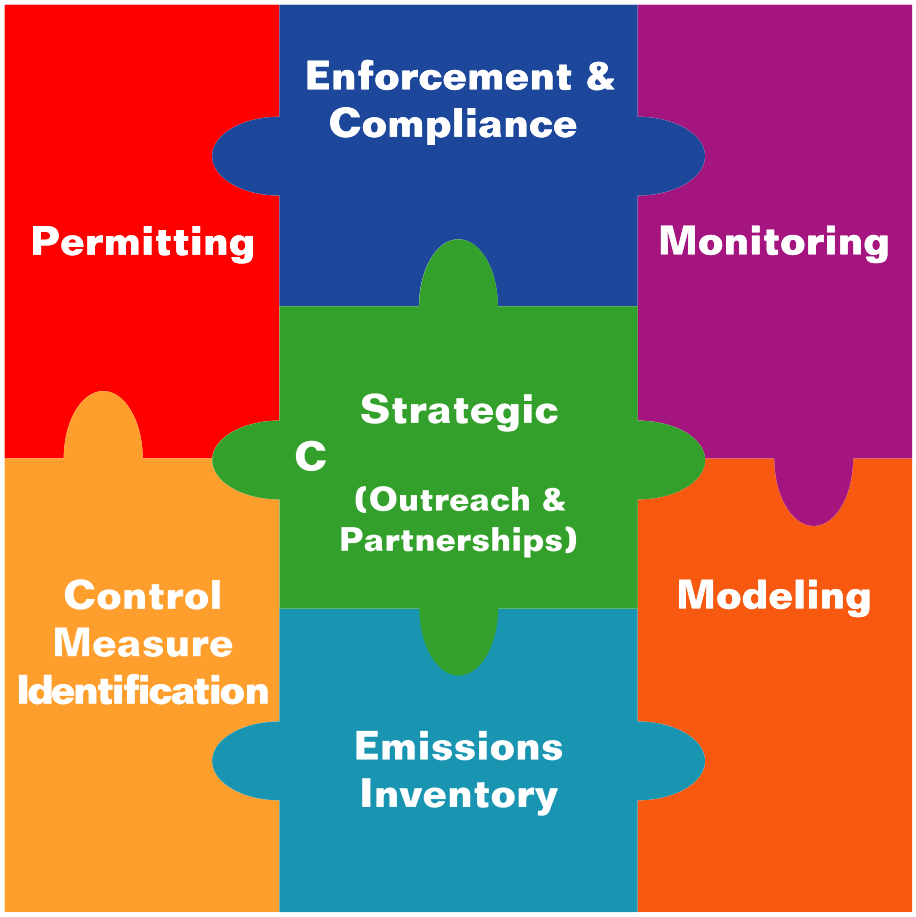
Demonstrating the Benefits:

A Program Planning and Evaluation Toolkit for Air Communicators



EPA Office of Transportation and Air Quality
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Acknowledgements

Demonstrating the Benefits: A Program Planning and Evaluation Toolkit for Air Communicators was developed by the Transportation and Regional Programs Division of the U.S. Environmental Protection Agency (EPA) Office of Transportation and Air Quality (OTAQ), in partnership with air communicators nationwide.

This *Toolkit* builds upon resources and tools from EPA-sponsored air communications projects and other examples provided by state and local air agencies.[1] Appendices A and B highlight many of these supporting materials. Special thanks goes to the partnership of federal, state, and local air communicators for their important contributions – insight, passion, creativity, commitment, and hard work – which made this document a value-added reality.

[1] For the convenience of the user the *Toolkit* provides links to web sites outside the EPA web site. The Standards of Ethical Conduct do not permit EPA to endorse any private sector web site, product, or service. EPA does not exercise any editorial control over the information you may find at these locations. These links are being provided consistent with the intended purpose of this *Toolkit* and EPA's web site.

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Introduction

In the past 30 years, significant progress has been made in the quest to improve air quality. Technological advances and environmental mandates such as the Clean Air Act and its Amendments, which authorized the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for criteria pollutants, have cleared up much of the visible pollution that once clouded our skies. But smog, soot, and haze still persist in many urban centers and wilderness areas. In fact, based on monitoring data, more than 120 million Americans – almost half the nation's population – live in areas with unhealthy air. These areas were in "non-attainment" under the Clean Air Act for at least one NAAQS pollutant in 2000.

Mobile sources are one of the biggest contributors to air pollution and greenhouse gas emissions, which in turn contribute to climate change. "Mobile sources" include not only cars and light trucks, large trucks, and buses, but also non-road recreational vehicles (such as dirt bikes and snowmobiles), farm and construction equipment, lawn and garden equipment, marine engines, aircraft, and locomotives.

Addressing mobile source pollution requires changes in how we get to work, how we play, how we mow our lawns, and how we transport goods. Although technology has made engines more efficient and less polluting, technology alone is not enough to solve the problem. More vehicles and engines are in use than ever before. Because cars, trucks, buses, lawnmowers, boats, snowmobiles, and other mobile sources are so integrated into our daily lives, solutions need to target not only what is under the hood but also the driver behind the wheel.

The public sees, feels, and reacts to the problem through worsening congestion, increased commuter stress, smoggy skies, and respiratory illnesses related to air pollution. But getting people out of their personal vehicles, even temporarily, and shifting fleet operators and manufacturers to low-emission engines is challenging. Long-term solutions need to be convenient, cost-effective, and practical. In addition to government mandates and technological advances, a behavior shift requires public education and outreach to increase awareness and ultimately motivate vehicle owners, users, future drivers, and employers to choose and promote cleaner modes of transportation.

Outreach Strategies to Reduce Emissions from Mobile Sources

EPA's Office of Transportation and Air Quality (OTAQ) is charged with reducing air pollution and greenhouse gas emissions from mobile sources by advancing clean fuels and technology, encouraging personal transportation choices that minimize emissions, and working to promote more livable communities. To control air pollution from such diverse sectors, OTAQ and its committed community partners are working to increase the public's understanding of the relationship between air quality, public health, vehicles and other engines that move, and the impact of individual choices.

Air Outreach Efforts Support OTAQ's Mission by:

- Promoting the use of cleaner fuels and less polluting vehicles and equipment;
- Encouraging responsible commuter choices, often through market incentives and services that make transportation alternatives more convenient;
- Promoting responsible car care and driving habits by educating drivers and auto service technicians; and
- Educating, entertaining, and raising awareness among youth and the general population about mobile source pollution.

Regulatory and Non-Regulatory Air Outreach Programs include:

- Trade-in/rebate programs;
- Incentive programs;
- Voluntary partnership programs;
- General public awareness campaigns;
- Youth-oriented education campaigns; and
- Environmental justice programs.

Since 1997, OTAQ has funded more than 80 community-based public education efforts across the country to support implementation of the Clean Air Act and the Transportation Equity Act for the 21st Century. These diverse and creative programs, documented in *Communities in Motion: Showcasing Outreach Initiatives 1997-2001* (EPA-420-S-01-009, February 2002),[2] are working to increase public awareness about cleaner transportation choices by harnessing the power of individuals.

OTAQ supports projects through two related approaches by (1) developing programs and products at the national level for hand-off to communities across the country; and (2) providing direct support to community-based efforts. Projects funded or managed by OTAQ are designed to build on and strengthen projects initiated at the community level so that they will grow beyond limited federal "seed money" to achieve long-term results.

To date, OTAQ has established cooperative agreements with numerous partners in more than 30 states and the District of Columbia. Partners include other federal agencies; local, regional, and state air and transportation agencies; and public health, non-profit, and environmental organizations.

OTAQ-funded partners, in turn, collaborate with local and regional leaders, such as air transportation practitioners, public health and community groups, academic institutions, business and industry leaders, and community planners, to develop and implement comprehensive outreach projects.

[2] Contact Susan Bullard, Director of Outreach, EPA/OTAQ, at bullard.susan@epa.gov to obtain copies of this compendium.

Outreach Benefits – Past, Present, and Future

Clearly, the work of air communicators is an **integral and essential piece** of improving air quality – just like monitoring, modeling, planning and other functions are considered to be essential (see Figure 1). Together, OTAQ partners and local coalitions have effectively leveraged limited resources to broaden the reach of their messages, maximize project benefits, and minimize duplication of effort. They have secured commitments to action, shared information, and solved problems.

Figure 1: Communication is Integral and Central to Air Programs

It is also clear that the work of these and other air communicators will become increasingly important. Implementation of more stringent NAAQS will result in more areas moving into non-attainment, which in turn will require states to develop or modify existing State Implementation Plans (SIPs) to show how they will attain the standards through a combination of regulatory and non-regulatory approaches. At the same time, budgets will likely decrease, and resources will require further leveraging. It will be more critical than ever that air communicators design their campaigns in such a way so that when the project is completed they will be able to conduct a meaningful program evaluation and continue their efforts.

In simple terms, a program evaluation can:

- Demonstrate the benefits of education and outreach programs to stakeholders, including funding sponsors;
- Increase a program's effectiveness by determining what is working and not working in the program;
- Allow for comparisons across programs;
- Serve as a catalyst for change and the foundation for new efforts; and
- Determine the appropriateness of a program for its intended audience.

This *Demonstrating the Benefits Toolkit* is designed to aid air communicators as they plan, implement, measure and evaluate, and refine the "next generation" of air outreach projects.

Development of the *Toolkit*

At OTAQ's annual *Communities in Motion* workshop, air communicators began a series of lively discussions on how best to "measure"[3] and evaluate outreach outcomes given the diverse array of funded projects:

- For some air outreach projects, OTAQ and its partners can develop direct measures of air pollution reduction via pollutants eliminated. For example, by counting the number of lawnmowers traded in, the number of marine engines replaced with "cleaner" models, the number of heavy duty engine retrofits, the reduced number of enforcement violations, etc., communicators can develop one-on-one correlations to measure the success of trade-in/rebate, incentive, and regulatory support efforts.
- For other outreach projects, however, the correlations may not appear as strong on the surface, and results will not be as easy to calculate. For example, more people may take public transportation during Ozone Action Days, but getting to the cause(s) of these changes may take much more effort, with many more assumptions and caveats.

At that point, a working group of state and local partners from across the country was formed to address the challenge of demonstrating the benefits of outreach and education programs. One central tenet held true for all these professionals that participated in this Demonstrating the Benefits Workgroup – that the "bottom line" of such a demonstration could not be decided purely on whether quantitative SIP credits were achieved by these programs. Instead, any evaluation must capture a much greater array of subtleties regarding the role that communication plays in the pursuit of cleaner air and protection of public health.

An example of the need to, and potential difficulty in, capturing these subtleties can be found when trying to demonstrate the impact of a web site dedicated to informing the public about air quality issues. Typically, it is assumed that measuring the impact of implementation support programs must be quantitative in nature, i.e., things must be counted and tallied. In some cases, counting is possible – such as lawnmowers that have been traded in or the number of marine engines replaced with "cleaner" models.

Consequently, not all programs lend themselves to easy, straight-forward calculations that result in useful numbers. For example, one could count the number of hits to the aforementioned web site. However, most communicators know this is not a meaningful calculation – many of the hits to the site may have been accidental, repeat users, etc. This frustration at the lack of being able to "count" success, may lead communicators to decide they can't, or don't know how, to measure the benefits of their programs.

However, what if the host of the web site approached the dilemma from a different angle? For instance, what if a fire wall was installed such that before people entered the site, they had to indicate their purpose for using the information (e.g., a farmer in Iowa interested in how air quality may affect his crops, a dissertation student in Hong Kong studying the topic, etc.)? The result would be a rich set of qualitative data, (e.g., quotes or comments from stakeholders on the value of a program) providing useful information on the impact of the web site.

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[3] In preparing this *Toolkit*, we deliberated over the use of the term "measure" – as we did not want to imply that all communications programs can and should be quantified, or that it was economically feasible to collect statistically valid, quantitative data for all programs. Therefore, for the remainder of the *Toolkit*, the term "measure" will be used in a very broad sense – including the collection of all types of information (i.e., qualitative, quantitative, etc.) that can demonstrate the benefits of a program.

Purpose of the *Toolkit*

This *Toolkit* is the result of the dialogue between, and collective experience of, the Demonstrating the Benefits Workgroup and was designed to help you think about your own evaluation strategy – both in terms of straightforward strategies, as well as more creative methods such as the web site fire wall.

The *Toolkit* is structured in an easy-to-read manner – using tables, figures, real and hypothetical examples, and worksheets to guide your thinking to develop your own evaluation plan. It will walk you through the steps of planning and evaluating an implementation support program.

Specifically, the *Toolkit* will allow you to:

- Gain an understanding of the "basics" of evaluation;
- Design and implement an evaluation strategy;
- Collect valuable information in a meaningful way – even if you can't "count" what you are doing, or if you are on a "shoe string" budget; and
- Begin a dialogue with your peers so that you can share examples, lessons learned, and tools, i.e., make the *Toolkit* a "living document."

To be sure, this *Toolkit* is not a crash course in either strategic communications or program evaluation, or a comprehensive guide to all evaluation strategies. It is, however, a first step toward demonstrating the benefits – both qualitative and quantitative – of outreach programs in reducing air pollution and greenhouse gas emissions from mobile sources.

While the *Toolkit* was created by air communicators, for air communicators, OTAQ believes that its usefulness as a framework for discussion will extend to other communication sectors.

