside experts to provide background and education on specific environmental health issues. Topics included hazardous materials, emergency preparedness, open space planning, regional ordinances, risk communication, landfill to talk about disposal flows, pesticide run-off, growth issues, oil extraction, asthma triggers in homes, among others.

We just invited people that had an environmental interest to come in and talk with us and it was to be educational. We had people come in from the University. We had people come in from the Conservation commission, the DNR, the water department, the utilities. We brought in speakers to educate us first of all so that we would have some idea how to make recommendations... They were a way to draw people in. We tried to keep this interesting and informative and get people's ability to think outside the box on how we might do things.

Then we got input from our technical people at the state or local level for each profile. We had people come in from the university, from the cooperative extension, etc.

We didn't look for technical assistance from the national level. Most what we needed was local data and ideas. [Our contact] was helpful in providing model ordinances from other communities in [our state]. We do have some local issues related to air pollution like barrel burning, outdoor wood burning furnaces, used to heat homes. This is common in our rural areas.

They just went down the list [of issues]. If nobody on the group had the specific expertise, we would try to bring in somebody who did and they would just come to that one meeting. They'd be invited to stay. Sometimes they got real excited and they stayed and kept coming.

The speakers who came to our meetings helped show the importance of those issues, and then the group took it from there. We had to educate ourselves first.

An engineer from the oil and gas company came and gave a presentation on extraction and how they try to protect water quality. We learned a lot from that. That was someone that didn't come to the meetings.

We did occasionally bring in outside experts such as on West Nile Virus. But we went on the premise that we represent the community.

There were two different teams—the original group, and then those doing the work. Expert advice was sought and then they left. They were available when needed.

There were a few cases where it was hard to find expertise in some things. In the end when I think about the air pollution issues, we had somebody who was basically there to answer the questions and write up the summaries of whatever we were talking about, radon or particulate air pollution, or ozone or whatever. So, [a representative from the county] that actually maintains that kind of network of 10-year monitors... was here for a meeting or two. People were invited sometimes for a meeting or two to help answer questions if the sub-committee needed it.

4.8.7   Trainings on Special Topics from Outside Experts

In addition to bringing in local experts to provide information and education related to specific environmental health topics, a few sites organized presentations to provide training on specific issues related to the PACE EH process. More than one site brought in an outside trainer to conduct trainings on environmental justice. One site's training focused on fundamentals of environmental justice for PACE EH team members in order to increase awareness in the community. This training included a policy course aimed at individuals from the health department and other public agencies as well as an advocacy session geared to CEHA team

members and other community members. It also included the history of environmental justice as well as stories from the trainers work around the U.S. in environmental justice in order to show how it can be successful. One site held a training session on social marketing, which helped to inform the development of a "*littering can hurt*" campaign.

One PACE EH pilot site developed a series of three text-book based trainings including biostatistics, toxicology, and community assessment. As one community member described it, "*we were all put in different groups and asked to create questions. We were in our books, learning together, studying together to come up with these questions.*"

4.8.8 Technical Assistance for Specific Tasks

Several implementing sites brought in outside help for assistance on specific PACE EH tasks. It was not uncommon to hear sites talk about using technical assistance related to developing indicators or conducting their community survey. One site hired Green Mountain Institute to conduct a 1-day workshop on developing indicators (Task 7). Several sites sought professional help to develop the survey and/or utilized a nearby university to implement the telephone survey. Interviewees reported high satisfaction with the technical assistance they received related to specific tasks.

> *We used outside technical assistance for the web survey. How useful was it? Priceless! We wouldn't have succeeded without it.*

A couple of sites reported utilizing an outside facilitator to help with the process, with mixed results.

> *I do think that their grossest mistake was having an outside facilitator. He was pretty much useless to the process. It would have helped if the health department staff had lead it. You wouldn't want someone who is perceived as having an agenda, but you do want to have someone who doesn't have to stop every time a technical question comes up.*

Other sites were very satisfied with the outside facilitation expertise they brought in.

> *We were trying to draw [community members] into process, not like engineers who wanted to design it as a strip of asphalt down the way. So we finally got them to engage in a community oriented process. And we hired them again to facilitate this process. We didn't quite know what we wanted them to do, and they didn't know what we were about, but we came together.*

> *They provided expertise on how to facilitate groups. The woman who ran yesterday's meeting has training on facilitating groups and I thought she'd be a great resource for that.*

4.8.9   Other Technical Resources Local to the PACE EH Site

Interviewees reported tapping into their own existing networks for resources and support in implementing PACE EH including within the health department, other government agencies, web sites, local community groups, networking contacts, the federal government, and national organizations, among others resources. Other health department staff provided additional resources to answer questions or for outreach to other state or local agencies to help the group along, to provide epidemiological support or to "crunch numbers."

> *I don't think we did anything without looking to see what was already out there. We looked at what other people had done before, what data there was. We had a lot of concern about fish consumption so we wanted to see what the CDC had to say about it, what some other more radical groups had to say about it—like the Angler's Association and other associations*

> *We pulled in local expertise as well, mostly related to environmental justice. We tapped people at the universities. All of our help both national and local was based on personal relationships. I hate to call it TA because it was all initiated by us. We called people when we needed to.*

Another site implemented a passive ozone monitoring program in low-lying areas as part of its air quality sub-committee, in partnership with the National Park Service and the Research Triangle Institute, to understand air quality in other parts of the county. The National Park Service provided significant in-kind contributions to this project including hardware which was shipped in from another state. Examples of local technical resources are provided in the following quotes:

> *The National Park Service has been at the forefront— they have been a fabulous resource for us. We couldn't have done everything that we've done without them. [Our contact] has bent over backwards to see that we have everything that we need, and that what we do is scientific enough so that it can be compared with what the Park is doing.*

> *DNR has a regional office [nearby] and we have a strong working relationship with them. Along with the Department of Conservation and the State Health Department. They send members to our meetings. They help with our projects. A fair number of technical specialists from the university, who are readily available and willing to work with us.*

> *I've been tapping resources to get information on the CARE grants, EPA, etc. to get some technical assistance for formulating groups, identifying key stakeholders, and to find out if they have knowledge/ideas about priorities.*

5 Intermediate Impacts on Agencies and Communities

Survey results identified 66 sites that have or are currently implementing PACE EH. Of these, half have completed an action plan and the majority of these have at least begun implementation of one or more actions. Nevertheless, because PACE EH is relatively new and no sites have had the opportunity to carry out activities over more than a few months or years, the present assessment of impacts is limited to intermediate impacts that might be apparent during a relatively short time frame. Based on the early experiences of the PACE EH pilot sites, the impacts that were anticipated included improved leadership, new professional partnerships, new work skills, confidence to take on large initiatives, broader and more flexible working definitions of environmental health practice, local environmental health database development, and new relationships between local public health agencies and communities. Survey respondents were asked to indicate the extent to which they had experienced a range of impacts in these areas. Impacts were also discussed with public health professionals and community members participating in the 24 case studies.

In this chapter we first summarize the intermediate impacts listed by survey respondents. We then describe in more detail specific types of impacts, relying heavily on the detailed narratives provided by interviewees in the case study sites.

5.1 Overall Impacts Reported by Respondents

The survey of PACE EH implementers asked a limited set of questions about the intermediate impacts that they had observed from their involvement with PACE EH related to impacts on the community, impacts on the health agency itself, knowledge and evaluation efforts, and support for environmental health programs. One negative impact was included in the list, loss of support for existing environmental health programs and activities.

Table 5.1 shows the average response on a scale of 1 for "Strongly Disagree" to 5 for "Strongly Agree" for each of these impacts. The overall average response for each statement is provided as well as the average responses for two groups of respondents based on the progress of their implementation. Specifically, we looked at those that have completed Task 12 (30 of 33 sites responded) compared to those that have not (23 of 33 sites responded). Of the 66 sites that indicated that they were implementing PACE EH, 33 of them have completed Task 12, development of an action plan. Most of these (27) have begun to implement at least one of their actions. Table 5.1 shows the average responses for all PACE EH implementers. A separate analysis restricted to PACE EH efforts led by public health agencies (which represents nearly 9 of 10 implementers) yielded nearly identical results.