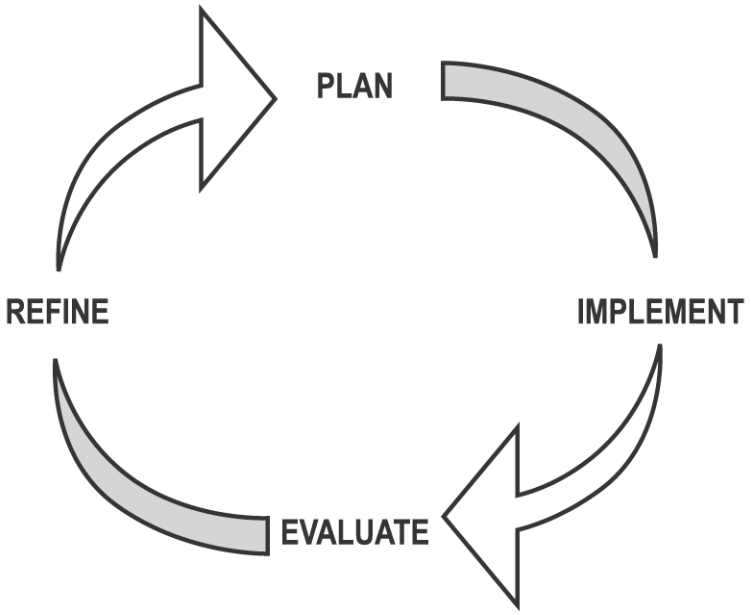
How to Use the *Toolkit*

The *Toolkit* is organized according to a standard, 4-phase, project lifecycle model (represented in Figure 2) of (1) planning, (2) implementing, (3) evaluating, and (4) refining a program over time, with a communications overlay. That is, the evaluation will be built toward three overarching indicators of success for a communications project:[4]

- *Outputs* – the volume of outreach to the target audience;
- *Awareness and Acceptance* – increased recognition, understanding, and acceptance of the issue on the part of the target audience (e.g., attitudinal changes); and
- *Actions* – actual steps that have been taken, in whole or in part, by the target audience as a result of the outreach effort.

Despite individual programmatic differences, the steps in Figure 2 are similar whether you are working on a regulatory program (e.g., car inspection); a non-regulatory, general awareness campaign (e.g., Ozone Action Days); or a targeted campaign (e.g., lawnmower buy-back programs). As a result, we will use this figure as the outline for the *Toolkit* – each subsequent chapter of the *Toolkit* will correspond to part of the cycle. In addition to text that explains the stage in the project cycle, there will be worksheets you can use that accompany the diagram – walking you through each step you will need to take to formulate your own evaluation plan.

Figure 2: "Plan, Implement, Evaluate, Refine" Project Lifecycle Model



[4] Communications practitioners use many different terms to describe the success of outreach and marketing programs. For example, there are the "3-Os" (output, outgrowth, and outcome) and the "3-As" (awareness, attitude, and action, or attention, awareness/attitude, and action). The three levels that are identified in this *Toolkit* are semantically correlated to these terms.

Preview of Chapter 1: Plan Your Program

Too often, the first time program evaluation and collecting information is even considered in a project lifecycle is when the project is coming to completion. That's simply too late – planning and evaluation are integrated activities, and their outcomes must inform each other. Thus, Chapter 1 provides details on communication planning as it relates to evaluation. As there are entire books on how to plan and develop strategic communications and social marketing campaigns, this *Toolkit* does not attempt to provide a comprehensive summary of that information. Instead, the goal of this chapter is to help you better understand what to take into consideration while planning your program ***in order to meet your evaluation goals and objectives.***

During the planning stage, you identify: what must be accomplished, how it will be accomplished, and how success will be determined. It is important to remember that decisions made during the planning stage will determine whether or not meaningful evaluation data can be collected. Chapter 1 introduces the previously mentioned worksheet to help track your project decisions. From this point on, read the remainder of the *Toolkit* with a pen in your hand, using the worksheet to fill in details of your own evaluation plan based on the concepts presented throughout the *Toolkit*.

Chapter 1 also includes a series of questions that help you determine your evaluation needs and the resources you have available to meet those needs. For instance, this chapter will ask you to answer questions such as, "Why do I need to evaluate this program?" and "How much money can I budget for the evaluation?"

Preview of Chapter 2: Implement Your Program

In following the Figure 2 model, Chapter 2 summarizes things that you might do while implementing your program. This chapter is brief, because it is, in essence, yours to "write" (i.e., implement) via your program work plan. This phase may represent the lengthiest part of a program – actual implementation of program activities.

Preview of Chapter 3: Evaluate Your Program

In Chapter 3, the steps of the evaluation cycle are broken down, and specific tips and pointers are offered so that you can apply them to your own evaluation. This chapter focuses on the evaluation component of the lifecycle model, including the basic steps to demonstrating the benefits of a communication program:

- Specifying what information is to be collected, and how (e.g., what is it you are trying to "measure", and what data will specifically support that measurement?);
- Collecting the information and analyzing the data; and
- Comparing results against the objectives.

As detailed in Figure 3, the evaluation process is cyclical in nature. Once it is decided what is to be "measured," appropriate tools are used to collect the data. Then, data can be compared against a baseline if it is available, or against stated program goals and objectives. Taken together, the entire planning and evaluation cycle is illustrated in the following annotated diagram (see Figure 4):

Figure 3: Steps in the Evaluation Cycle: Specify, Collect, Compare

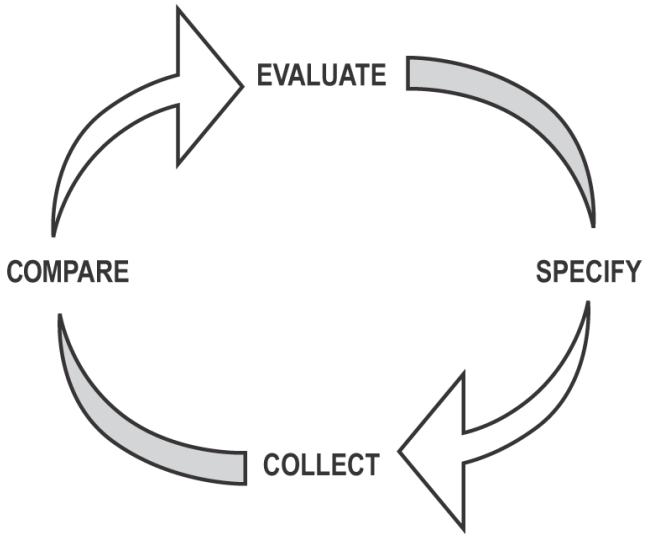
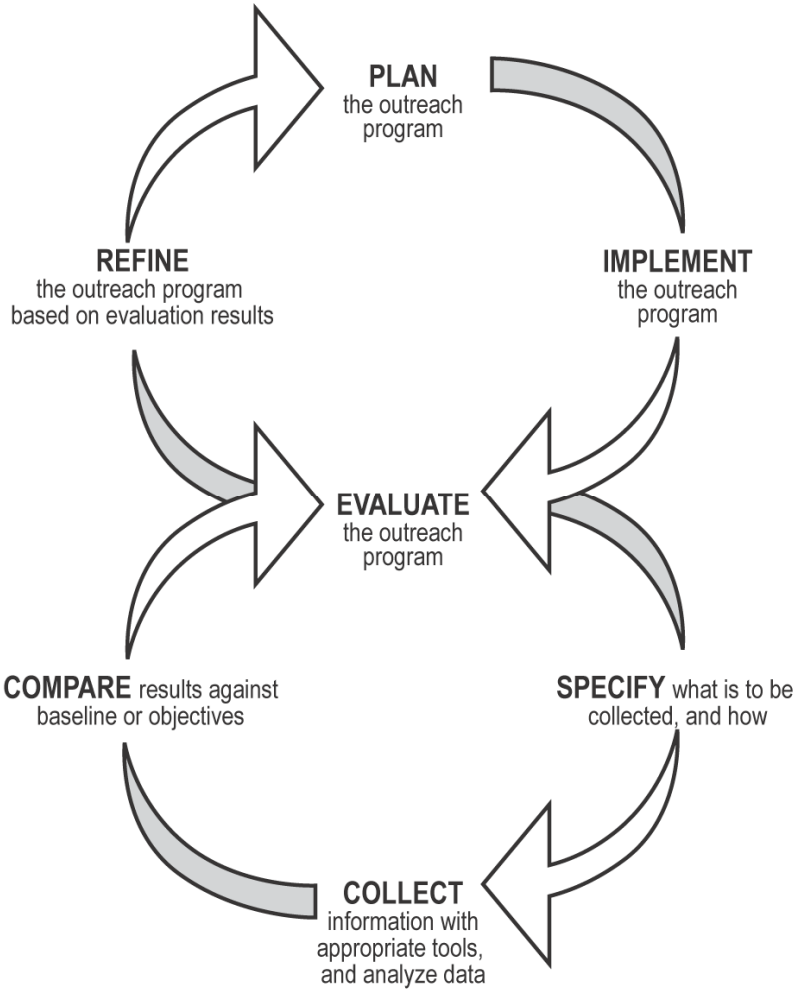


Figure 4: Integrated Planning and Evaluation Cycle



Preview of Chapter 4: Refine Your Program

Chapter 4 highlights lessons learned gleaned from current OTAQ partners who have implemented outreach and education programs. It is these types of lessons that will help others further refine their programs, as well as provide points to consider as you develop and implement your program.

Preview of the Appendices

The Appendices include a variety of resources to help you as you embark on your endeavor to demonstrate the benefits. Appendix A identifies resources on communications planning and program evaluation by web sites; graduate schools and university-affiliated centers; associations and institutes; and literature, including communication planning, general evaluation literature, creating a survey, and analyzing and reporting data. Appendix B provides copies of and web links to tools used by your peers in assessing their air communications projects to date.

Index of Figures, Tables, and Worksheets

Introduction

Chapter 1: Plan Your Program

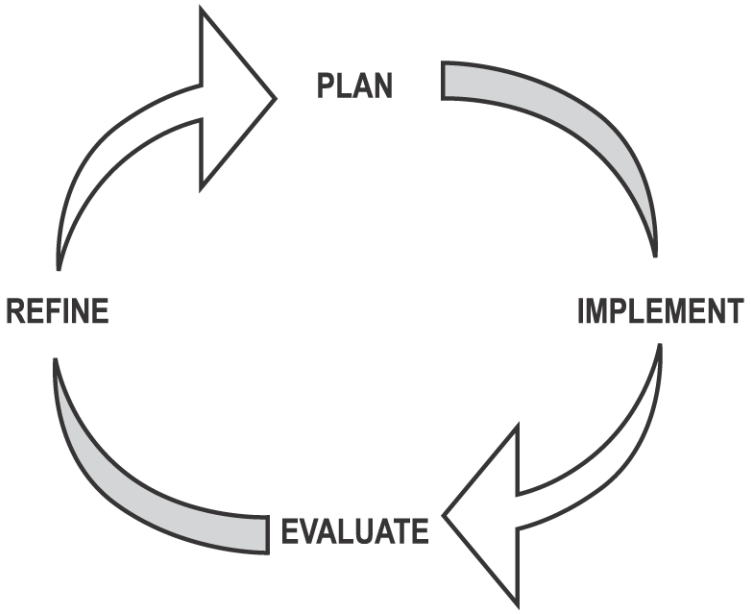
Chapter 3: Evaluate Your Program

Chapter 4: Refine Your Program

Chapter 1: Plan Your Program

There is a large body of literature that describes the strategies and tactics necessary to plan and develop a communications campaign. This *Toolkit* is not meant to reiterate this information or to be "Communications 101". Instead, this chapter focuses on helping you think about aspects of communications planning that can influence your ability to demonstrate the benefits of your program. As noted earlier, planning and evaluation are closely linked activities and must be undertaken accordingly (see Figure 1-1). The two sections within this chapter address planning, and evaluation needs and resources, respectively.

Figure 1-1: "Plan, Implement, Evaluate, Refine" Project Lifecycle Model



Planning Begins with the End in Mind

In this section of Chapter 1, we introduce a worksheet that asks planning questions that directly relate to evaluation. The more targeted and precise you can be when answering these questions, the better poised you will be to develop your implementation strategy.

"Warm-up" Your Thinking Cap

When beginning the planning process, begin with the end in mind. Table 1-1 provides a list of questions to ask yourself when starting the communications planning process. As well, it provides examples of how you might answer these questions and a rationale for why it is important to identify this information. [Later in this section, Worksheet 1 provides a blank worksheet that contains these same questions, which you can complete for your own program.]

Table 1-1: Questions to Consider when Developing an Air Communications Plan

Question	Examples of Possible Responses	Relevance of the Question
1. What is the primary purpose of the outreach component of my implementation support program?	• Regulatory program support • Non-regulatory program support ▪ Voluntary program support ▪ Incentive program support ▪ General public awareness campaign for environment and/or health ▪ Youth oriented awareness campaign for environment and/or health ▪ Environmental justice • Other:_____	This question helps you identify the drivers behind the program, which in turn will affect how you determine success. For example, if a state moves into non-attainment, it may regulate mandatory emissions testing for all motor vehicles. In this case, an indicator of success may be the percentage of people in compliance with emissions testing requirements following a related outreach campaign.
2. What is the program emphasis? What is the key message(s) you are trying to convey?	• Alternative fuels • Reformulated fuels • Transportation/commuter choice • Car care for consumers • Car care for technicians • Heavy duty diesel • Off-road equipment/engines • Other:_____	The answer to this question will impact your choice of target audience and development of outreach materials, which in turn will influence what types of questions you may ask to evaluate your program. As well, this question helps to narrow the project emphasis. Without a concise focus, a program may try to be "all things to all people", risking effectiveness in any one area. For example, one program may not be able to focus on alternative fuels and car care. If you attempt to cover both topics, it is likely your evaluation results will suggest that the program did not have much impact in either area.
3. Who are the stakeholders (beside the target audience) for this outreach program?	• The state and/or local air agency • Community decision makers • Other air quality communicators • EPA and/or DOT • STAPPA/ALAPCO • Physicians interested in the impact of air quality on health issues • People with health issues affected by air quality • Other:_____	The answer to this question provides some insurance that you are not working in a vacuum, but have considered a variety of perspectives when planning your program.

Table 1-1: Questions to Consider when Developing an Air Communications Plan (continued)

Question	Examples of Possible Responses	Relevance of the Question
4. Who is the target audience for the program?	It is important to be as specific as possible when answering this question. • For a diesel school bus education initiative, for example, the target audience may include: school transportation supervisors, school bus drivers, school board members, PTA leaders, etc. • As another example, rather than saying the "public", specify (e.g., "People between the ages of 14 and 25 in the Latino/Hispanic community").	Air quality outreach messages should be tailored to the demographic they are targeting to produce greater results. The answer to this question informs whose attitudes and behavior you are trying to influence with your outreach campaign. In doing so, you can better focus your message, choose the appropriate media with which to convey your message, and ultimately ask applicable evaluation questions using relevant methodologies.
5. What is the target geographic area for the program?	For example: • "The Washington, DC metropolitan area"; • "All suburbs within 45 miles of Los Angeles"; • "[xxx] County"; or • "The Dallas/Fort Worth non-attainment area".	The answer to this question allows you to choose appropriate media opportunities, identify and partner with other organizations in the area, and ultimately ask applicable evaluation questions. As well, the size and population density of the targeted area will affect the type and extent of resources needed to plan and evaluate your program.
6. What is the desired objective(s)?	Quantify success to the maximum extent possible. For example: • "To reach out to 100% of the school districts in Acme County within 2 years, with 10% moving to alternative fuels for their school bus fleets by the end that period." • "To obtain project message retention of 35% of the target audience over a 6 month period." • "To realize a 3% reduction in commuter work trips over a 3 year period."	Ultimately, your stated objectives are what you will be accountable for and will be used to help determine if your program has been successful. Essentially, the more specific you can be in stating your objectives the better able you will be to determine how well your program accomplished what you set out to do. [Note: See "Define Your Goals and Objectives" in Chapter 1 for additional information on crafting specific, measurable objectives.]
7. What are my outreach products? Will they need to be translated?	• Outreach documents • Promotional give-aways • TV spots • Radio spots • Outdoor advertisements (such as billboards) • Movie theater ads • Links with related products • CD-ROMs • Web sites • Other: _____	The suite of outreach products you choose for your project goes hand in hand with your target audience, the message you are trying to convey, your overall objectives and your budget. The type of outreach product also influences how you may capture the benefits of the program. For example, if you utilize movie theater ads you may want to conduct intercept interviews outside the movie theater to determine how your message was received. Alternatively, if you placed radio spots, you might conduct a random sample of the target demographic for that radio station to ascertain the impact of your campaign.

Table 1-1: Questions to Consider when Developing an Air Communications Plan (continued)

Question	Examples of Possible Responses	Relevance of the Question
8. What indicators/data would I use to determine if my approach was successful and I achieved my objectives?	• Public surveys (telephone, mail, etc.) • Air emissions inventories • Air monitoring data • Enforcement data • Air modeling data • Vehicle maintenance data • Vehicle repair data • Inspection program data • Sales/buy-back/rebate data • Fleet data • Refueling data • Bicycle statistics • Other: _____	The answer to this question forces you to determine if you need to collect new information regarding the impact of your outreach campaign (e.g., through a survey) or if you can utilize existing data to determine the benefits of your program (e.g., inspection program data). Typically, demonstrating the benefits of regulatory programs can be accomplished using existing data, such as enforcement statistics. Targeted non-regulatory programs, such as a lawnmower buy back program, generate their own information (e.g., the number of lawnmowers turned in for cleaner models). Alternatively, in the case of non-regulatory awareness raising programs, you may need to rely on information generated through surveys or focus groups to demonstrate the benefits. [Note: Chapter 3 provides more information on specifying what are to be measured – indicators of success and sources of information – as well as methods of data collection.]
9. What is the timeframe for my outreach project?	• The school year • The fiscal year • 6 months • Other:_____	The answer to this question determines the extent of your program, including development, implementation and evaluation. Remember, you will probably want to pilot test your program's messages and selected media before full program implementation. Consider whether the program needs to be completed in a certain timeframe and whether there are mandatory reports to funders that would accelerate your evaluation schedule. In addition to any deadline constraints, it is important to be sure the timing of the program is seasonally appropriate. For instance, it would not make sense to conduct a car care campaign in the Northeast US in the winter. In all likeliness, the program would not be a success due to the weather, and any evaluation would misrepresent the potential impact (i.e., if the program were implemented and evaluated in July, it might have successful results).
10. How much will my outreach project cost? What percentage of my budget will be used for evaluation?	As a general rule, 5% to 10% of the total budget should be set aside for evaluation purposes.	The initial cost question relates to the size and extent of your campaign. Clearly, cost affects how targeted you must be, both in message and audience, when developing your campaign. As well, it is important that the cost of the evaluation be proportional to the cost of the program. In other words, it does not make sense to spend $20,000 to evaluate a $40,000 outreach program. [Note: Later in Chapter 1, "Take Stock of Your Evaluation Needs and Resources" provides further discussion on evaluation resources.]

Define Your Goals and Objectives

As you think through the basic questions listed in Table 1-1, a key issue is to clearly articulate "goals" and "objectives" – the most important precursors to collecting meaningful information to demonstrate the benefits of your program. Goals and objectives represent two related, but separate, ideas.

A goal is high-level articulation or the vision you hold for your program. It is typically not measurable, but sets lofty ideals. For example, a goal of an implementation support program might be: "Pollution-free air for the City of Greater Acme". While great strides may be taken toward cleaner air, it is likely that it will never be 100 percent clean. It is clearly, however, a worthwhile goal.

In communicating a message to the target audience, outreach programs can have multiple goals and produce various reactions across individuals. They can:

- *Grab Attention* – By disseminating information via written, audio or visual materials, outreach programs can "get the word out" and grab the attention of an audience. The goal of such outputs is to lay the groundwork so that those who are interested will seek further information to learn more about the issues surrounding your message.
- *Raise Awareness and Increase Acceptance* – If crafted correctly, outputs will raise awareness on the part of the target audience. Raising awareness occurs when audience members are no longer just passively recognizing a catch phrase or logo associated with your program. Since they are more aware of the issue, they are more "open" to attitudinal changes. Once awareness has been raised and the message is accepted, individuals actively seek knowledge to further their thinking about an issue.
- *Produce Action* – Behavior change occurs when individuals are motivated enough about what they have learned to change their behavior appropriately.

These three levels may build upon each other in a linear fashion. However, just because individuals can recall your message or are motivated to seek more information, it does not mean that they will adopt new behaviors. On the other hand, "early adopters" may view or hear an outreach message and be compelled to change their behaviors immediately. As a result, it is important to be very specific about which of these outcomes you may want to eventually demonstrate the benefits of your program. Setting objectives will help with this endeavor.

An objective is a statement that guides the development of a program and should be used as the framework for the program's evaluation. Objectives are measurable and can show progress towards the overarching goal. Generally speaking, objectives should be ambitious, but realistically attainable. When crafting objectives, consider the following questions:

- Who is the target audience?
- What will the impact be on that target audience?
- What is outreach issue or message?
- When do you expect to see results from the outreach campaign?
- Where are changes expected in the geographic area?
- How much change is expected?
- How can/will change be determined?

Table 1-2 provides hypothetical examples of both well and poorly worded objectives (including outputs, awareness and acceptance, and action) to support assorted program goals. Note that none of these examples are based on actual objectives reported by OTAQ partners.

In the majority of cases you may have objectives in each of the outputs, awareness and acceptance, and action categories that relate to the same goal. For example, if your goal is: "Reduce daytime fueling during the summer in the City of Greater Acme", you may have multiple objectives across all three categories, e.g.:

- *Output-Focused Objective* – To distribute [xxx#] pamphlets to citizens ages 16 and older who drive a motor vehicle in the Greater Acme Area, and augment message distribution through a PSA radio campaign on 3 radio stations.
- *Awareness and Acceptance-Focused Objective* – To achieve a [xxx%] recognition level of those interviewed in the Greater Acme Area about messages in the pamphlet and PSA campaign.
- *Action-Focused Objective* – To decrease daytime fueling by [xxx%] at service stations in the Greater Acme Area.

Tips for Creating Objectives

- Start with "By the end of the outreach program, participants will be able to …"
- Use action verbs like: apply, recognize, predict, name, make, decide, use, etc.
- Fast forward to the end of your outreach program. What would success look like? How would you describe it? Can that be one of your objectives?

Table 1-2: Sample Enhancements to Poorly Worded Objectives

Indicators	Poorly-Worded Objective	What's So "Poor" About It?	Solution: A Better Worded Objective
Outputs	To deliver information about car emissions to a diverse community in the [state x].	Reader will not understand that the true objective is to reach two diverse audiences in a specific city within the state: automotive technicians as well as the general public in [city y]. Does not state that educational materials will be written in more than one language.	To each of the 250 automotive repair shops listed in [city y] phonebook, distribute 25 multi-lingual diagnostic toolkits for automotive technicians and 250 consumer education pamphlets on new emissions requirements.
	To educate teenagers on air quality.	No mention of the message medium or of forming partnerships with educational institutions to distribute outreach materials.	To partner with 10 local school districts in the [Greater Acme] target geographic area in order to get information about air quality and health posted on every web site for schools within those districts.
	To run a Public Service Announcement (PSA) about transportation alternatives.	Not specific enough as to location, timeframe, or frequency.	To run 2 radio PSAs on 3 stations each hour over a 6-week period during morning rush hour (6 am – 9 am) to reach commuters in [area z].
Awareness and Acceptance	To convey a PSA to the general public.	Does not convey the location, medium, or the desired impact in terms of audience recognition rate.	To aim for a 35% PSA message recall rate of a random sample of primetime television viewers in [area z].
	To educate local citizens about car-care maintenance.	Not specific as to the educational method or desired impact in terms of how many people you want your program to reach.	To have each of 5 summer outreach events on car-care maintenance in [city y] attended by at least 50 target audience-members, with a pre- and post-event survey to determine message retention.
	To provide more information to the public about Ozone Action Days.	Does not tell you the method by which you are trying to increase awareness or the percent increase you are trying to achieve.	To increase hotline requests for media-ready information kits about Ozone Action Days by 20 percent in [city y].
Action	To motivate employees to take alternate modes of transportation to work.	The reader will not be aware of the desire to target corporations as a means of promoting commuter choice.	To have 50 corporations sign-up 1,000 employees for commuter-choice benefits over the next 6 months in [area z].
	To target lawnmower purchasers in order to inform them about cleaner lawn care equipment.	Not specific as to the method of using rebate vouchers, or the effectiveness as determined by incentive utilization rate.	To obtain a 70% redemption rate by consumers who were issued incentive rebates in [city y] to purchase cleaner lawn care equipment.
	To educate the public about not pumping gas during high ozone days.	No mention of the desired outcome in terms of reduction in automobile fueling during the daytime, or the targeted geographic area.	To see a 35% reduction in daytime automobile fueling during high ozone days in [city y].

Table 1-3 provides additional examples of output, awareness and acceptance, and action-focused objectives for regulatory and non-regulatory programs. It is crucial to note that this table is simplified for exemplary purposes. In reality, each entry in the matrix could have a number and variety of different objectives.

Table 1-3: Sample Objectives for Representative Regulatory and Non-Regulatory Air Outreach Programs

Program Type	Sample Programs and Objectives			
	Program Name	Outputs	Awareness and Acceptance	Action
Regulatory	Car Inspection & Maintenance	To distribute 10,000 reminder postcards to community members in [city y] two months before their yearly car inspection is due.	To obtain a 90% recall rate from community members who received reminder postcards about getting their yearly car inspection.	To have 90% of the community members who received reminder postcards get their yearly car inspection on time.
General Public Awareness	Ozone Action Days	To obtain 5 billboards in [area z] on vanpooling, to be displayed for 3 months each.	To see a 20% increase in phone-calls regarding vanpooling in [area z].	To increase vanpool enrollment by 8% in [area z].
Targeted Public Awareness	Lawnmower Rebate	To distribute 5,000 flyers in 10 of the top home repair stores in [city y], advertising a special money-back rebate for purchasing cleaner lawn care equipment.	To receive at least 700 phone-calls to the phone number listed on the rebate flyer to request a rebate certificate in the mail.	To have 350 of the mailed rebate certificates redeemed by consumers in [city y] who purchased cleaner lawn care equipment.

In addition to objectives that are specifically targeted at producing cleaner air, you will want to identify other objectives that are related to improved air quality, including:

- Partnership building;
- Leveraging of resources;
- Increased ease of program implementation, both internal and external to your organization;
- Increased visibility in the community; and
- Increased credibility in the community.