Table 5.1 Impacts of Implementing PACE EH

Impact	Average Response*	Average Response by Implementation Progress	
		Did Not Complete Task 12	Completed Task 12
Stronger contacts and networks with key players in the community	4.2	4.0	4.3
Resulted in stronger community collaboration	4.2	4.0	4.3
Increased awareness of EH topics of concern in the community	4.3	4.1	4.5
Influenced other planning efforts in the community	3.7	3.7	3.6
Increased trust between different key players in EH	3.9	3.9	3.9
Improved media attention for EH issues	3.6	3.4	3.8
Positive Community Impact	**4.0**	**3.9**	**4.1**
Strengthened the perception of the health agency as a leader in EH	4.3	4.0	4.4
Strengthened the health agency focus on environmental justice	3.7	3.5	3.8
Changed the health agency's EH priorities	3.3	3.2	3.3
Ongoing EH planning	3.7	3.7	3.6
Changed the way the health agency defines at-risk populations	2.9	3.1	2.7
Positive Impact on Health Agency	**3.6**	**3.5**	**3.6**
Improved knowledge and skills of participants in EH issues	4.3	4.2	4.4
Improved evaluation efforts for EH	3.6	3.6	3.7
Improved knowledge and skills of participants in collaborative processes	4.1	3.0	4.3
Improved Knowledge and Evaluation Efforts	**4.0**	**3.6**	**4.2**
New programs or projects being implemented	3.5	3.4	3.6
Increased funding for EH	2.5	2.6	2.5
New databases being developed	3.4	3.5	3.3
Development of new indicators	3.4	3.5	3.2
Increased support for existing EH programs & activities	3.4	3.5	3.3
Political support for implementing the plan	3.3	3.0	3.5
Improved Support	**3.3**	**3.3**	**3.2**
Loss of support for existing EH programs & activities	1.8	2.1	1.6
Negative Impacts	**1.8**	**2.1**	**1.6**

* 1= Strongly Disagree; 2=Somewhat Disagree; 3=Neither/Not sure; 4=Somewhat Agree; 5=Strongly Agree

Overall, the positive impacts associated with PACE EH implementation were higher among those that have completed the process at least through the development of action plans, although impacts are still apparent among those that are not as far along in the process. The largest

impacts are in building networks and collaboration, improving knowledge and skills in both environmental health issues and collaborative processes, and in increasing awareness of environmental health issues within the community. Respondents also credited PACE EH with increasing trust between key players in environmental health within the community and in strengthening the perception of the health agency as a leader in environmental health. The impact on trust is apparent among all implementers, regardless of progress. It appears, however, that the health agency gains additional status as a leader in environmental health when the process is completed through the development of an action plan.

Implementers did not indicate that PACE EH has played a strong role in building support for existing programs, but neither did they think that it has led to loss of support for those programs. Little support was provided for the idea that PACE EH changed the environmental health priorities within the health agency or that it has led to new programs being developed. Somewhat stronger support was given to the idea that PACE EH has influenced other planning efforts in the community.

Implementers did not agree that PACE EH has changed the way the health agency defines at-risk populations, nor did they agree that it has led to increased funding for environmental health. It should be noted however, that these responses represent averages. Impacts clearly vary by community. The range of responses for all of the impacts listed was from a low of 1 or 2, to a high of 5 "Strongly Agree."

5.2   Impacts on Environmental Health Priorities

Survey respondents were asked to list the priority topics that emerged from their PACE EH process and to indicate which ones were existing priorities and which were new. In total, respondents to this question indicated that they had 170 priority areas (143 of which were specified as summarized in Table 4.13). Of these 170, respondents indicated that 69 were existing priorities and 66 were new priorities, nearly an equal split. No response or a response of "Don't Know" was given for the remaining 35 priority areas. This result gives stronger weight to the idea that new environmental health priorities emerged from the PACE EH process than is indicated in the table above. One possible interpretation is that even when new environmental health issues are identified and prioritized through PACE EH, respondents do not think that this has or will translate into a change in health agency priorities. This idea is supported by the following statement from one of the interviewees: "*We have had a greater impact on the way the health department thinks about priorities than on the priorities themselves.*" In this site, PACE EH was instrumental in a reorganization of the health department to create a division called Community Health Promotion Partnerships and Planning. The purpose of this new group is to encourage and strengthen community collaboration and partnership. Departmental management credits PACE EH with this new approach to integrating people across the department and building a community partnership. Another site described the impact of PACE EH as "*a difference in emphasis but not priorities.*"

Another explanation for this discrepancy may be that PACE EH succeeded in raising issues to the forefront that are not within the jurisdiction of most health agencies. Examples of these issues include air pollution (often handled at the state level rather than the local level) and land use

planning, typically the jurisdiction of the land use department. In many sites, it was not clear what role the health agency might play in implementing action plans related to these priorities and thus respondents were reluctant to say that these priorities had resulted in a change within the health agency. A community member put it this way: "*The proof will be in the implementation of the action plan.*" A public health professional lamented the lack of flexibility to target new areas. "*We don't have a lot of flexibility in the health department because we still respond to the same regulations.*" Another site echoed this theme of lack of flexibility in setting programs, but nevertheless described PACE EH as facilitating a different approach to these programs. "*We can't change in the short run the way our programs are established. The are driven by rules and regs. But now we look for opportunities for the community to be involved in programs.*"

New priorities. Nevertheless, many interviewees, both community members and public health professionals, stated that a major impact of PACE EH was to expand the view of what constitutes environmental health. For example, in more than one community interviewees reported discussing and prioritizing public safety, walking, and the creation of pedestrian-friendly places.

> *The discussion around this issue identified stop signs and other pedestrian-friendly measures that you don't normally think of as within the environmental health arena... What the PACE process showed, however, is that environmental health can also include the whole planning and zoning process, and trees, and walking paths.*

> *Finding these untraditional environmental health issues like street lighting or abandoned houses—learning how those are linked to public health—was very eye opening to me. It amazed me how they were linked to each other.*

Land use, which is typically not an area of activity for health departments, was frequently raised as an issue within PACE EH.

> *Land use probably would not have been identified as a priority without the PACE EH process. Not everyone views these [land use] issues as environmental health. Part of our work has been to become educated and to educate others about the linkage between land use and environmental health.*

> *Without the PACE process and the public health focus we would [have given] little thought to sprawl, smart growth, air quality, physical activity for good public health. There just wouldn't be any thought to any of those other things to speak of.*

> *We wouldn't have sprawl on our radar screens without PACE... the built environment.*

Other nontraditional priorities that rose to the surface included stray animals, violence prevention, and ATV safety.

Elevation in status of existing priorities. PACE EH also served to elevate some issues to a higher level of priority that were within the health department jurisdiction to address. Examples given included hazardous waste—"*We wouldn't have taken on hazardous waste without having done PACE because we get more complaints weekly on air or water topics*"—and water quality —"*The DH may not have realized the extent of the threat to water quality without PACE.*" Several people noted that the health department, through better engagement with the community, came to understand the issues in the community in a way they had not before—"*It was a reminder that what you think is important isn't necessarily so to the community.*"

> *I don't think we, the people who are part of that environmental fraternity, would have thought that... things like fish consumption were not on our minds, yet it's a huge thing for the community. So that came out of the PACE process and it would have never been anything that we would have focused on otherwise.*

Another site described the issues as the same, but the approach to them as different: "*The health department would probably not have approached it in the same manner, we would have approached it as a regulatory project. So that was different.*"

Support for existing priorities. Clearly many issues that made the priority list were existing priorities, some with and some without programs in place to address them: "*I think what happened is that we identified that the issues that we are focused on are really the issues that the residents care about.*" In these cases, the primary impact of PACE EH has been to increase awareness of the issue and to provide stronger support for addressing them. As one public health professional stated: "*The priorities we developed might have been chosen without PACE, but there would have been less emphasis, less study, and less backing for them.*"

In a strong testament to the potential power of PACE EH in providing support to address environmental health issues, one public health professional stated:

> *The priorities in the area are so overwhelming that anybody that went in there would have probably come to the same conclusion. But the advantage of PACE is that it has already brought the people together and they already have more political clout. Due to this project they probably stand a chance of actually getting something done.*

5.3   Local Health Agency Impacts

Among the stated goals of PACE EH are strengthening the leadership role of public health agencies in environmental health and increasing their capacity to perform the ten essential environmental health services. Capacity has several dimensions, including improved knowledge and skills, new perspectives, and increased support for both new and existing programs. As shown in Table 5.1, PACE EH has had a positive impact on health agencies, especially through an increased perception of the health agency as a leader, and by creating stronger networks, collaborative relationships and trust among key players in the community. Some evidence is provided for PACE EH as a positive force in supporting new and existing programs, although the

evidence was not as strong as for the other impact areas. The case studies provide additional information about the impacts of PACE EH on health agencies.