While these positive attributes may not lead directly to emissions reductions, they are still highly important to document as project objectives, for they demonstrate quality service to taxpayers, stakeholder commitment, and organizational improvements that increase the ease of program implementation.

Table 1-4 provides a few examples of possible objectives for such key associated benefits.

Table 1-4: Sample Objectives for Associated Benefits of Air Outreach Programs

Affiliated Benefit	Sample Objectives
Partnership Building	• Work collaboratively with at least 3 local organizations focusing on air quality and health issues. • Co-sponsor 2 car care events with at least 1 large area retailer and 1local radio station in order to attract the attention of citizens. • Share exhibit booth at 2 conferences with an organization supporting a similar initiative.
Leveraging of Resources	• Access at least 0.5 FTE from outside your program (e.g., another government agency). • Get 1 private sector firm to, at minimum, match every dollar donated by other funders. • Get local radio to donate/sponsor a free, on-air "plug" or advertisement. • Access a graduate student *pro bono* to conduct the program evaluation. • Customize another state's existing outreach materials to suit your programmatic needs. • Ensure replication of your outreach materials by providing access to project deliverables to other cities and organizations.
Increased Ease of Program Implementation	• Engage the 5 key internal stakeholders in kickoff project meetings(s) to achieve collaborative and early buy-in on the project. • Coordinate monthly community-level information sessions during Phase I, Options Analysis, to facilitate selection of final approach that will be implemented during Phase II of the project.
Increased Visibility in the Community	• Host 2 community events, each with at least 100 participants. • Advertise on the preview slides at 5 local movie theaters over a 2-month period. • Partner with 1 local TV station to convey daily air quality messages. • Create a hotline or web site to communicate outreach program messages.
Increased Credibility in the Community	• Meet with at least 5 members of the local media to provide informational interviews on outreach areas of expertise. • Partner with a nationally recognized chain to promote outreach message.

Develop Your Own Communications Plan

Throughout the rest of this *Toolkit* you can use the worksheets (at the end of this chapter) to create your own plan to demonstrate the benefits of your outreach program. Whenever you see this icon 

take some time to apply what you have learned.

- Worksheet 1 provides a blank version of Table 1-1, Questions to Consider when Developing an Air Communications Plan.
- Worksheet 2 provides additional space to begin outlining your program evaluation strategy. For now, focus on the overarching goal and objectives for your program and fill out only those portions of the worksheet. You will note that we limited the number of objectives to four. This was done purposefully, allowing you to think about objectives related to: (1) outputs; (2) awareness and acceptance; (3) action; and (4) associated benefits. We will continue to work on other sections of Worksheet 2 in the remaining chapters of the *Toolkit*.

Take Stock of Your Evaluation Needs and Resources

In the last section we discussed planning your communication strategy. Now it is time for you to "take stock" of your evaluation needs and resources and plan accordingly for that portion of your project. It is important to clearly understand what you really need out of your evaluation before designing your approach, selecting instruments, and collecting data. You will likely have limited resources and do not want to spend them collecting data that you don't need or cannot use. As well, you must consider the resources you have available for your program. Resources include: time, money, stakeholders, existing data, and knowledge of program evaluation.

First Things First – Is There a "Baseline" Against Which to Track Programmatic Progress?

Typically, people think about tracking progress against a baseline – that is, the *status quo*, or the way things are prior to conducting any implementation support program. By gathering information on the *status quo*, one can make an informed decision about the appropriate program and then plan the program. Once the program is implemented, data can be again collected and compared with the baseline information or the objectives for the program.

Baseline measurements may be derived from "hard" data (e.g., compliance/enforcement data, employer data, call-to-action network numbers, counts of media outlets using air quality forecasts, web site statistics, vehicle miles traveled (VMT) and trips data from regional Transportation Demand Management (TDM) plans), as well as qualitative or self-reported data on public awareness, attitudes, and/or behavior (based often on random-sample surveys). Table 1-5 provides examples of possible baseline indicators and data sources for various regulatory, general public outreach, and targeted public outreach campaigns.

Plan Your Evaluation

Table 1-6 provides primary and clarifying questions for you to consider at this stage of the planning process, as well as an explanation on why these things are important to consider. Worksheet 3 provides these same questions, which you can fill out for your own program. The sum of the answers to the questions in Table 1-6 and Worksheet 3 should help you answer the overarching question: ***Keeping in mind existing data that may form a baseline, and my evaluation needs and resources, am I being realistic about my evaluation strategy?*** Chapter 3 will help you to actually develop that evaluation strategy building on Worksheets 2 and 3.

Next Steps

Take some time to fill in Worksheet 3 (at the end of this chapter) 

to begin thinking about your own program evaluation.

Table 1-5: Examples of Possible Baseline Indicators and Data Sources

Program Type	Program Name	Baseline Indicators	Data Sources
Regulatory	Clean Fueled Fleets	• Number of fleets in or out of compliance as a percentage of the total number of fleets	• Enforcement data • Fleet data
	Emissions Testing	• Number of vehicles subject to testing in any given year	• Vehicle registration data
General Public Awareness	Ozone Action Day	• Air monitoring data • Air modeling data • Transit ridership statistics • Medical admissions data from hospitals • Refueling statistics • General public awareness through surveys, focus groups, etc.	• State environmental agencies • Transit agencies • Hospitals • State transportation agencies
	Air Web Site	• Number of hits, scroll-throughs, sessions longer than [xxx# minutes]	• Existing web statistics
Targeted Public Awareness	Junker Car Trade-in	• Number of cars older than [year] in the target geographic area	• Department of Motor Vehicles statistics
	Commuter Benefits	• Number of carpools and vanpools registered with MPO, TMA, etc. • Number of employees who use subsidized transportation (e.g., metro checks) • Number of employers enrolled in regional transit programs • Number of telecommuter work centers • Number of daily transit riders • Number of guaranteed ride home programs	• Vanpool providers • MPO/TMAs • Transit agencies • Chambers of Commerce

Table 1-6: Questions to Clarify Your Evaluation Needs and Resources

Question	Clarifying Questions	Why Are These Questions Important?
1. Is there a "baseline" against which you plan to evaluate your implementation support program?	• If "Yes", what is that baseline? • How was it determined and calculated? • What data sources were used to determine and calculate the baseline?	In a textbook, ideal sense, establishment of a baseline should precede any sort of evaluation. In that ideal world, some might argue that without a baseline, there is no point in conducting an evaluation. Think about any existing data that might serve as a baseline, against which you could ultimately collect and compare information after program implementation to evaluate the benefits of your efforts.
2. What data already exist, and from what sources?	What representatives can I contact to help me identify existing data? • Metropolitan planning organizations (MPOs) • Regional planning commissions (RPCs) • Transportation management agencies (TMAs) • Other state or local planning departments • State or local departments of transportation (DOTs) • Transit agencies • Vanpool agencies or organizations • Commuter/rideshare organizations • Federal Highway Administration (FHWA) • Federal Transit Administration (FTA) • Census Bureau • Bureau of Transportation Statistics (BTS) • Other:_____	As noted in Question 8 on Worksheet 1 ("What indicators/data would I use to determine if my approach was successful ad I achieved my objectives?"), depending on your objectives, you may need to collect new information, or it may be possible to use existing air quality, emissions, and transportation statistics. By assessing this ahead of time, you can better plan the kind of information you need to collect, and from what source. [Note: Additional information on data indicators and sources is provided in Chapter 3.]
3. What is the purpose of the evaluation study you will ultimately undertake as part of the program?	• Why will you be conducting a program evaluation? Is there external pressure (i.e., from funding sources) or internal pressure (i.e., from your administration or governing board), or both? • What are your evaluation goals (i.e., to improve your program, to prove your program is effective, to get a baseline, etc.)?	Given the motives driving your evaluation, you may choose to collect different types of information. For instance, if you are conducting the evaluation in order to better your program, you will want to collect information on not only the outcomes of your program, but on the processes you employed to achieve those outcomes.
4. Who will need to be involved in the evaluation process?	• For whom is the evaluation being undertaken? • Who are the evaluation stakeholders? • What type(s) of information do the stakeholders want, need, and/or think is most important? • Will stakeholders be involved in the evaluation process?	A stakeholder is someone interested in the program being evaluated and the results of the evaluation. There are a variety of people you may consider stakeholders: funders, project staff and administrators, other state and local air agencies, EPA, program participants, community leaders, collaborating agencies, etc. It is important to consider the needs of these stakeholders as you plan your evaluation.

Table 1-6: Questions to Clarify Your Evaluation Needs and Resources (continued)

Question	Clarifying Questions	Why Are These Questions Important?
		By identifying your relevant stakeholders you will be better able to determine the amount and type of information that you need to collect in your evaluation. For example, if your funders have specific reporting requirements, it will be necessary to collect information that meets those requirements.
5. How do you plan to package the evaluation data?	• Who will hear your evaluation message? How will they use it? • In what form will you present your data to stakeholders? • How will you disseminate your data?	It is also important to consider how you and your stakeholders will utilize the data that are generated. Evaluation data may be used to make positive changes to the program, secure additional funding for the program, describe the program, and build shared meaning and understanding. Depending on who will hear the message, you will need to package your evaluation findings accordingly. But remember that in all cases, having "hard data" will better enable you to explain your program accurately to others.
6. How much time will you have to conduct your program evaluation?	• What people and resources can help? • How soon after the program concludes will stakeholders need to see results? Or will they want to see incremental, on-going progress?	Data collection can be time consuming. Issues such as the type of data you collect, the willingness of sample members to participate, and whether you use existing data collection instruments or create your own will affect the time it takes to conduct your evaluation. Prior to planning and evaluating a program it is necessary to know if there are any key deadlines involved (e.g., a report is due to funders by a specific date; the program must be completed by the end of the fiscal year; etc.). As well, understanding how much time you have will allow you to determine the extent of the program and its corresponding evaluation (i.e., the more time you have, the more involved the implementation and evaluation phases can be).
7. How much money can you budget for evaluation activities?	• Are their volunteers who can help organize the evaluation, collect and analyze the data and compile results? • Will I need to hire someone to plan and implement the evaluation? • Do I have any stakeholders or colleagues who may have interest and expertise in helping me? Can they help with planning and implementing the evaluation? • Do I need to develop my own data collection instruments or are there some that already exist? • What costs may I incur (i.e. labor, photocopying, postage for surveys, incentives for participants, travel, transcription of data, etc.)? • What supplies will I need?	The cost of program evaluation can vary greatly. It does not make sense to develop an evaluation strategy that you cannot afford to implement. As a general rule, 5-10% of the total budget should be set aside for evaluation purposes. As such, by determining your evaluation budget ahead of time you can scale your strategy appropriately. For instance, if you have a large budget for evaluation you may want to hire a professional evaluator. On the other hand, if your budget for evaluation is rather small, you may want to rely on existing data sources to determine the benefits of your program.

Table 1-6: Questions to Clarify Your Evaluation Needs and Resources (continued)

Question	Clarifying Questions	Why Are These Questions Important?
8. What is your knowledge of and experience with program evaluation?	• What do I know about the evaluation process? • What experience, if any, do I have in conducting evaluations? • What sources of expertise may be available to you?	Some specific knowledge and skills are necessary to conduct a meaningful evaluation. After assessing these questions, you can determine whether you can conduct the evaluation yourself, augmenting your knowledge with additional resources. As well, you may determine that you need to, if it is financially feasible, hire outside expertise.

Worksheet 1: Questions to Consider when Developing an Air Communications Plan

Question	Possible Responses (circle all that apply, where relevant)	Your Notes
1. What is the primary purpose of the outreach component of my implementation support program?	• Regulatory program support • Non-regulatory program support ▪ Voluntary program support ▪ Incentive program support ▪ General public awareness campaign for environment and/or health ▪ Youth oriented awareness campaign for environment and/or health ▪ Environmental justice • Other:_____	
2. What is the program emphasis? What is the key message(s) you are trying to convey?	• Alternative fuels • Reformulated fuels • Transportation/commuter choice • Car care for consumers • Car care for technicians • Heavy duty diesel • Off-road equipment/engines • Other:_____	
3. Who are the stakeholders (beside the target audience) for this outreach program?	• The state and/or local air agency • Community decision makers • Other air quality communicators • EPA and/or DOT • STAPPA/ALAPCO • Physicians interested in the impact of air quality on health issues • People with health issues affected by air quality • Other:_____	
4. Who is the target audience for the program?		
5. What is the target geographic area for the program?		
6. What is the desired objective(s)? [Also see Worksheet 2]		

Worksheet 1: Questions to Consider when Developing an Air Communications Plan (continued)

Question	Possible Responses (circle all that apply, where relevant)	Your Notes
7. What are my outreach products? Will they need to be translated?	• Outreach documents • Promotional give-aways • TV spots • Radio spots • Outdoor advertisements (such as billboards) • Movie theater ads • Links with related products • CD-ROMs • Web sites • Other: _____	
8. What indicators/data would I use to determine if my approach was successful and I achieved my objectives? [Note: As previously indicated, indicators and data sources are also discussed in Chapter 3.]	• Public surveys (telephone, mail, etc.) • Air emissions inventories • Air monitoring data • Enforcement data • Air modeling data • Vehicle maintenance data • Vehicle repair data • Inspection program data • Sales/buy-back/rebate data • Fleet data • Refueling data • Bicycle statistics • Other: _____	
9. What is the timeframe for my outreach project?	• The school year • The fiscal year • 6 months • Other:_____	
10. How much will my outreach project cost? What percentage of my budget will be used for evaluation?		

Worksheet 2: Outlining Your Program Evaluation Strategy

Program Goal: _____

Program Objective(s) [To be completed now in Chapter 1]	"Specify" What Is To Be Collected [To be completed in Chapter 3]		"Collect" & Analyze Data [To be completed in Chapter 3]		Calculate and "Compare" Results [To be completed in Chapter 3]
	Indicators of Success	Sources of Information	Methods of Data Collection	Logistics to Consider	Potential Methods to Calculate Results
#1: [Re. Outputs] To …					
#2: [Re. Awareness and Acceptance] To …					
#3: [Re. Action] To …					
#4: [Re. Associated Benefits] To …					

Worksheet 3: Planning Your Evaluation

1. Is there a "baseline" against which you plan to evaluate your implementation support program?

2. What data already exist, and from what sources?

3. What is the purpose of the evaluation study you will ultimately undertake as part of the program?

4. Who will need to be involved in the evaluation process?

5. How do you plan to package the evaluation data?

6. How much time will you have to conduct your program evaluation?

7. How much money can you budget for evaluation activities?

8. What is your knowledge of and experience with program evaluation?

Chapter 2: Implement Your Program

Once you've developed your plan and detailed your specific communications strategies and tactics, it's time to implement your program. Because actual implementation varies greatly depending on the type of program, your specific next steps are beyond the scope of this *Toolkit*. This chapter is brief, because it is, in essence, yours to "write" (i.e., implement) via your work plan. [This phase, however, typically represents the lengthiest part of a program – actual implementation of program activities.]

No matter what type of program you've designed, there are several points to keep in mind:

- *Access the Right Staff* – Outreach projects typically require a diverse array of skills, ranging from technical experts (e.g., on air issues) and even sometimes attorneys, to communications experts (e.g., in messaging and media), designers and graphic artists, and web designers. Furthermore, there must be a manager who coordinates the project, interacts with partners, and reports to management and stakeholders.
- *Ensure Quality Throughout the Project* – You need to anticipate problems and act affirmatively to resolve them before they materialize. This requires hands-on management and constant communications across the program staff to make sure you are aware of all facets of project implementation.
- *Track Technical and Financial Progress and Milestones* – Many managers use project-planning software as a means for tracking their technical and financial progress toward project milestones. Regardless of whether you use a software package or some other system, you need to track progress and account for any unforeseen deviations from the original plan. Only in this way will you ultimately ensure meeting your final deadlines with products that comport to your original goals and objectives.
- *Work to Promote "Buy in" from Relevant Internal and External Stakeholders* – As you've seen in filling in your worksheets, communications projects typically involve a large number of stakeholders. While some stakeholders are automatically convinced of the value of the communication component of a project, others may require additional coaxing. By systematically going through the exercise of documenting your program through the worksheets in this *Toolkit*, you'll be in the best position to articulate your goals and objectives and satisfy any need for additional information from these parties.

Tips for Program Implementation

- Make sure that your project has the right staffing mix, at the appropriate points in project implementation.
- At regular meetings, encourage program staff to tell you what is working, as well as areas for improvement.
- Document what is and what is not working, as well as any mid-course corrections that are implemented as work-around solutions.
- Apply informal "lessons learned" to provide immediate feedback and input to mid-course adjustments.
- Use the worksheets in this *Toolkit* as a formalized mechanism for capturing information and convincing stakeholders of the program's potential impact.

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Chapter 3: Evaluate Your Program

Chapter 1 detailed the integrated nature of planning and evaluation and allowed you to think through your evaluation needs and resources. It also started you on your evaluation strategy (i.e., Worksheet 2) by having you focus on your goal and objectives. The program itself was then implemented, as described in Chapter 2. This chapter focuses on post-program implementation, specifically evaluation.

The United States General Accountability Office (GAO) defines program evaluations as "*individual systematic studies conducted periodically or on an ad hoc basis to assess how well a program is working*." There are four main types of program evaluation (taken from GAO Report, *Performance Measurement and Evaluation: Definitions and Relationships*, April 1998):

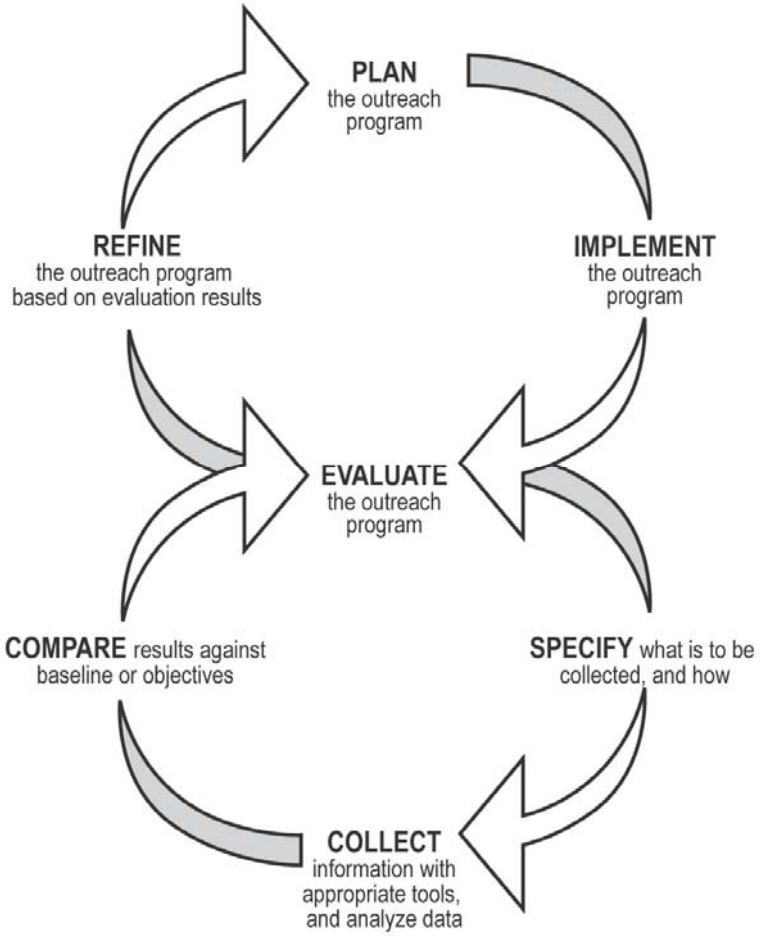
- *Process Evaluation* – This form of evaluation assesses the extent to which a program is operating as it was intended. It typically assesses program activities' conformance to statutory and regulatory requirements, program design, and professional standards or customer expectations.
- *Outcome Evaluation* – This form of evaluation assesses the extent to which a program achieves its outcome-oriented objectives. It focuses on outputs and outcomes, including unintended effects, to judge program effectiveness, but may also assess program process to understand how outcomes are produced.
- *Impact Evaluation* – Impact evaluation is a form of outcome evaluation that assess the net effect of a program by comparing program outcomes with a estimate of what would have happened in the absence of the program. This form of evaluation is used when external factors are known to influence the program's outcomes, in order to isolate the program's contributions to achievement of its objectives.
- *Cost-Benefit and Cost-Effectiveness Evaluation* – These analyses compare a program's outputs with the costs (resources expended) to produce them. Cost-effectiveness analysis assesses the cost of meeting a single goal or objective and can be used to identify the least costly alternative to meet that goal. Cost-benefit analysis aims to identify all relevant costs and benefits, usually expressed in dollar terms.

The "It All Adds Up to Cleaner Air" web site at http://www.italladdsup.gov provides additional information on program evaluation; see, for example, http://www.italladdsup.gov/pdfs/Evaluation.pdf.

Regardless of the type of evaluation, there are several basic steps to doing an evaluation. This chapter describes those components, shown in Figure 3-1 as "Specify", "Collect", and "Compare".

The remainder of this chapter builds upon worksheets initiated in Chapter 1. After reading each section, take time to fill in your worksheets as they relate to your program. While reading this chapter, keep in mind that there is no such thing as a "perfect" evaluation. You will never be able to capture all aspects of any program entirely, nor should you try.

Figure 3-1: Integrated Planning and Evaluation Cycle



Specify What is to Be Collected and Assessed

Worksheet 2 asks you to specify your indicators of success and sources of information by objective.

Indicators of Success

Indicators are signals – they help you to understand if you have achieved your objectives. Indicators may map directly with your objectives, or they may be indirect measures of what you are trying to achieve. If available, they may be based on baseline figures discussed in Table 1-5 and Worksheet 3. Indicators help you answer the questions:

- What information would I convey to stakeholders to tell them this objective has been achieved?
- What constitutes success for this objective?
- What evidence can I provide to show this objective has been met?

For example, imagine a program with the following:

- *Goal* – To decrease air pollution in [area z].
- *Objective* – To increase ridership on public transportation by 35% from September to December.
- *Indicator* – The average number of people riding the subway on a daily basis from September to December.

As previously noted, we are using classic indicators of success for a communications project: outputs, awareness and acceptance, and action. Table 3-1 identifies examples of indicators for each of these three categories. To be sure, this is not an exhaustive list, but rather just a sampling of possibilities. It is also important to note that the list of examples for output and awareness and acceptance indicators is typical of any communications campaign. The action indicator examples, however, identify data sources that key into air-specific information.

Table 3-1: Sample Indicators for Outputs, Awareness and Acceptance, and Action

Indicators of Success	Examples
Outputs — *Output indicators show the volume of outreach products, tools, and materials to the target audience. In measuring outputs, one is measuring if a message has been transmitted.*	• Number of documents distributed • Number of outreach "give aways" • Number of media hits/clips • Number of print-based exposures • Number of television based exposures • Number of radio-based exposures • Number of outdoor exposures • Number of people who attended a general event • Average cost to achieve one print-based exposure • Average cost to achieve one TV-based exposure • Average cost to achieve one radio-based exposure
Awareness and Acceptance — *Awareness and acceptance indicators help to identify whether or not there is an increased recognition and understanding of the issue on the part of the target audience. In measuring awareness and acceptance, one is measuring if a message has been received and subsequently influenced changes in public awareness and attitudes.*	• Number of media inquiries in response to public interest • Number of public inquiries via web site, hotline, etc. • Number of business inquiries • Number of requests from educators for materials such as toolkits • Number of attendees at educational seminars
Action — *Action indicators tell us what behavior changes have been taken, in whole or in part, as a result of the outreach effort. In measuring action, one is measuring whether the implementation support efforts have influenced behavior choices.*	Changes in: • Air monitoring data • Enforcement data • Air modeling data • Vehicle maintenance data • Vehicle repair data • Inspection program data • Sales/buy-back/rebate data • Fleet data • Refueling data • Bicycle statistics • Pedestrian statistics

Table 3-1: Sample Indicators for Outputs, Awareness and Acceptance, and Action (continued)

Indicators of Success	Examples
	• Ridesharing statistics • Park and ride statistics • Transit ridership statistics • Traffic flow measures • Vehicle travel statistics • Employer data • Carpool/vanpool statistics • Telework statistics • Hospital emergency room visits/admission statistics • Other medical data

Take a moment to identify some indicators for your own program, by objective, in Worksheet 2.

Sources of Information

Once you have identified indicators, the next step is to determine where you can get the data to demonstrate the benefits of your program. There are three main sources of data for communication outreach programs:

- Existing data sources;
- Program-generated statistics; and
- Survey data.

Note that multiple methods of collecting information to demonstrate the benefits may be necessary to best understand your program.

Existing Data Sources

Some entity may have already collected information that you could use to evaluate the success of your program. For instance, if you have a communications campaign that encourages people to get out of their cars and take public transportation, you might use public transit ridership numbers to verify if your program is having an impact. As noted in Table 1-6, organizations that might collect relevant information include:

- Metropolitan planning organizations (MPOs);
- Regional planning commissions (RPCs);
- Transportation management agencies (TMAs);
- Other state or local planning departments;
- State or local departments of transportation (DOTs);

- Transit agencies;
- Vanpool agencies or organizations;
- Commuter/rideshare organizations;
- Federal Highway Administration (FHWA) and the Highway Performance Monitoring System (HPMS);
- Federal Transit Administration (FTA) and its National Transit Database;
- Census Bureau (such as the Journey to Work Survey); and
- Bureau of Transportation Statistics (BTS).

Since local organizations vary, it may be necessary to contact the organization appropriate to your project and determine if they have any information that may be useful to your project.

Program-Generated Statistics

Another source of data is information generated by the program itself. For example, in a marine engine rebate program one can count the number of rebates redeemed at local merchants. That count can serve as a data source. By multiplying the number of rebates redeemed (and hence, engines replaced), one can estimate the amount of emissions reductions that resulted.

Survey Data

When there are no existing data sources, and the program does not generate its own statistics, it may be necessary to survey your target population to determine the success of your program. When surveying to demonstrate the benefits of your program, it is important to target the appropriate people – or sample – for your data collection. To better understand sampling, here is a short vocabulary list:

- *Population* – These are all the people to which you want to generalize your findings.
- *Probability Sampling* – In probability sampling, you would randomly select people from your relevant population to participate in your evaluation. A table of random numbers, a computer random number generator, or even picking out of a hat can allow you to randomly select participants.

Sample Size and Error Rates

How large should the sample be for your results to have some "statistical significance"? The answer to that question depends on how much error you're willing to tolerate and how randomly you have been able to select participants. The greater the number of people who are interviewed, the smaller the sampling error. Additionally, sampling error is smaller with probabilistic sampling than with other non-probability sampling procedures.