In the case studies, public health professional interviewees were asked to reflect on the impact of PACE EH on their capacity to do the 10 essential environmental health services. Those most often mentioned were in the policy development part of the wheel (Inform, Educate, Empower; Mobilize Community Partnerships, Develop Policies) and in the Assessment part of the wheel (Monitor Health; Diagnose and Investigate). The portion of the Assurance part of the wheel most often mentioned was Assure Competent Workforce. Additional capacity to Enforce Laws was mentioned by only a few. Public health professional interviewees were also asked to identify other ways in which PACE EH had affected their department, including new resources and new skills. The primary findings from these interviews are presented below. A copy of the wheel is included in Appendix D.

Stronger community partnerships. Case study interview data provide strong support for PACE EH as a vehicle for building stronger relationships between public health agencies, other agencies with an interest in the environment and health, and the public. These relationships are between different jurisdictions (e.g., city and county), between departments or units within local government (e.g., health, environment), and between government agencies, the public, and the Board of Health. Two interviewees summarized this well in the following statements:

> *There are so many ways that governments, both local and state and federal, can isolate themselves. This was one to me that successfully really brought together the idea that they could work together.*

> *We've brought people together that used to work in silos. The area planners did their own thing…public health did its thing and the environmental people were doing their own thing…We're actually making those connections now and bridging environmental health people, public health people, and bringing it all together.*

One site particularly mentioned reconnecting with the environmental protection community as an important consequence:

> *Public health people have been aware of the disconnection between the environmental protection and public health and that plays out on a local level in relationships between the state and the environmental regulatory agencies. We just weren't connected and haven't been since the EPA's split off from public health in the early 1970s. This gave us a way to get EPA people to the table with us to talk about environmental health.*

One interviewee warned of the potential for negative impacts if the ball is dropped.

> *Public health has to link up with communities. It is critical. But if they do that and fall on their face then it is a negative. My opinion of the health department in this community is now worse than when I started the process.*

More competent workforce. Several credited PACE EH with enhancing the ability of staff to interact with the public, and with increasing their cultural competency, two elements of Assuring a Competent Workforce, one of the ten essential services.

> *Competence is not just technical issues, it's also using the tools of current public health practice which includes community mobilization, pulling together partners and being able to facilitate meetings, presenting issues to the community which we are now a lot better at than we were then. It definitely raised our competence level.*

> *It has also had an impact on assuring a competent workforce. It has enhanced our cultural competency. We have had people work for the county who would not normally have wanted to work for the county and they have taught us a lot about cultural competency along the way.*

> *We've learned group facilitation skills thanks to the trainer we brought in to teach us how to coordinate groups.*

> *It has broadened the way I think about hiring employees.*

> *Very much did we see both the collaboration and the leadership abilities of our staff increase through this process.*

Enhanced professional networks. Many interviewees described a stronger network of individuals who they can call for information, to collect data, or just to discuss a new idea.

> *It has built an association of people that are now involved with the health department. Now I can call them up and bounce ideas off of them. Normally I would be more leery of doing something like that. There is a feeling of trust.*

> *I have contacts now that I would never have made except through PACE. I know who to call now.*

> *We did get some new data through the relationships. Now I know who to go to about air pollution.*

> *We have GIS data that we can use. This was a direct outcome of the PACE process. We asked the people who normally collect these data, 'hey, can you start collecting this kind of data?' So they added it in.*

New knowledge. Another side benefit of PACE EH was a gain in knowledge among staff about a greater variety of environmental health issues: "*We were kind of educating each other at the same time. They don't really talk about that in PACE but that's really a huge side benefit... you gained a lot of knowledge from everybody.*" New knowledge came about both through interactions on the committee and through the technical assistance provided to the team.

Interviewees also discussed their role in sharing their knowledge as an outcome of their involvement with PACE EH. Examples include sharing information at national workshops (e.g., APHA), nationally coordinated regional trainings (e.g., NACCHO), and locally coordinated workshops. One site mentioned an interest in including some of their work in toxicology in the local school curriculum, an idea that was developed by teachers involved in the PACE EH committee.

Enhanced credibility and visibility. Many interviewees talked about gains for environmental health in terms of visibility and understanding. They believe that it has had an influence on creating greater awareness about the services that are offered as well as the constraints that they operate under, as indicated in such statements as "*It's given some people better knowledge of the health department. The health department is not just for a shot or primary health. They are also for the environment.*"

It has also led to respect and credibility, as evidenced in statements such as "*It has given the health department credibility*" and "*I am strongly of the belief that this project has enhanced people's understanding and respect for the public health service.*"

Other statements that attest to the change in relationships with the community include the following:

> *When they saw that we could really do something with this assessment and could do something they wanted, I think they definitely trust the government more and feel comfortable communicating with officials.*

> *It raised the level of public awareness. And it makes it easier for us to enforce laws when the community understands why the law is there.*

> *The community has traditionally seen us as a regulatory agency around environmental issues that would take them to court. It took a while to gain trust, and I never quite overcame that impression with 100% of the community.*

Support for environmental health programs. Types of support for environmental health that interviewees attributed to PACE EH include increased capacity to attract new grant money and other financial resources, increased ability to attract personnel, opportunities to get students involved in special studies, connections to new data resources, and better support from policy boards.

Regarding new financial resources, sites pointed to a number of new resources that they linked directly or indirectly to PACE EH. This includes several successful applications

to EPA, a successful bid to get a statewide grant called the Environmental Health Tracking Network, and an application for a Healthy Homes grant. One site specifically described PACE EH priorities as instrumental to the health agency becoming involved in water and air quality, both of which were new priorities for the agency, which in turn positioned them to apply for and receive an EPA grant. One site specifically talked about PACE EH helping them to become more proactive and be on the forefront of funding.

> *We'll probably move into the more total clean indoor air and the lead contamination will become more secondary. We're trying to make a transition and I think this helped us to make that transition, to keep ahead of the grant funding, the dollars, and the priorities of the community.*

In several PACE EH pilot and demonstrations sites that received support money, agencies were able to hire additional personnel. In sites without direct support, new personnel was not generally an outcome of the process, but in two sites, staff indicated that having PACE EH attracted a CDC public health prevention specialist. Some PACE EH sites were also successful in getting university partners to provide resources, including students, to take on additional activities. It was not clear how many of these resources would have lasting impact. One state received support money and was able to use its grant funds to hire a coordinator to assist sites throughout the state.

Access to new data resources was also mentioned by some sites as a result of PACE EH. Several mentioned new GIS data and access to new data regarding air and water quality. Another identified a need for data on the number of homes on public water lines. The health agency has since made significant strides in collecting these data.

Others spoke less in specifics, and more in terms of the health department no longer being isolated, or in terms of increased political support.

> *Now it's not only the HD to implement on its own—they've got more resources to work with…Everybody bought into the priorities.*
>
> *Because the process involved people from outside it is easier to sell and promote programs.*
>
> *We've…seen the power of community in getting BOH [Board of Health] on our side. Scientific evidence pales in comparison to community opinion before the BOH.*
>
> *I think that this process reinforced and validated what came from other plans and projects… This provides justification.*

Lastly, another site described success in getting business sponsors for every event they initiate, including computer recycling event, and an oil event. *"That's the stuff we learned… if we do it on our own it's not going to happen but if we can get businesses or for-profits to understand that*

they will benefit from cooperating—they get their name out—…at the same time, our objectives are met."

Changes in mindset. One of the biggest impacts of PACE EH in many sites came in the form of a reevaluation of the role of environmental health professionals. Many health agency staff described their primary mindset prior to working with PACE EH as regulatory. In many sites, interviewees indicated that PACE EH has helped expand their conception of their role to one that is much broader, and more in line with the essential health services.

> *I think that Environment Health thought of themselves as mainly a regulatory agency and didn't really see that this assessment of the community, taking a look at what's going on, and working with the community was part of their role too.*

> *[Now] for our monthly Board of Health report we [use] the 10 essential services.*

> *The PACE EH process helped us get past constrained thinking: put your heart into what you want, not just what you can afford. It helped create a change in the philosophy of local government.*

> *It has made us sit back and think and prioritize our programs within our division, rather than just focusing on day-to-day activities.*

> *The department is typically more reactive, and this knowledge base allows them to be more proactive.*

> *It got people out of their comfort zone and opened doors to new relationships across agencies. It built trust.*

> *The community expects us to be sharp and not second rate…Getting involved with community raises expectations and fires [staff] up.*

> *The whole regulation and enforcement role that we are accustomed to has changed. We now have the element in this department of community outreach. I'm now going to the planning department technical review committee meetings to work with them. There's a lot of collaboration now and it's all coming under community outreach.*

> *We changed some of our workforce. Two of our EH people have pursued MPHs and one another master's degree… I think the PACE process might have contributed to her decision to do an MPH because it was a broadening experience for her.*

> *More of our EH programs now have some mechanism for community input with regulatory decisions.*

The idea of prevention is not common among environmental staff, their training is in monitoring and enforcement. Policy is not a typical area for them and the process was a little painful.

This change in perspective has led to some changes in ongoing practices, such as new monitoring approaches (developing report cards), more opportunities to engage the public, and better communication and education practices, such as improved web sites.

Not all sites, however, believe that PACE EH has led to changes in practice. This type of change does not seem to have taken hold everywhere as evidenced by the following comment: "*When I look at these things [10 essential services], I don't really think about it as part of my job.*" The key difference may be in how wholeheartedly the department embraced PACE EH. The interviewee who cited a lack of impact went on to say. "*We are just a little project. It may have had that impact if more people were involved.*"

5.4   Community Impacts

Case study interview data provide evidence that PACE EH has led to impacts both on community members that were involved in PACE EH and in the community at large.

CEHA members. Individuals involved in PACE EH described impacts that included greater knowledge about environmental health issues, greater understanding about what public health agencies do, new connections with people, and increased trust between them and health agencies. Example statements include the following:

There is value to volunteering. It allows me to gain access to data sets and also gain an understanding of the local issues.

Being part of this broadened my perspective on environmental health.

More interaction among community groups that didn't realize they had more in common. You would see this from meeting to meeting, with people recognizing common interests and making arrangements to get together outside of the meetings to talk more or do things together.

It gives the community players a level of confidence they didn't have before to learn about new ideas and take these back to others.

I enjoyed learning, opening up my sense of the environmental. It was my own personal journey and it was well worth my time.

The PACE process brought in a lot of elected officials and it brought in a lot of people that aren't part of the "environmental fraternity" of the community. So it got some of the people that had been thinking about becoming involved in environmental activities in the community involved... that has been very beneficial to the community.

It really increased the trust between us and the health department.

Some individuals also described knowledge and skills that they gained that they could use in their other activities: "*I've certainly used the tools that I've gained from this project in other projects.*" For example, a realtor described having a better understanding of radon issues that they could discuss with their clients. A representative from a local industry described taking his newly acquired knowledge back to his company and increasing their focus on evaluating the impact of their activities on water quality, specifically the water they discharge offsite. "*We've changed some practices.*" Another described the benefits to his/her organization of having access to new data and learning about monitoring systems. Yet another indicated that although PACE EH had not changed the programs within his/her organization, "*it has given us a new set of lenses... it has allowed us to consider the human health component [of our program].* A final example, one person described using this experience to focus her own research agenda. "*I might not have applied nor received this grant without [PACE] so it made a big difference to my priorities personally.*"

Community-at-large. Most case study sites did not yet feel that the community-at-large had been impacted as of yet by PACE EH, mostly because "*at this point, the community has not been engaged.*" Among those that had begun to implement their action plans, impacts are beginning to be felt beyond those directly engaged in the assessment process. The impacts among the community-at-large have included an increased sense of empowerment that they can take charge and make improvements in their environment, primarily due to increased responsiveness from organizations who are in a position to improve local environmental conditions, whether this is improvements in low-income housing developments or in street safety. For example, because of PACE EH, in one site "*property managers have come in and fixed some bad problems... they put locks in, added intercoms and fixed a furnace.*" In another, transportation has been added for people who need access to health care.

One site in particular talked about the community stepping up and taking leadership for implementation. "*The health department really has little function in the PACE process except for coordinating and facilitating the effort. The community members have taken over many of the responsibilities of the PACE process.*" This has led to "*ownership and pride in the community.*"

One interviewee described being able to do his job better, not just because the PACE EH process created change, but directly because of the implementation of an action plan. This individual stated that he can do his job (community policing) better because of the neighborhood changes that have directly resulted from PACE EH, namely the installation of additional street lighting. His agency has seen a drop in crime. He has also seen an increase in the willingness of residents to talk to crime stoppers to request changes. According to community members, the neighborhood had been trying to get street lighting for 20 years and were finally successful when PACE EH adopted it as a priority. Now that they have had this success, they are tackling access to municipal water next by waiving impact fees for new connections in the community.

Other changes that were described relate to how government organizations conduct business in the community. For example, in one site, interviewees indicated that there had been a change in the planning and development review process which has the potential to have a major impact on urban sprawl. Similarly, another site implemented changes in the subdivision code. Another was

successful in getting a parks levy passed to create more green space. This levy had failed seven times in a row but was finally passed after the PACE EH process endorsed it. Another site described increasing the recycling options available to residents. Another site was actively working on rewriting the code to increase fines for illegal dumping.

Several sites described better media coverage of environmental issues as an impact of PACE EH along with better mobilization of residents around certain issues, such as litter pickup, hazardous waste disposal, clean up of waterways, and taking better care of home septic systems.

Environmental impacts. Few sites reported that they had proceeded far enough down the path of implementation to have noticeable environmental impacts, although several more saw the opportunity for this to occur in the future. There were some notable exceptions. More than one site said that activities have led to trash pickup. This included two sites that cleaned up trash along waterways, another that has established a regular hazardous waste clean up, another that has seen improvements in the physical environment at a low-income housing complex, and another that had installed street lighting in a neighborhood that was considered unsafe. For most sites, these changes were still in the future at the time of our interviews (2004 and 2006).

5.5   Implementation of Action Plans

Several case study sites indicated that they had begun implementation focused on one or two of their priority issues. As those successfully moved into implementation, they were able to redirect staff resources to the next priority on the list. Other sites languished after completing their action plan, wrestling with the issue of who was really responsible for implementation, is it the convening agency or is it the community group? Only a few at the time of our site visits had tried to revisit PACE EH, reexamining priorities as part of a new or abbreviated PACE EH process.

Our analysis suggests that there are several factors that may contribute to successful implementation of priorities. These include:

- Retention of the PACE EH champion.
- Integration of process within existing decision-making structure
- Funding (grants or business support)
- Relationship of selected topic within existing priorities of health agency

PACE EH champion. Most sites that adopted PACE EH had a clear champion, usually a staff person in a leadership position within the agency. As shown previously in Table 3.6, this stands in clear contrast to those sites that elected not to implement PACE EH. The presence of a PACE EH champion appears equally crucial in the implementation of action plans.

In some case study sites, the PACE EH champion was lost when their position ended or because they retired. In other cases, despite continued interest, when funding that was specific to the planning phase ended, their energies were diverted elsewhere.

Integration of PACE EH in existing decision-making structure. In several sites, PACE EH was described as a "project" that was carried out in isolation, unconnected to the existing

decision-making framework. This type of isolation appears to have a strong negative association with implementation. This situation in particular occurred in communities where the adoption decision was at least partially made at a larger regional or state level rather than at the local level and where the local level agencies agreed to participate in PACE EH but were not the primary movers in adopting PACE EH. It also happened where the process was strongly associated with an individual who lacked leadership within the agency and thus did not have the ear and the support of the existing decision-makers. In contrast, where PACE EH had the support of agency leaders and/or policy makers, and they were engaged in decisions about priorities, the likelihood that they would find support for implementation was much higher. Without this support, action is still possible if the community steps up and takes ownership, a situation that occurred in one site.

Funding. Several sites indicated that the process came to a halt when the money they had used to hire a facilitator came to an end. This occurred with sites that had money through NACCHO and other time-limited sources, such as a CDC prevention specialist or an Indian Health Service pilot implementation grant. When funding ended, this person either left, or had their responsibilities shift. This directly impacted availability of staff to make implementation a priority and to coordinate activities.

Funding has an impact on both the extent and the pace of implementation. Without funding, said several interviewees, partners must piggy-back on existing efforts and "*do what we can without funding.*" With funding, efforts can be more targeted and comprehensive. One interviewee lamented the fact that action plans did not attend enough to the potential costs of implementation. "*We need more information to give our elected officials for their budget cycle so they know what they are budgeting for.*" This same individual wondered if cost shouldn't be included in the criteria for selecting priorities.

Allocation of resources clearly affected the value that community members place on the process and their involvement in it, as evidenced by the following statements.