One simple formula you can use to calculate sample size is:

$$N = 1 / error^2$$

So, if you were willing to accept a 5 percent error rate for your results (that is, the odds would be 95: 5 that the true population value would be within plus or minus 5 percent of your results), you would need to get 400 responses from your target population:

$$400 = 1 / 0.05^2$$

The greater your tolerance for possible sampling error, the smaller your sample could be. For example, for a plus or minus 10 percent error rate, you would need to get 100 responses from your target population.

$$100 = 1 / 0.10^2$$

Clearly, the fewer people sampled, the cheaper the cost of the study. However, for example, a sample size of only 45 responses would be associated with plus or minus 15 percent error rate. Most researchers would strongly caution against allowing such high error rates.

**Also note that due to potentially high non-response rates, you would most likely need to survey a much larger number of people in order to yield the desired number of responses. You would also need to state specifically in your findings if you assumed that the characteristics of non-respondents were the same as respondents.

- *Non-Probability Sampling* – There are a variety of forms of sampling that do not use probability theory. Some of the most common include:
  - Accidental, haphazard or convenience sampling – This is actually a fairly common method of sampling. When you are stopped at a shopping mall and asked for your opinion on something, this is accidental or convenience sampling.
  - Purposeful sampling – In this type of sampling, people are chosen for a specific reason. For example, they may have expertise in a certain subject area.
  - Snowball sampling – In snowball sampling, you would initially determine a few people who are relevant to your data collection. Then, these participants suggest other people that have expertise or experience on that subject.

Once you have determined an appropriate sample, you are better positioned to choose an appropriate method of data collection. The following section provides additional information on surveying as a data collection methodology.

Take this opportunity to identify sources of information for your own program, by objective, in Worksheet 2.

Cautions on Surveys

We realize many of you are reading this *Toolkit* because you need to demonstrate the benefits of your program, but you do not have the resources to hire a professional evaluator to collect information. Do not assume that doing your own surveys will be without cost! Keep in mind expenses such as postage for surveys sent through the mail and staff time taken away from another project to conduct an evaluation.

Also, if you are collecting information through federal funding (e.g., a federal grant or cooperative agreement), you must address the issue of Information Collection Request (ICR) requirements under the Paperwork Reduction Act. Table 3-2 provides additional information on surveys and ICRs.

Collect and Analyze Data

Worksheet 2 asks you to specify your methods of data collection and logistics to consider by objective.

Methods of Data Collection

There are many methods you can use to collect information about your outreach support program, particularly if there are neither existing data sources nor program-generated statistics. Focusing on techniques where you survey a population, Table 3-2 explains the following main data collection tools:

- One-on-one interviews;
- Focus groups; and
- Surveys (written, telephone, web, and/or email).

Table 3-2 also describes their advantages and disadvantages and tips for using them.

Table 3-2: Data Collection Tools: Advantages, Disadvantages, and Tips & Tricks

Data Collection Tools	Advantages	Disadvantages	Tips & Tricks
One-on-One Interviews – An interview is a one-on-one conversation, typically guided by a protocol of questions. It can take place on the phone or in-person.	• Can lead to rich qualitative data, especially quotes. • Interviewees can respond in their own words (versus predetermined categories). • Interviews may used in conjunction with quantitative data to tell the "story behind the numbers". • Relatively inexpensive (unless travel is involved). • High response rate. • May allow longer interview that probes for more detailed information. • Questions can be interpreted for interviewee if necessary.	• Time: interviews can be time intensive and expensive. • Time: data analysis can be time consuming and overwhelming. • Costly per interview. • There may be a variation in response if more than one person is conducting the interviews. • Selection of the sampling location. • The interviewer may not stay on script in opinion probing. • Interviewing people who can take an hour or so out of their day to participate.	• Hold the interview at a time and place convenient to the participant. • State the purpose, approximate length of time, and whether or not you are taping the data up front. • Discuss how responses will be used (i.e., only in the aggregate, without name attribution, etc.). • Move from general questions, or easier questions, to more specific or difficult questions. • Avoid questions that lend themselves to a simple yes or no answer. • Pre-test interview questions ahead of time to be sure they will elicit the information you are trying to get. • If possible, ask participants to read over your transcript of their interview to be sure it accurately reflects their opinion.
Focus Groups – A focus group in an interview that typically lasts 1-2 hours. A facilitator leads the discussion with approximately 8 to 10 participants.	• Time: as quick as needed (and resources will allow). • Inexpensive. • Many opinions heard in a short time. • Can use respondent comments to spark ideas for discussion.	• It is hard to replicate a focus group, as groups vary considerably. • Subjectivity in interpreting results. • Findings depend on a group willing to share their thoughts.	• Select a person skilled in group process to be the moderator. • Choose a site and time convenient and unbiased for participants. • Provide incentives, such as food or cash, if possible. • Tape record and transcribe the conversation for accuracy (be sure to tell participants that you are doing this). • Plan a limited number of questions (3 to 6) and probe accordingly. • Start with easier questions and work into harder questions. • Hold focus groups with native language speakers and avoid assumptions about

Table 3-2: Data Collection Tools: Advantages, Disadvantages, and Tips & Tricks (continued)

Data Collection Tools	Advantages	Disadvantages	Tips & Tricks
			what messages and appeals will work best. • If your program is funded with federal dollars, and you are collecting information from 10 or more participants who are not government employees, you will need to file an Information Collection Request (ICR). See EPA's ICR page at http://www.epa.gov/icr/ for more details.
Surveys – A survey is a set of questions used to collect information on a particular topic. They can be administered in writing, over the telephone, on the web, or through email.	• Can reach a large number of people. • Can be administered randomly. • Can be completed on the respondent's own time at their own pace. • Quantitative responses are easily tallied.	• Administrators cannot answer participant questions regarding the survey easily. • Response rates can vary greatly. • Questions may be misinterpreted. • Cannot adjust the questions once the survey is administered. • Results are dependent on the quality of the questions. • May not be suitable for exploring complex issues.	• Always pilot test the survey with a group similar to the intended respondents. • The survey may need to be translated into multiple languages. • If your program is funded with federal dollars, and you are collecting information from 10 or more participants who are not government employees, you will need to file an ICR. See EPA's ICR page at http://www.epa.gov/icr/ for more details. • Check with your agency or organization regarding any specific data collection rules and regulations.
Written Surveys	• Can include visual aspects. • Easy to enter data and analyze. • Format is familiar to most people. • Avoids bias introduced by interviewer (uniform question presentation and no verbal or visual clues to influence the respondent).	• Time: takes longer than other surveys to complete (e.g., 8-12 weeks). • Lower response rate. • Cannot ask for more detailed information. • Among the least expensive. • Best response levels are achieved from those with a particular interest in the subject.	• Keep questionnaire short and well designed – no more than 4 pages. • Provide cover letter and incentive as a motivation for completing the survey with the mailing. • Provide a self-addressed (non-bulk rate) postage-paid envelope, as well as a 1-800 fax line for returning completed surveys.

Table 3-2: Data Collection Tools: Advantages, Disadvantages, and Tips & Tricks (continued)

Data Collection Tools	Advantages	Disadvantages	Tips & Tricks
Telephone Surveys	• Time: can be completed as quickly as needed. • Good for shorter interviews. • Interviewees can be contacted more quickly than other methods. • Can use random sampling (i.e., dialing random numbers). • Easy to enter data and analyze. • Provides for some "opinion probing". • No cost of transportation.	• People are increasingly reluctant or unwilling to answer phone interviews. • Calling time is limited to a "window" of about 6-9 pm (e.g., people working normal business hours versus night shift). • Interviewer may not stay on script in opinion probing.	• Possibility of random-digit dialing makes random samples easy to draw cheaply, since no additional identification information on the target audience must be gathered. • May also use computer-assisted telephone interviewing (CATI) to enter the response automatically, which ensures consistency.
Web Surveys	• Time: fast. • Cost-effective: large samples do not cost more than small samples. • Can show pictures use colors, fonts, etc. as formatting options. • Can use complex question skipping logic, etc.	• Time: potential for low response rate. • Cannot use Internet surveys to generalize findings to the whole population; people with Internet are different demographics from those who do not, even when matched on demographic characteristics, such as age and gender. • Have no control over who replies (unless each respondent is provided with a unique identification to ensure only one response from each person).	• Population must have Internet access. • Needs to be short, so respondent does not quit in the middle of the survey.

Table 3-2: Data Collection Tools: Advantages, Disadvantages, and Tips & Tricks (continued)

Data Collection Tools	Advantages	Disadvantages	Tips & Tricks
Email Surveys	• Time: fast response rate. • Cost-effective • Can attach pictures. • Novelty element of an e-mail survey often stimulates higher response levels than ordinary "snail mail" surveys.	• Could be perceived as junk mail. • Typically cannot use colors, fonts, and other formatting options. • May have to purchase a list of e-mail addresses. • Cannot use complex skipping patterns. • Cannot use e-mail surveys to generalize findings to the whole population; people who have e-mail are different from those who do not, even when matched on demographic characteristics, such as age and gender. • Cannot necessarily check to eliminate people responding multiple times or forwarding the survey on to their friends.	• Population must have Internet access.

You may need to create these data collection protocols (i.e., surveys, focus group guides, interview questions, observation guides) from scratch or it may be possible to utilize existing instruments (see Appendix B for examples from your peers). If you do need to create an instrument in its entirety, there are several general steps that are necessary - regardless of whether you are creating a focus group guide, an observation guide, an interview protocol, or a survey. They are as follows:

- *State Your Purpose* – You may not be able to get at all your program objectives with one instrument. Stay focused - else it will become too long and complicated!
- *Design the Questions* – When it comes to crafting specific questions be sure to: use the appropriate language, avoid using biased words, and avoid multiple rating scales. As well, it is important to steer clear of double-barreled questions. In other words, questions where you are asking two things at one time. For instance, "Did you find the outreach materials useful and timely?" The respondent may have found the materials useful and not timely, or vice versa. By combining the questions you will not get an accurate answer.
- *Organize Appropriately* – Once you have created your questions, it is important to order them thoughtfully. Generally:
    - Start with easier questions (i.e., name, phone number, address, program, etc.) and move into more complicated or sensitive areas.
    - Include any necessary directions, explanations, definitions, etc.
    - If you are able to offer incentives (food, coupons, money, etc.), mention it at the beginning and end of the survey. Remember, incentives can be as simple as a copy of the results.
    - Always include a "thank you"!
    - Be sure to indicate the approximate time it should take to complete the survey, where the respondent should return the survey, the due date, and contact information for someone who can answer questions related to the survey.
- *Conduct a Pilot Test* – It is important to do a "dry run" of your instrument before using it with your entire sample. Ask people who would be familiar with the content and language to review the instrument and answer the following questions:
    - Is it understandable?
    - Are any of the questions confusing?
    - Are any questions missing?
    - Did you feel any questions were redundant?
    - What else would you add?
    - How long did it take you to complete?

    When reviewing the pilot test results, be sure your questions are seeking the type of answers you were looking for. Then, take all the information gathered and make any necessary changes before full-scale implementation of the instrument.

- *Implement your Instrument* – When implementing a survey, there are a variety of methods from which to choose, e.g.:
  - Email;
  - Regular mail;
  - Via a web site;
  - By telephone;
  - In person;
  - By fax; and
  - Attached to a product (e.g., along with workshop materials, distributed collateral (CD-ROMs, videos, etc.).

  In deciding which format to use, consider your respondents' needs and your time frame. For instance, sending surveys through regular mail will take significantly longer than using email. However, it is important to check to make sure your entire sample has access to email.

  For written or email surveys, send reminders out to increase your response rate. In order to increase the number of responses you receive, it is important to follow-up with participants when you are doing a survey. Depending on the type of format, you can send reminder postcards or emails, or make a brief phone call. You may also want to send the actual instrument a second time, in case the original was misplaced.

Take this opportunity to identify in Worksheet 2 some methods of data collection that may work for your program.

Logistics to Consider

After you have determined your evaluation methods, you need to consider logistical factors that may impact your ability to collect meaningful information. For instance:

- Are the staff you are depending on to help with the evaluation going to be busy with other work at that time?
- Are there any holidays or seasonal factors that may interfere with your ability to get a good response rate (i.e., people will be away from their computers or mail and will not respond)?
- Do you truly have adequate time to implement the selected data collection method (for example, in the case of "snail mail" surveys, anticipated lag time in sending and receiving the questionnaires)?

When thinking about logistics to complete Worksheet 2, reflect back on your list of evaluation needs and resources from Worksheet 3 in Chapter 1.

Take this opportunity to identify any logistics you may need to take into consideration for your own program.

Calculate Results and Compare Against Baseline or Objectives

The next step in completing your evaluation is to calculate your results and compare them against the baseline or, in the absence of a baseline, your objectives. Using the indicators discussed previously in this chapter, you can calculate a variety of changes (e.g., in transit ridership, number of vanpools, number of employers offering commuter benefits, etc.).

However, you may not be able to take credit for these changes, because there may be other factors that are influencing the same issue (e.g., other outreach efforts, expanded coverage of public transportation in the target geographic area, relocation of major employers, seasonal variation through tourist trade, etc). You could, of course, cite the changes, acknowledging that there are a number of variables that could have influenced the results. However, you would be in the position to argue that there are reasonable lines of correlation between these results and the intended purpose of your program. To create a stronger case that it was your program that in some way, shape, or form influenced the results, you could use program-specific surveys (e.g., self-reported measures, random polls, etc.).

Table 3-3 provides examples of hypothetical program evaluation results. These examples are based on discussions with many communications professionals; they do not necessarily represent existing program evaluations. In addition to indicators and sources of data, Table 3-3 suggests methods for calculating and extrapolating the benefits for various regulatory, general public awareness, and targeted public awareness programs.

In addition, Table 3-4 includes outcomes, awareness and acceptance, and action results reported by selected OTAQ partners. These examples are provided simply to show the variety of ways air communicators have calculated and portrayed benefits to date. Additional resources and tools for both qualitative and quantitative data analysis can be found in the Appendices.

Take this opportunity to identify how you may calculate results and compare them against your baseline or objectives.

Table 3-3: Calculation of Hypothetical Program Results

Program Type	Program Name	Baseline Indicator	Baseline Data Source	Post-Implementation Indicator	Post-Implementation Data Source	Calculated Benefits
Regulatory	Clean Fueled Fleet	Compliance with Clean Fueled Fleet Rule to date	Fleet data & enforcement data: Number of non-complying fleets / Total number of fleets	• Increased inquiries about the program • Increased return of annual reports • Increased number of fleets complying with the program	• Inquiries • Fleet data and enforcement data	Measured changes in the number of annual reports that were received without further administrative actions and by the number of fleets that complied with the program requirements • Increase in number of fleets submitting annual reports X enforcement savings per reduced number of follow-up administrative enforcement action = dollars saved • Potential emissions reduction per fleet that comes into compliance
	Emissions Testing	Number of vehicles subject to testing in any given year	Vehicle registration data	Number of vehicles actually tested	Emissions testing log (e.g., by vehicle tag or registration number)	• Number of vehicles that complete annual testing w/o any additional follow-up X cost of each follow-up reminder/action = dollars saved • Number of vehicles that fail emissions testing and get taken off the road X average emissions load per vehicle = total emissions saved

Table 3-3: Calculation of Hypothetical Program Results (continued)

Program Type	Program Name	Baseline Indicator	Baseline Data Source	Post-Implementation Indicator	Post-Implementation Data Source	Calculated Benefits
General Public Awareness	Web site re. Ozone Action Days	Baseline of web sessions	Web statistics	• Number of hits to web site • Queries from web-readers looking for more information • Measures of activities on the web site that go beyond the home page	Web statistics, e.g.: • Survey questionnaire built into the firewall as users first log in • Other self-reported web survey data (e.g., to evaluate the usefulness of the web site, to assess knowledge on what the user learned from the web site, to query behavior changes)	• Increased awareness based on calculated increase in web activity (e.g., hits, scroll throughs, length of session, etc.) • Increased awareness as calculated by web survey results • Benefits affiliated with self-reported actions, as calculated by web survey results
Targeted Public Awareness	Heavy Duty Engine Emission Reduction Incentive Program	For this example, assume no baseline	None	Number of engines retrofitted or purchased through incentive funds	Program-generated data, e.g., • Inquiries about potential retrofits or purchases • Number of funded retrofits or purchases	• Increased awareness based on level of inquiries • Assuming each engine retrofitted or purchased = Y lbs of NOx not emitted, X number of funded/purchased engines = total NOx not emitted
	Lawnmower Rebate Incentive Program	For this example, assume no baseline	None	Number of rebates redeemed	Program-generated data: • Inquiries about potential retrofits or purchases • Number of rebates generated • Number of redeemed rebates	• Increased awareness based on level of inquiries • Assuming each lawnmower turned in = Y lbs of VOCs not emitted, X number of lawnmowers turned in = total VOCs not emitted

Table 3-3: Calculation of Hypothetical Program Results (continued)

Program Type	Program Name	Baseline Indicator	Baseline Data Source	Post-Implementation Indicator	Post-Implementation Data Source	Calculated Benefits
Targeted Public Awareness *(continued)*	Junker Car Trade-in Incentive Program	Number of cars that failed inspection in the target area	Department of Motor Vehicles statistics	Number of cars scraped through the program	Program-generated data: • Inquiries about the program • Number of cars scraped	• Increased awareness based on level of inquiries • Number of cars scraped X average emissions per car = total emissions saved
	Commuter Benefits	Number of: • Employers who offer subsidized transportation to their employees • Employees who use subsidized transportation • Carpools and vanpools • Telecommuter centers • Transit riders • Guaranteed ride home programs	• MPO • TMA • Transit agencies/ authorities • Vanpool /carpool providers • Local Chambers of Commerce or other business organizations	See baseline indicators	• See baseline data sources • Inquiries about the program • Program-specific surveys	Let's suppose your program produced a variety of multi-media collateral (1) urging people to get out of their cars and use their local metro/bus service; and (2) urging business to offer commuter benefits to their employees. Let's also suppose that during your ad campaign transit saw a net increase in monthly ridership totaling 5 percent.[1] You may decide to focus on understanding the opinions, attitudes, and behaviors of just "new" riders. To do this, you could periodically poll metro/bus riders to quantify the percentage that heard these placements, understood the message, and began riding metro/bus thereafter. For example, you could poll 25 riders/hour, at four different locations, on four different days (i.e., that would give you a sample size of 400 responses). If 40 of these 400 intercepts reported that they

Table 3-3: Calculation of Hypothetical Program Results (continued)

Program Type	Program Name	Baseline Indicator	Baseline Data Source	Post-Implementation Indicator	Post-Implementation Data Source	Calculated Benefits
Targeted Public Awareness *(continued)*						heard the ad and/or began to take metro/bus as a result, this is evidence[2] that your program demonstrated a direct impact in ridership. You could take credit for the 10 percent of the 5 percent increase, with an error rate of plus or minus 5 percent. You could then extrapolate calculated emissions savings based on average emission per commute X number of commutes not taken.

[1] Note that the net increase has many components: some previous riders may have dropped out of the system, some may be completely new riders, some may have contemplated leaving the system but remained on board due to the persuasiveness of your arguments, etc. Additionally, it may be that every month there is some net turnover in transit ridership.

[2] As noted earlier in the chapter, you would have to put the appropriate caveats on this calculation.

Table 3-4: Examples of Air Communications Programs Demonstrating the Benefits

Outputs

- "It All Adds Up to Cleaner Air", a collaborative effort of the U.S. Department of Transportation and EPA, has provided print and broadcast public service announcements, outdoor signs, and other materials to help communities implement public outreach initiatives. Television and radio PSAs, print advertisements, special events, billboards, and displays produced a minimum of 74 million viewer impressions. See http://www.italladdsup.gov for additional information on this national effort.
- The National 4-H Council has distributed more than 3,200 copies of its curriculum, "Going Places, Making Choices: Transportation and the Environment" and presented the curriculum at 23 conferences and workshops, reaching more than 72,000 students. See http://www.4hgpmc.com for additional information on this curriculum.
- The American Lung Association of Alaska developed a wintertime carbon monoxide awareness program called "Care About Air" campaign. The campaign coalition allocated $150K for media advertisements and distributed 58,000 "Plug It In" brochures as an insert in the *Anchorage Daily News*.
- The Sacramento Metropolitan Air Quality Management District distributed a variety of materials around "Save Planet Polluto", an interactive CD-ROM and web site (http://www.planetpolluto.com), including 2,500 coloring books; 2,500 Save Planet Polluto pens; and 500 rulers. Additionally, the program sponsored 480 on-air advertisements and 17 assemblies at 14 elementary schools that reached 5,077 students.
- The Northeast Sustainable Energy Association (NESEA) designed curriculum resources and teacher workshops that bring transportation, energy and air quality issues into the classroom. In 2000, 113 teachers attended the workshops, a 50 percent increase over 1998. Of the attendees, 62 percent said they would not have used the materials without the workshop. See http://www.nesea.org/education/index.html for additional information on these resources and workshops.

Awareness and Acceptance

- After years of educating the public about the benefits of variable tolls to reduce congestion and encourage alternative transportation choices, the New Jersey Turnpike Authority and the Port Authority of New York and New Jersey were in the position to move forward on plans to implement congestion relief pricing. These Authorities began their new pricing programs in 2000-2001.
- The Sacramento Metropolitan Air Quality Management District estimates that between 100 and 150 visits are made each week to "Smog City", the nation's first interactive air pollution simulator for the Internet. A variety of people use "Smog City", including educators, students, medical doctors, and government officials.
- Over a 2-month period, approximately 135,000 moviegoers were exposed to "Screen Seens" developed by the Maine Department of Environmental Protection. Of the 296 viewers who were interviewed to assess reactions to the "Screen Seens" and program effectiveness, 44 recalled seeing the message, and 42 reported that they got the message.
- The Miami-Dade County (FL) Department of Environmental Resources Management's program, "Instructing Drivers to Lower Emissions", has been successful at teaching students critical thinking and problem-solving skills. More than 3,200 students heard the "I.D.L.E. in Dade" presentation, and student post-test scores were almost 20 percent higher than pre-test scores. A final "train the trainer" workshop exposed 30 driver education instructors to the "I.D.L.E. in Dade" messages and materials.
- The average score in the Alamo Area Council of Government's "Car Care and Clean Air Survey" was 76 percent. The results indicated a specific need to further educate the local public as to emissions released from cold cars and emissions savings from trip chaining.

Table 3-4: Examples of Air Communications Programs Demonstrating the Benefits (continued)

Action
• On Martha's Vineyard, the Massachusetts Department of Environmental Protection's summer electric vehicle program eliminated approximately 1,600 pounds of air pollutants and the use of 193 gallons of gasoline during the program's first two summers. • Participants turned in 300 pieces of gas-powered lawn equipment and purchased 200 pieces of electric lawn equipment during the "Mow Down Smog" rebate program in San Antonio, Texas. These replacements reduce the amount to VOCs produced on a summer's day by approximately 20 pounds. • In the Sacramento Metropolitan Air Quality Management District's evaluation of the "Spare the Air" campaign, survey results indicated 21 percent of respondents drove less on Spare the Air days, and 19 percent said they reduced their driving for air quality reasons. • Under its "Cash for Clippers" program, Maryland Department of the Environmental estimated that 425 rebates prevented the release of approximately 8 tons of VOCs per day, or 129 pounds of pollution per summer day. • In California's San Joaquin Valley, the "Heavy Duty Engine Emission Reduction Outreach Program" funded 600 projects that resulted in the retrofit or replacement of existing engines for less-polluting ones, eliminating the release of 16.6 million pounds (8,300 tons) of nitrogen oxide over the lifetime of the projects. • At Yellowstone National Park, the "Clean Snowmobile Challenge 2000" inspired college students to design cleaner, quieter machines. Competition results are helping manufacturers build and market less polluting snowmobiles, such as Arctic Cat's Yellowstone Special, which boast a four-fold reduction in greenhouse gas emissions. Specifically, as a result of the 2000 competition, a machine was produced that reduced unburned HC emissions by 99.5 percent and CO by 46 percent. 2001 saw reductions of HC by 96.9 percent, CO by 82.5 percent, and NOx by 90.5 percent. • The Georgia Department of Natural Resource and Clean Cities Atlanta created an "Information Resource Program" to educate municipal fleet operators about low emissions vehicles. As a result of the outreach program, more than 300 employer fleets in the region have purchased cleaner vehicles. • In Kansas City, KS, the "Let Kids Lead" program used classmate and parent surveys, followed by community presentations, which resulted in a local planning and zoning commission decision to build more walking and bicycle paths.
Associated Benefits
• "It All Adds Up to Cleaner Air" materials have been accessed and modified by more than 90 communities beyond the initial 14 demonstration communities. • Trained volunteers donated more than 1,800 hours to the "Chattanooga Lifestyle Campaign". • Numerous individual products have been accessed and modified by other states and localities (e.g., "Air World", an interactive CD-ROM developed by the Ventura County (CA) Air Pollution Control District; "Breathe Easy" materials developed by Escambia County (FL) NESD and WFRPC/MPO for their ozone program; "Exhausted", a driver's education video developed by the Texas Natural Resource Conservation Commission; Clean Fueled Fleet Program materials developed by GA EPD; "Air Watch Northwest", initiated by the Puget Sound Clean Air Agency, etc.). • Numerous individual projects have won prestigious national awards, including "Breathe Easy"; "Clean Snow Mobiles"; "Air World"; "Smog City"; "Going Places, Making Choices"; the American Lung Association's California mini-project; and the Northwest Indiana Regional Planning Commission's "It All Adds Up to Cleaner Air" campaign. • Numerous projects have leveraged matching funds and in-kind transfers, e.g., IL EPA and Chicago Museum of Science and History leveraged a $75K grant from OTAQ into a $1 million museum exhibit.

Package Your Results

Once you have completed your evaluation, it is important to consider how you present your results. The way you "package" your findings affects the way it is received by your stakeholders. Laying out a clear roadmap of what you did, and why you did it, as well as findings and recommendations will allow those reading the materials to better understand what you have accomplished.

An evaluation report typically consists of:

- Background;
- The main questions you were trying to answer;
- Your methodology (sample, data collection instruments, assumptions and caveats, etc.);
- Findings;
- Conclusions; and
- Recommendations.

Some additional pointers on presenting your findings:

- Be sure to refer to program goals and objectives when writing the report – this information should feed back into the program planning and evaluation cycle!
- Any graphics should enhance, not distract from the content.
- Your audience – what format would be most appealing to them?