> *If you put people through the process and you get them kind of worked up to a feverish pace and they come up with some good data, then it just sits on a shelf and there are no resources dedicated to dealing with it, then people are let down. So the next time you need to engage the public... they've lost the trust that you're going to do anything, that you've got the resources to back up what you are going to do.*

> *I think that if you get the community together you are going to get some good ideas, but without funds you can lose the committee, because they will not have confidence that you are what they think if you are not going to help us make it happen.*

Several sites were successful in using PACE EH to help secure additional resources, either in the form of grants or from private businesses. This created a level of excitement among participants and contributed to an assessment that PACE EH had been extremely worthwhile. Others were still awaiting the outcomes of grant applications. "*If we see green we will move forward.*" These additional resources included grants from federal agencies (e.g., EPA, CDC, NIEHS) and

corporate sponsors of specific community events. Some were also able to leverage support from existing programs and grants, such as using CDC funds from a "Heart to Heart" program to help implement sidewalk and park improvements. One site discussed mobilizing the community to raise funds for implementation, but this does not appear to be common, at least at this stage of implementation.

At least one site was successful in making financing changes that helped support implementation. In that site, the county agreed to fund street lighting improvements and was able to do that by creating a multiple taxable street-lighting unit, in which some of the costs were defrayed by property taxes. They were also able to wave or reduce impact fees to bring municipal water into a neighborhood that suffered from water quality problems through a grant obtained with the support of the Civic League.

Priority topic. Several sites indicated that some of the resulting priorities were closely linked to existing health agency priorities. These were the easiest for sites to implement because they had the staff expertise and authority to move forward. For example, one interviewee stated, "*Groundwater is the issue we're in the best position to promote. We have a groundwater program already and because of my position I can pursue this*." Another stated that the health agency was putting resources into revising the county code with respect to illegal dumping "*which only they can do*." Programmatic responsibility, however, was no guarantee of implementation if staff resources were scarce or required expertise was lacking. "*Indoor air quality is our issue, but we don't have anyone on staff that we can take and run with it… We don't have anyone with the right technical foundation to build on*."

Where priorities diverged from existing programs, the challenge was harder. In these cases, the health agency looked to other agencies or community groups to lead the way or to new funding sources that could support a new program or initiative. Discussions included forming public/private partnerships for activities that were of interest to the agency but that did not fall within existing funding priorities, such as a "clean sweep" to collect household hazardous waste.

In some cases, a clear alternate agency was prepared to step forward and take the lead. For example, in one site, a partnering agency stated that "*we'll be responsible for the storm water issues in the action plan*," actions that clearly fell within their programmatic responsibilities.

5.6   Institutionalization of Assessment Approach

At the time of our field visits, very few sites had yet reached the point where they could say with any confidence that PACE EH had changed ongoing assessment practices within their agency. This was evident in the survey responses as well, where the statement that PACE EH had "resulted in ongoing environmental health planning" received only modest support (score of 3.7 where 4 indicated "Somewhat Agree" and 3 indicated "Neither Agree nor Disagree").

A few survey respondents provided comments to indicate that they were revisiting their PACE EH priorities and/or implementing PACE EH again in a different neighborhood or community. During our case studies, a few sites described keeping the plan alive in the sense that when new

opportunities arise, either in terms of new funding, new staff expertise, or other community resources, the plan can be dusted off and used. It creates a state of readiness to take action.

Among our case study sites, only one described doing another complete assessment cycle. This site did an abbreviated process the second time through in which they updated their priorities for the next 5-year planning cycle. To do this, they convened a leadership team which met for four months during which they revisited the information collected through PACE EH and other sources and identified a list of nine priorities. For each of the nine areas, many of which were the same issues identified during PACE EH, a team of experts was convened. Some of these experts were the same individuals who had worked on the PACE EH action plans. These teams were able to look at the previous plans and update them through a series of meetings. In some cases where the issue had not changed, one meeting sufficed to update the plan. The updated plan is now more unified than before, combining both environmental and personal health.

One long-time observer of PACE EH in multiple locations suggested that to help sustain PACE EH it would be helpful to promote PACE EH in multiple locations within a state and to create a support network across these sites. Two states have experimented with this model recently—Alabama and Florida.

6 Recommendations From the Field

Both survey respondents and case study interviewees were asked to provide recommendations regarding PACE EH. They were asked to provide recommendations in several areas, including how to improve the visibility of PACE EH, suggestions for making the *Guidebook* better, additional technical assistance they would like to see from national partners, and recommendations for other communities considering using PACE EH. They were also asked to give their overall assessment of the value of PACE EH.

6.1   Exposure to PACE EH

All survey respondents were asked to provide suggestions to make environmental health practitioners aware of the PACE EH method and its potential benefits. Interviewees in the case studies were also asked for suggestions for how to market PACE EH. Many respondents and interviewees believe that environmental health professionals are already largely aware of PACE EH. However, some indicated that they had just "*stumbled on it.*" Even those who believe that exposure to PACE EH is high, indicate that the benefits and outcomes from PACE EH have not been well communicated. Concrete suggestions provided for improving exposure and for "selling" the concept are presented in this section.

Marketing venues. Suggestions about avenues for marketing PACE EH include a mix of national and state venues. These include presentations and workshops at state environmental health association meetings or state affiliates of APHA, presentations and break-out sessions at national health and environmental health conferences, direct mail to environmental health offices, presentation in academic courses, articles in professional journals, NEHA publications, and inclusion of PACE EH as a best practice in the Community Guide. Several respondents and interviewees cited the importance of working with national organizations that have a strong state and local presence to get the word out, such as NEHA.

Other suggestions include using professional list-serves, marketing PACE EH through the National Council of State Legislators, the U.S. Conference of Mayors, and the National Association of Counties (NACO). Another suggested that environmental agencies and groups be included among those informed about PACE EH. An interviewee from a non-profit organization indicated that "*getting the word out to non-profits like us that do land use development is good.*" One way to do that would be to target Partners for Smart Growth; The Funders Network for Smart Growth and Livable Communities; Smart Growth America; Smart Growth Network; and NACO. These are all methods to market to audiences beyond the traditional public health community.

One person suggested that CDC make better use of national media by working with its internal public relations group. "*I've rarely seen a release about a community doing anything environmental.*"

PACE EH products. A few suggestions were provided for products that would help spread the word and generate interest about PACE. Respondents indicated that some existing products, such as on-line resources and workshops, are good approaches. New ideas include synopses written for Health Boards, case studies of PACE EH successes—"*here's a difference that was made in this community as a result of PACE*"—or best practice manuals. "*Show me where it's worked. What has it done?*" Other interviewees suggested that making toolkits available to help communities work with PACE EH would be very beneficial. It should be noted that NACCHO indicated they were developing an online "Model Practices" database that could include PACE EH success stories, a step that is clearly in line with recommendations.

Several respondents also advocated for additional training opportunities so that individuals could learn more about what PACE EH entails without having to travel long distances. They also suggested holding "PACE summits" where those who are implementing share their experiences and talk about it as a tool for looking at what the community wants.

PACE EH messages. Some interviewees went further than asking for success stories and provided specific examples of PACE EH benefits that should be communicated to environmental health professionals. One suggested that it be marketed as "*a management tool to manage and get resources*." Another suggested that it be promoted as a "*good strategic planning process*." Another suggested that messages be specifically targeted to sites that may wish to combine MAPP and PACE EH, showing how they can be integrated. Another suggested it as a mechanism for promoting "*prevention*" and for bringing recognition to health departments.

Community visibility. In addition to providing suggestions for how to market PACE EH to environmental health professionals, many interviewees offered their ideas for how community members can be better apprised of the protocol and the outcomes that result from its use. One suggestion offered was to use the media rather than relying on the committee to communicate about PACE. Another stressed that it is important to communicate the philosophy and what the acronym stands for. Radio interviews were suggested as a way to make PACE EH more visible within a community and help build community support for the team's efforts.

6.2   Changes to PACE EH *Guidebook*

Survey respondents who indicated that they were currently (or had in the past) implemented PACE EH were asked what changes they would make to the PACE EH *Guidebook* to make it more useful to professionals in positions like their own. Interviewees were also asked to make suggestions for improving the *Guidebook*. The suggestions provided fall into four types: (1) changes to existing chapters in the *Guidebook*, (2) changes in task sequence, (3) new chapters or supplemental documents, and (4) new formats for making the *Guidebook* accessible. It should be noted that several respondents indicated that they found great value in the document *PACE EH in Practice* as a supplement to the *Guidebook*. Several individuals commented, however, that the full name of PACE EH is too long and complicated and hard for the community to grasp.

Changes to chapters. Respondents were divided as to whether changes were needed. Many were very complimentary, indicating that they thought "*it is really good*" and that "*the level of*

detail was good, it had a nice structure, it was clear and easy to follow." Others thought it was either too academic, too complex, or lacking in specific guidance or examples in key places. In general, there was a tension between those who wanted it more prescriptive and streamlined and those who felt that prescription could lead to lack of creativity and preferred the existing philosophical and flexible approach. Both camps agreed, however, that more examples would be helpful. Pilot sites in particular were happy to see the improvements that had been made in the *Guidebook* based on their early experiences.

Sections specifically targeted as places for improvement include the "Analyze Issues" chapter, the "Develop Indicators" chapter, and the "Select Standards" chapter. As shown in Chapter 4, implementing sites indicated that these were the most difficult tasks. The models provided in the *Guidebook* were found by many to be too complex and difficult. Some tried to have CEHA members work through these tasks independently and compare notes, but few could pull it off. In the end, it was necessary for staff to play a major role.

The "Analyze Issues" section was described by one interviewee as too process-oriented and by others as too complex. "*The issues framework had to be adapted for the community- if it could be written in simpler way and say the same thing, this could be helpful.*" One interviewee found it difficult to analyze an issue without the indicators and standards.

It was suggested that the "Develop Indicators" section be simplified and better integrated with priorities. More ideas about where to go for indicators were recommended. One person noted that environmental health indicator development has been active in recent years and that the *Guidebook* could be updated to reflect those developments. This is in keeping with another suggestion to make available "*a common knowledge base… a common set of indicators and data structures.*"

The "Select Standards" section was described as "*too vague.*" Another suggested that "*it would have been a lot easier and faster for somebody to say well here is a good standard for that. Or even to have compiled… some standards [we] could choose from.*"

One stakeholder suggested changes to the first task, "Determine Community Capacity." Although few sites indicated that this task was difficult, it is also clear that it was often done in a cursory fashion. Greater attention to what capacity means and how the assessment could be used to not only decide <u>whether</u> to adopt PACE EH but <u>how</u> to proceed would be beneficial. This individual went on to recommend that experts in community change and organizational development be involved in the next iteration of PACE EH.

To make the existing material more real and more accessible, many respondents and interviewees advocated for adding more real-life stories both of what worked, and where communities may have gone wrong. They appreciated the existing vignettes and thought "*there could be even more of them.*"

Changes in task sequence. As described in Chapter 4, the case studies confirm that many sites changed the order of specific tasks. A common change was to rank issues before (or without) developing indicators and standards. One suggestion offered was to explicitly change the order in

the *Guidebook*, although others disagreed and liked the existing order. One recommendation was offered to insert a tip about being flexible with the order at the beginning of the *Guidebook* and to provide concrete examples of some of the ways that implementing sites have successfully completed PACE EH using alternate sequences.

New material. The most commonly cited need for more information is with respect to what comes after Task 13. How do sites implement their action plans? How do they identify resources? What team members do you need for implementation? "*The people who do the assessment versus the people who do the implementation may need to be a different group.*" One person suggested that this could be divided into two volumes, where Volume 1 takes communities through priority setting and Volume 2 guides communities through action plans and implementation. Another related suggestion was to include more information on moving from action to policy.

Some of the recommended additions relate to helping sites with the process of doing PACE EH. These include adding a section on facilitation skills which could be added to the existing "Determine Capacity" section. Another suggestion was to have more information on how to engage policy makers, how to communicate with the team, and how to handle ongoing recruitment. One person described this as a need for a "*pre-PACE EH primer.*" In other words, the environmental public health workforce is good at science and inspections, but they aren't necessarily trained in how to engage the community.

Other suggested additions to the *Guidebook* included a cost-benefit section. More electronic templates, tools, and examples were also recommended. "*They show things in the book but anything in the book had to be redone by us.*"

More information on outcomes was another theme of the recommendations offered. One interviewee suggested that making sample action plans available, especially for topics that are common across sites, would be useful, for example.

The *Guidebook*, as written, is viewed as suitable and appropriate for most professionals. It is not accessible to the community. During the case studies, it became clear that several sites opted not to share the *Guidebook* with their community-based teams and instead chose to use it primarily as a facilitator's guide for the coordinator. Community members that did have the book thought it was useful but overwhelming and typically relied on staff to translate it for them. This was especially true in the sites with the strongest grassroots base. To address the needs of this audience, many changes would be required. An alternative would be to have a supplemental document that would be geared for this audience. One suggestion was a short overview modeled after the overview of the MAPP model. For the busy businessman a shorter simpler version was recommended, a "*Cliff Notes version.*"

Separate guidance materials were recommended for tribal organizations. It was suggested that tribal environmental health professionals be engaged in creating these materials. These materials should address how to integrate PACE EH within a tribal community where decision making structures and community engagement methods may differ. Particular attention should be paid to how to constitute a team in this setting.

New formats. New formats for sharing PACE EH materials were recommended. The primary goal of these recommendations was to create a more interactive environment for completing the tasks. Specific suggestions included creating an interactive CD or webpage version. These new formats would be useful for addressing the need described above for more tools and templates. It might also address one person's comment about the prohibitive price of the *Guidebook*.

6.3   Recommendations for Technical Assistance

Survey respondents who indicated that they were currently (or had in the past) implemented PACE EH were asked what technical assistance they would recommend from national partners to support local sites with their implementation efforts. Case study interviewees were asked to provide recommendations for technical assistance that could be provided to sites implementing PACE EH. Concrete suggestions for technical assistance are presented in this section. Many sites reported that all of their TA needs were being met. Specific suggestions by some interviewees and respondents fall into the following areas:

Data. One area where interviewees and respondents would appreciate additional technical assistance is in connection with data, including guidance on how to analyze it "*thoroughly and properly*," understanding the role of data ("*that indicators have to be replicable and local enough that you feel comfortable applying them to the community*"), making data more readily available, and getting additional help from agencies to provide data resources.

> *Data concerning prevention impacts of environmental or public health interventions are particularly hard to come by, since it is difficult to prove that you avoided something bad unless you have specific data collected in the same way over time for the same area.*

> *Having data made more readily available would be nice. If somebody at the state or national level, could pull this together, that would be wonderful. It's easier for one group of people to gather it for the whole state and give it for every county than for every single person in every county to go out and find it all…It's so hard for every single individual community to go and gather their own data from the same source.*

Developing survey and drawing sample. Another area where technical assistance could be improved is in assistance developing surveys and drawing samples to "*assure a higher degree of statistical validity.*"

Indicators. Several sites reported that they became stuck in the task of developing indicators and they could have used more technical assistance in that area.

> *The attempt was to get organized and then take this organization and put them into factors that we could measure. That was our challenge. That's where it got diverted back to staff. We didn't have the magic pill for that. That's where we*

could've used better mentoring support. Is taking it from this point and actually turning it into health indicators that we could measure.

We clamored constantly for indicators and now in hindsight having some to choose from, a menu would be very nice.

Opportunities for PACE EH sites to share experiences. Interviewees were quite vocal in their interest in having more opportunities to share experiences between and across PACE EH sites. Several interviewees mentioned that they would like to have "*some central way in which all current and future PACE EH sites could share helpful information and lessons learned.*"

I know it would have been almost impossible to engineer this, but if there could have been some type of instant feedback of what everyone else is doing who is doing PACE. That could have been interesting, but it is very hard to do and not quash what you are doing anyway. You don't just want to copy what someone else is doing. But it was announced that certain other people were doing this and others have done this in the past, that would have enlarged it that we are doing this with somebody. That would have given it a larger context.

One recommendation is to just as strongly promote ways for site coordinators to network with other site coordinators and to share info. There is the PEER Network but somehow there is just something about getting people together in a room that is just different and beneficial. It buoys you up.

What NACCHO is now doing in providing regional workshops is vitally important. Those who are thinking of doing PACE EH want to meet with and hear from people who are doing it. They don't want to hear from people who developed the protocol or the tool; they don't want to hear from NACCHO staff. I think that NACCHO can go a long way to support PACE EH by continuing to provide opportunities for potential users and adopters to meet with those who are doing it.

Case study interviewees and survey respondents agreed that there should be PACE EH interaction at a state level, "*getting whatever sites are doing PACE together periodically to share ideas and notes, as part of our state health association meetings maybe*" and that "*outside technical assistance needs to be local.*"

We didn't look for technical assistance from the national level. Most what we needed was local data and ideas.

Related to this, interviewees stressed the importance of having "*If nothing else, someone to call and talk with,*" a technical assistance resource to talk to as you go through the process of implementing PACE EH, "*just someone to bounce some of the ideas off of.*"

I don't know if this would be helpful or not some sort of a traveling emissary/ambassador or base, someone who could be the 'honeybee going from

flower to flower' on a bigger collaborative effort. This person would identify where people are and possibly share things between the sites.

Facilitating focus groups and the community process. Another area where interviewees indicated they would like to have technical assistance is in the area of facilitating the community process.

> *The community process is where we could've used help. I don't think the science of this was that hard.*

> *If the staff or a facilitator had a clear idea of the process itself (not the content of this process), that would have helped. The last thing you want is to say you have a set agenda.*

> *They were good at their science, but public health at the grassroots level needs to deal with the fact that people with a biology background who are trained to do restaurant inspections are going to do restaurant inspections. We don't necessarily train people to approach people…*[to have] *community interaction and engagement skills. PACE EH is based on that.*

At the same time, one interviewee cautions that PACE EH sites not hire a professional facilitator without environmental health experience: "*You need to have a facilitator who was familiar with the issues; not just a generic facilitator, I think.*"

Integration of PACE EH with other processes. Interviewees mentioned that they would like more technical assistance on implementing PACE EH with other assessment processes or protocols like MAPP or how other assessment tools like BRFSS and Healthy People 2010 could fit with PACE.

> *It would be nice to have a national tool for a health survey on health behaviors, sanitation, and environmental issues. This would be something that would be standardized around the country or at the state level, not just used in local communities.*

Other topics. Other recommendations for technical assistance suggested by case study interviewees and survey respondents included: technical assistance in strategies for implementation (how to implement action plans), CEHA team development, EPA CARE partnership participation, training on priority setting, funding opportunities and grant writing for implementation of PACE EH actions, risk communication, and getting media attention.

6.4   Recommendations for Communities Considering Adoption

Recommendations offered by interviewees for new sites that might consider adopting PACE EH covered a wide range of issues. Among these were recommendations regarding setting realistic goals and timelines, identifying staff and other resources, engaging the community, taking advantage of technical resources available locally and nationally, integrating PACE EH into other ongoing activities, and documenting successes.

Realistic goals and timelines. Recommendations include setting a realistic time frame for PACE EH, which may be as long as two years if "true community involvement" is to be accommodated. Shorter time periods are possible if the process is structured using a staff-led model. The time frame will also be determined by the goals that are set. Realistic goals can shorten the time it takes. Interviewees recommend getting a commitment up front from participants so that they know what they are committing to and agree to stick with it. Depending upon the committee composition, this might also include obtaining commitment from department heads to support staff involvement for the duration. Regardless of the goals and timelines set, interviewees caution that the process will require patience. "*Consensus building processes take more time than you think.*"

Resources required. The internal resources required to conduct PACE EH include dedicated staff. "*You really need someone in a full-time capacity to do the assessment and do it right.*" This sentiment was echoed in many sites. Others suggested that although a full-time coordinator is ideal, a minimum of a half-time coordinator is needed and that sites should consider creative approaches to filling this staffing need, which could include a mix of agency staff and outside resources from other departments or agencies. Without a dedicated person, things can fall through the cracks. Somebody has to take minutes, schedule meetings, reserve rooms and other administrative tasks in addition to the actual facilitation. Between meetings, staff must also gather information and collate and summarize input.

Skills and qualifications that should be sought in a coordinator include a mix of solid scientific grounding in environmental health issues and skills in facilitation and group process. This combination of skills was described as hard to find, but critical for success. Interviewees also recommended this person have a "*strong sense of conviction and a passion*" and good communication skills.

Support and buy-in from agency leaders is another key resource requirement. Without that support, it may be difficult to complete the cycle and to obtain support for implementing priorities. If that support is lacking, it is easy for nobody to feel responsible when the planning cycle ends. It is also important to have leadership support if the goal is to revisit PACE EH every five years.

Community engagement. Recommendations for community engagement include inviting a broad spectrum of participants, actively encouraging and supporting their involvement, and removing barriers to participating. Many sites stressed the importance of having decision makers involved in PACE EH to generate support for action. Others stressed broad community input from those who are most affected by the environmental health issues so that they will become their own advocates for change. Interviewees recommended that it be clear to participants that they are participating in an assessment process and are not there to push their own agendas.

To work with community members, interviewees stressed the importance of proactive outreach to identify interested people and engage them in a manner that builds trust. "*The most important thing is to listen to the community and get over the lack of trust. They've been burned too many times by the government.*" To ensure their participation, it is also important to provide food and

have the meetings in accessible locations and convenient times. Depending on the community population, it may also be important to accommodate children and overcome language barriers.

Technical resources. Sites that wish to adopt PACE EH will benefit from the wisdom of those who have gone before. Sites are encouraged to connect with other PACE EH sites. They are also encourage to tap into the peer assistance network and to use other nationally available assistance through NACCHO and others. Many sites also stressed the importance of local resources. Universities can be a good source of expertise on data collection. Local agencies may be able to contribute data or provide expertise to better understand an environmental health issue.

Integrate PACE EH with other activities. Interviewees stressed the fact that PACE EH is flexible and that it can be tailored to the community. Part of this tailored approach includes integrating PACE EH with other assessment activities that may be ongoing such as APEX, MAPP, and Healthy People 2010. Communities that have existing community boards or forums are encouraged to consider situating the PACE EH team in that existing context. This can serve to increase its profile within the community and to render the process less overwhelming. It can also provide additional support for implementation of priorities.

Documenting success. The long planning cycle can be difficult for many participants. New sites are encouraged to identify opportunities for action early on to keep people engaged. They are also encouraged to celebrate successes whenever they occur along the way. "*We have a culture that doesn't evaluate and that prefers to just move on. The book says you need to take time to celebrate your successes and it sounds hokey but you have to do it!*" Documenting success is also useful for seeking additional resources to support PACE EH activities.

6.5   Overall Assessment of Value of PACE EH

Most PACE EH implementers who responded to the survey and participated in the case studies are strong supporters of the PACE EH method. Individuals used words such as "*fabulous*" "*gratifying*" and "*tremendous*" to describe the process. They found value from the process in terms of building relationships, identifying issues of concern to the community, and building agency capacity, providing support for the value of the original vision for PACE EH.

As an assessment process, PACE EH was described as a good vehicle to "*narrow down and bring into focus what really needs to be done.*" Another described the process as a way to decide how to direct scarce resources and or to compete for them against other programs. "*We can design our program around those issues that they thought were important.*" A community participant described PACE EH as providing a more comprehensive view of issues than other ad hoc assessment processes. Another described it as "*a good way of formalizing a common sense approach to planning that gives the community a voice.*"

As a vehicle for community change, PACE EH was described by some interviewees as an outreach and empowerment vehicle. "*It is a vehicle to create action and inspire leadership.*" "*It is a way to teach people to fish rather than a way to catch a fish,*" stated one community participant. In another site, it was described as "*very helpful, especially in communities that are*

struggling with a health issue and a feeling of being underrepresented. To help them gain a voice."

As a process for building environmental health capacity, agency staff described benefits to them in their ability to do the 10 essential environmental health services. They pointed to increased staff skills, new resources, and greater community support. In one site, they specifically addressed the benefits that can accrue where departmental support is dependent on voters through local levies. "*If [sites] do it and they see people care and can get voter support, they would be empowered.*" PACE EH is seen as a way to boost credibility. PACE EH is also seen by some as a lifelong learning process. "*You need to institutionalize it so it is part of your job.*" One interviewee described it as "*a means of institutionalizing long range planning in your agency. It is not perfect, but you get a workable result.*"

To many participants and observers, the value of PACE EH lies in its flexibility. "*I think PACE is wonderful as long as people understand they can enter and go back and forward. You can move through it different ways.*" Although most sites used PACE EH to generate a list of issues and priorities, one site found value in using it after an issue was identified to further explore the issue and develop means to address it. "*It was nice that we were able to use it in a more targeted or specific approach, tailoring it to our needs instead of doing it as the overall environmental health concerns.*"

As with all methods, however, PACE EH had its detractors. Some individuals felt that the time spent was not worthwhile because they never succeeded in getting to action.

> *We spent a lot of time. We accomplished only the relationships and my knowledge. We didn't really get even one thing accomplished. We needed to have implemented something.*

Among the survey respondents that did not implement PACE EH, many indicated that substantial changes in their situation or the method would need to occur before they would reconsider adoption. It is viewed as time and staff intensive and as an "*all or nothing endeavor.*" Most responders suggested that they would need to see new funding or staff emerge before they could consider using PACE. A few wondered if a more simplified and streamlined approach might be possible. Nobody rejected the central premise that assessment is a worthwhile enterprise.

7 Summary and Next Steps

For some health agencies and communities, implementing PACE EH has been transforming. That is, PACE EH has had a profound impact on the way the agency and its staff carry out its environmental health responsibilities. PACE EH has led them on a journey in which they have moved beyond their regulatory responsibilities to embrace a larger role in which they actively engage with the community in addressing environmental health issues of importance. In so doing, they have broadened their conception of environmental health and have redefined their own role to be more in line with the ten essential services. In a very few cases, this transformation has reached into the community and begun to change residents' perceptions of their environment, the agencies that serve them, and their ability to affect change. These are the sites that offer proof that the vision of the PACE EH development team can be realized.

For some health agencies and communities, however, the journey has been much less profound. A dialogue has begun between agencies and between agencies and the community, but these changes have not had a significant impact. Participants in the process have grown from the experience, both personally and professionally, but this has not resulted in broader changes within the agency or community. These are the communities in which PACE EH is likely to be viewed as a project, and the resulting action plans the final report. The report now sits on a shelf and nobody takes responsibility for its implementation.

The factors that determine which outcome is observed are not clear, but the results of this study suggest that the presence of a "champion" with political clout within the agency is a key factor. Resources also make a difference. The sites in which this transformation is most pronounced have staff who are passionate about the value of community involvement and about redefining the ways in which the agency works with the community. These sites also have resources that they can dedicate towards this end. While few would say that they have all the resources they would like, in these sites they are able to maintain staff focus on the goal and have secured resources for implementation. Agencies with few resources are likely to be able to make only small steps in the process. These agencies hope to have a blueprint for action—PACE EH action plans—if resources become available..

To support PACE EH implementation, national partners are already engaged in many activities that are valued by implementing sites. Suggested next steps to increase the number of sites that are successful in using PACE EH to transform their activities are provided below.

- Provide detailed case histories and examples of sites that have been particularly successful. In these case histories, provide concrete examples of outcomes that have resulted from PACE EH in the agency and in the community so that others can begin to visualize benefits that might be possible with PACE EH. A web site is a good vehicle for sharing these materials.

- Provide additional tools and guidance in several areas where sites have struggled the most. Some of these areas are technical in nature—how to find and work with data, how to develop indicators. Some of them are process—how to facilitate a community process and promote community development. Experts in community development and in environmental tracking might lend a valuable hand in these developments.

- Provide additional guidance on how to transition from assessment and planning to plan implementation. Many sites approach the end and lose momentum or are unsure how to proceed.

- Articulate better the relationship between PACE EH and the essential services so that communities can assess their progress. This will give evaluation more meaning.

- Help agencies and communities locate sources of funding that can be used to implement action plans.

- Provide additional guidance on methods for securing support for PACE EH from decision-makers.

- Provide mentoring opportunities or funding for roving experts who sites can call on to provide on-site assistance at key steps.

- Bring PACE EH into the environmental health curriculum at the university level so that the next generation of environmental health professionals will see their chosen profession in a new light.

At the same time that it is desirable to encourage and support more sites to implement PACE EH in a way that has far-reaching outcomes, it is also important to recognize even small steps. PACE EH was designed to be flexible and adaptable. In many sites that means it could still be useful even when resources are scarce or when political support is shaky at best. PACE EH has three legs: (1) scientific assessment, (2) community change, and (3) agency capacity building. Advances in all three do not need to occur for the process to have value. Thus another source of support that could be offered is better guidance about how to complete an initial capacity assessment. If agencies are provided with additional tools to help them assess the setting in which PACE EH would be implemented in a more systematic and comprehensive fashion, they might be better at setting realistic goals about what steps forward are most possible, at least within the short term. Thus capacity assessment could be approached not to answer the question "Should we proceed?" but to answer the question "How should we proceed?"

It is important to remember that changes of the magnitude envisioned by the PACE EH development team take time. PACE EH has proven to be a valuable tool for many agencies and communities. However, the model offered is not familiar to many environmental health practitioners and not all are open to its message and approach. Over time this may change. CDC can provide support for this change by continuing to support PACE EH, developing new tools and guidance as new knowledge emerges, and by sharing success stories.

In general, we observed a tension between those who would like to see PACE EH be more prescriptive and streamlined and those who prefer the existing philosophical and flexible approach and feel that prescription could lead to lack of creativity. Some of the observed tension

was focused specifically on the *Guidebook* and not just the process itself. Many sites easily embraced its flexible style and added materials of their own as desired. However, others wanted more of a "cook book" approach in which every step is clearly described and templates for materials are readily available. We agree that encouraging flexibility and creativity to adapt the protocol to local conditions is critical. However, we also agree that to better meet the needs of those sites that have limited resources but are still interested in adopting the approach advocated by PACE EH, new templates, toolkits, and on line resources could help them move more quickly. These need not be at odds with one another if the resources are designed to reflect multiple approaches that are successful in different situations.

There was also a tension observed between the differing views about the value of community input. While many embraced PACE EH because of its community involvement emphasis, there were also those professionals who questioned the value of input from community members. Some were concerned that they do not know environmental health issues as well as the professionals; others thought that identifying a community's environmental health concerns is a large responsibility which could place obligations and expectations on the health agency that they are unable to fulfill. Those who hold this view are less likely to undertake PACE EH and, if they do, are more likely to view it as an assessment or strategic planning tool than a tool for community involvement.

To further the idea that multiple approaches are possible and even desirable, additional guidance could be developed to help adapt PACE EH to the local context and to distinct decision-making environments. Examples include integrating PACE EH with other assessment methodologies, adapting it to tribal decision-making structures, and adapting it to environmental health divisions that are not part of health departments or to other environmental agencies that might be in a position to serve as lead agency.

Finally, if PACE EH is to achieve its vision of creating lasting change within agencies, additional attention needs to be given to how to develop PACE EH as an ongoing assessment tool rather than as a process for developing priorities at a single point in time. This is new territory, and few sites have yet ventured there. CDC could make a lasting contribution by directing attention to methods and approaches that would support agencies and communities in making community-based assessment an ongoing way of doing business.

[i] Centers for Disease Control and Prevention (CDC). *Ten Great Public Health Achievements- United States, 1900-1999.* Morbidity and Mortality Weekly Report 48(12);241-243. Atlanta, GA: U.S. Department of Health and Human Services.

[ii] Centers for Disease Control and Prevention (CDC). *A National Strategy to Revitalize Environmental Health Services in the United States.* Atlanta, GA: U.S. Department of Health and Human Services (HHS), 2003.

[iii] See Public Health Functions Steering Committee 1994. *The Public Health Workforce: An Agenda for the 21st Century. Full Report of the Public Health Functions Project, US Department of Health and Human Services*, P. 21. (http://www.health.gov/phfunctions/public.htm) accessed 18 June 2003

[iv] Nelson, Jane, Joyce Essien, Rick Loudermilk and Daniel Cohen. *The Public Health Competency Handbook*. National Association of County and City Health Officials (NACCHO), 2001.

[v] Healthy People 2010. 2nd Edition. Washington, DC: U.S. Department of Health and Human Services (HHS), 2000.

[vi] PEW Environmental Health Commission. *American's Environmental Health Gap: Why the Country Needs a Nationwide Health Tracking Network*. 2000.

[vii] Public Health Service (PHS). *The Public Health Workforce: An Agenda for the 21st Century*. Washington, DC: U.S. Department of Health and Human Services (HHS), 1997.

[viii] U.S. Department of Health and Human Services. 1998. *Planned Approach to Community Health: Guide for the Local Coordinator.* Atlanta, GA: U.S. Department of Health and Human Services, Department of Health and Human Services, Centers for Disease Control and Prevention. National Center for Chronic Disease Prevention and Health Promotion. Available: http://www.cdc.gov/nccdphp/patch/

[ix] National Association of County and City Health Officials. 1991. *APEX PH: Assessment Protocol for Excellence in Public Health*. Washington, DC. Available: http://www.naccho.org/project47.cfm

[x] National Association of County and City Health Officials. 2001. *MAPP: Mobilizing for Action Through Planning and Partnership*. Washington, DC. Available: http://www.naccho.org/project77.cfm

[xi] Yin RK. 2003. *Case Study Research: Design and Methods.* Thousand Oaks, CA: Sage

[xii] Nelson, Jane, Joyce Essien, Rick Loudermilk and Daniel Cohen. *The Public Health Competency Handbook*. National Association of County and City Health Officials (NACCHO), 2001.

[xiii] McDonald, Tim, Charles Treser, and Jack Hatlen. 1994. Development of an Environmental Health Addendum to the Assessment Protocol for Excellence in Public Health. *Journal of Public Health Policy* 15(2):203-217.