Oftentimes it is appropriate to include your data collection instrument.

Chapter 4: Refine Your Program

After you have analyzed the evaluation data, you will be in the position to refine your program (see Figure 4-1) based on "lessons learned." Tables 4-1 and 4-2 provide information on lessons learned from a number of air communications projects implemented to date through OTAQ grants and other resources.

Figure 4-1: "Plan, Implement, Evaluate, Refine" Project Lifecycle Model

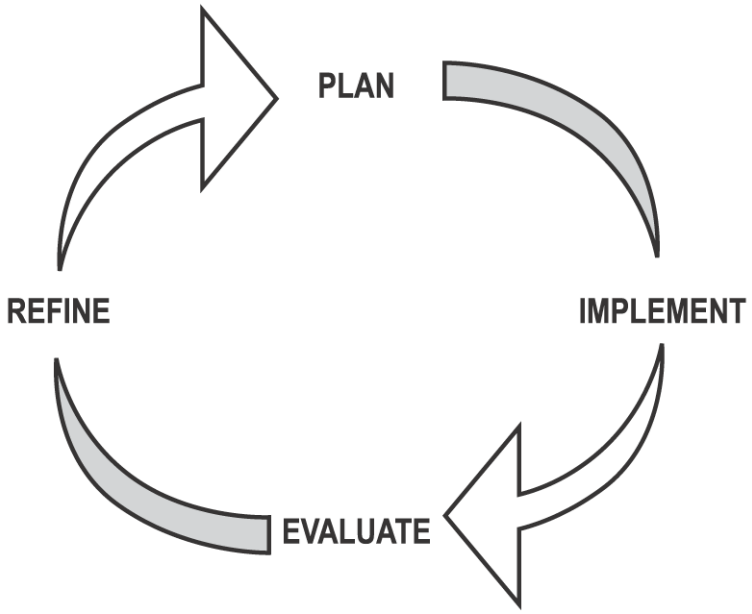


Table 4-1 highlights partner's experiences – both positive and negative – in producing and distributing various outputs to the target audience. It is important to note that this is only a snapshot of different people's experience – it is not meant to be a consensus of all OTAQ partners. Factors such as geography, local employment rates, and the size of the targeted population would clearly have a role in shaping lessons learned from a given program.

Table 4-1: Lessons Learned – Refining Outputs (Source: Air Communicators)

Outputs	Lessons Learned for Refining the Program
CD-ROMs	Received positive feedback from students and other targeted stakeholders.
Communicating through employers	Seen as valuable, since employees read/listen to employer communications.
Events (and promotional give-aways at events)	• Promotional items (sunshades, Car Care 101 booklets, etc.) were well received and drew individuals to events. But need to link events to larger venues, with a major retailer and/or on-air personality who can promote event or offer real incentives for individuals to attend (sales, discounts, etc.), or create a "glam" event/premier of the product to attract local press coverage and create a buzz. • At teacher convention trade shows, an exhibit booth with curriculum materials was a boon to teachers, especially since the cost was low.
Outdoor and indoor billboards	• Reached a large audience. • Provided positive reinforcement through dioramas and bus poster ads. • Could be costly.
Print-based outreach	• Could be least costly; however: ▪ Newspaper print ads can be expensive and not reach the target audience (e.g., blue collar public). ▪ Too much printed material can be confusing – better to go w/ one solid product. • Saw success with targeted publications (e.g., education newspapers, etc.).

Table 4-1: Lessons Learned – Refining Outputs (Source: Air Communicators) (continued)

Outputs	Lessons Learned for Refining the Program
Radio ads	• Reaches a large, diverse audience: ▪ Commuters: Radio ads linked to traffic reports during drive times, with 30 and 60 second spots that gave more information. ▪ Future drivers: Partnership with Radio Disney worked extremely well and could be duplicated nationally; PSAs using school children audio messages were good.
Ride-free days	Very low participant rates despite significant media push.
Theater ads	• Costly. • Might not reach target audience. • Did not receive much feedback from stakeholders.
TV	• Reached a large audience (e.g., air quality forecasts on TV weather reports). • Advertising was costly and only effective if you could do saturation marketing.
Video	Great classroom tool that prompted student attention and generated interest.
Web (and hotlines & networks)	• Had national and international reach, thereby opening up a wide range of participation. • Allowed cross-program/site promotion. • Facilitated call-to-action networks, discussion groups, etc. • Viewed as a great tool for individual and group research, information and training. • Provided publishing opportunities for students and teachers. • Received positive feedback.
Workshops	• Reached a large, diverse audience: ▪ Teachers: Trained teachers in the best and highest use of the materials. ▪ Regulated universe: Targeted most efficiently the regulated universe; most efficient way to provide information to fleets that were required to comply with the program.

Other Comments:

- For K-12 education programs, important to (1) budget for teacher training, and for teacher and student focus group testing; (2) develop evaluation instruments that are meaningful for teachers and for project funders; and (3) direct mail curriculum officers in school districts to assure that all schools and the appropriate teacher(s) at the school receive the material.
- Attempts to increase awareness of a program name as a "brand" did not necessarily work well due to insufficient funds to conduct full-scale adverting campaigns. Conversely, with respect to Web projects, had success in "mega-tagging" a Web site and marketing the URL broadly.
- Helpful to link data sources and public information budget so as to be more effective in using media to give the public the information it needs.
- Some distribution networks (e.g., American Lung Association chapters) were viewed as "priceless".
- Submitting projects for media and communications awards helped increase credibility to all stakeholders.
- Easier to count numbers (e.g., of documents distributed, of potential exposure, etc.) than per unit costs of exposure.

Table 4-2 describes different partner's experiences to date in measuring acceptance and awareness, as well as action, attributable to their outreach efforts. These valuable lessons learned can inform future communications endeavors – not only on the part of partners, but all air communicators.

Table 4-2: Lessons Learned – Refining Awareness and Acceptance, and Action (Source: Air Communicators)

Methods to Assess Awareness and Acceptance, and Action	Lessons Learned in Using these Indicators to Assess Results
Existing data sources	• Calculated increased compliance with regulatory programs based on reduced number of enforcement actions and fleet data. • Measured public and/or employer participation/enrollment in air/ozone programs. • Tracked transit ridership statistics. • Noted that follow-up to call-to-action networks might be a good tool in quantifying actual behavior changes.
Feedback/ evaluation forms	• Feedback via hotlines, web sites, and e-mails was valuable. In the future, would promote feedback by email and/or web site submissions, as that gives air communicators a second chance to educate the target audience via the web. • Comments from students and teachers confirm that educational product was designed so that students (and teachers) had to learn about air quality issues in order to finish the product's "adventure".
Inquiries (e.g., via hotlines, etc.)	• Measure of success was the increased inquiries about the program, e.g.: ▪ Inquiries from educators requesting curriculum and other material increased 100 percent. ▪ Exhausted supply of CD-ROMs and other collateral; outreach product on backorder. • Fleet hotline received positive feedback.
Surveys	• Often, it is assumed that surveys are only used to measure attitudes towards and acceptance of communications campaigns. Remember – you can ask people to self-report their behavior changes (as a result of your campaign), allowing you to capture any actions that have resulted from your program. • Surveys were successfully used to measure pre- (baseline) and post-implementation levels of awareness and acceptance, and action, with varying results: ▪ Example 1: Recorded an 18% increase in awareness. ▪ Example 2: Saw very little change in pre-and post-campaign statistics about willingness to make behavior changes. ▪ Example 3: Conducted trend analysis of yearly survey research, relying on self-reporting. Saw small changes in awareness or behavior using trend analysis.
Web sessions (e.g., exploratory behavior on web site)	• Saw increased subscribers in call-to-action network. • Should see increased "chat room" interactions over time, which should help measure "educational impact" (e.g., information retention, etc.) of products.

Other Comments:

- Critical to factor in the differences among ethnic communication styles for target audiences, building materials based on that research.
- Submitting a web project for media and communications awards, and winning awards, helped build credibility and made users feel confident about the site's content.
- Building partnerships was key – not only for funding, but also for building project credibility and allowing the agency better to market the appropriate target audience.

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Appendices

Appendix A: Resources[1] identifies selected web sites, graduate schools and university-affiliated centers, associations and institutes, and literature on program planning and evaluation – all resources that may be helpful in compiling your evaluation plan. The list of possible literature sources provides information on communications planning, general evaluation literature, creating a survey, and analyzing and reporting data. Note that these entries are not exhaustive, nor do they represent formal endorsement by EPA. Instead, they highlight a handful of the numerous information sources that are available to help you think about communications planning and evaluation.

Appendix B: Tools from Your Peers[1] provides hard copies of air outreach surveys and evaluation results conducted by two partners as well as web links to tools developed by other air communicators. As additional survey instruments and evaluation reports are made available by air communicators, it is OTAQ's intent to update lessons learned (see Chapter 4) and Appendix B in this *Toolkit* electronically (e.g., via the http://www.airshare.info web site).

[1] Exit Disclaimer: Links to web sites outside the EPA web site are for the convenience of the user. The Standards of Ethical Conduct do not permit EPA to endorse any private sector web site, product, or service. EPA does not exercise any editorial control over the information you may find at these locations. These links are being provided consistent with the intended purpose of this *Toolkit* and the EPA web site.

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Appendix A: Resources

Appendix A identifies selected web sites, graduate schools and university-affiliated centers, associations and institutes, and literature on program planning and evaluation. As previously noted, links to web sites outside the EPA web site are for the convenience of the user. The Standards of Ethical Conduct do not permit EPA to endorse any private sector web site, product, or service. EPA does not exercise any editorial control over the information you may find at these locations. These links are being provided consistent with the intended purpose of this *Toolkit* and EPA's web site.

Web Sites

Agency for Toxic Substances and Disease Registry Evaluation Primer on Health Risk Communication Programs and Outcomes
http://www.atsdr.cdc.gov/HEC/evalprmr.html
The ATSDR site is dedicated to providing comprehensive techniques for designing health risk communication programs, as well as methods to measure outcomes.

Center for Social Research Methods
http://www.socialresearchmethods.net/
This is an evaluation site developed by Bill Trochim at Cornell University. Its primary function is to provide resources relating to social research methodology and statistical analyses.

CDC Evaluation Working Group
http://www.cdc.gov/eval/
The Web site provides information on promoting program evaluation in public health, including the areas of prevention campaigns. It contains ample resource support including a community toolbox and a distance learning instructional workbook.

Online Evaluation Resource Library
http://oerl.sri.com/
OERL was developed to help professionals improve educational and technology project evaluations, and is funded by the National Science Foundation. It features extensive resources to aid in the development of evaluation practices including examples of plans and instruments, as well as discussion boards.

The American Evaluation Association
http://www.eval.org/EvaluationLinks/default.htm
The goal of the association is to become the leading resource of information for evaluators. Thus, their web site provides a comprehensive listing of links to online texts, foundations funding evaluation, companies that provide analytical software, and other helpful web sites.

The World Wide Evaluation Information Gateway
http://www.policy-evaluation.org
This site provides a virtual library of information regarding social policy including publications, analyses, and links to more than 35 resource guides from government to public agencies.

Tools of Change: Proven Methods for Promoting Health, Safety, and Environmental Citizenship
http://www.toolsofchange.com/English/firstsplit.asp
In the online "planning guide" there is a useful section called "measuring achievements" with links on how various public prevention and change-oriented campaigns tested their effectiveness.

United Way of America: Outcome Measurement Resource Network
http://national.unitedway.org/outcomes/
Online resource library lists program outcome measurement services for the public, including videos and training kits.

Graduate Schools & University-Affiliated Centers

Oftentimes, undergraduate and graduate program evaluation students are looking for projects to complement their coursework. They may be able to help you with your quest to demonstrate the benefits. There are literally hundreds of such programs nationwide; the following list provides just a sampling of relevant departments nationwide.

Carnegie Mellon University
Statistics and Public Policy Program
http://www.stat.cmu.edu/

Cornell University
Policy Analysis and Management Program: Evaluation Concentration
http://www.human.cornell.edu/pam/grad_progs.cfm

Johns Hopkins University
Center for Communication Programs
http://www.jhuccp.org/

Lesley University
Program Evaluation and Research Group
http://www.lesley.edu/perg.htm

Ohio State University
The Center for Health Outcomes, Policy, and Evaluation Studies
http://hopes.med.ohio-state.edu/

University of Maryland
Department of Measurement, Statistics and Evaluation
http://www.gradschool.umd.edu/catalog/programs/EDMS.html

University of Michigan
Michigan Center for the Environment & Children's Health
http://www.sph.umich.edu/urc/projects/mcech.html

University of Rochester School of Medicine & Dentistry
Toxicology Program
http://www2.envmed.rochester.edu/envmed/tox/welcome.html

Vanderbilt University
Center for Evaluation Research and Methodology
http://www.vanderbilt.edu/CERM/

Associations & Institutes

There are a variety of institutions and associations that may be useful in planning your evaluation. They may help you to construct your evaluation, collect information that may be useful to you, or even be willing to help you "pilot test" your instruments.

Air & Waste Management Association
http://www.awma.org

American Educational Research Association
http://www.aera.net/

American Evaluation Association
http://www.eval.org/

American Public Health Association
http://www.apha.org

American Statistical Association
http://www.amstat.org

Association for Public Policy Analysis and Management
http://www.appam.org

Center for Clean Air Policy
http://www.ccap.org

Center for Transportation and the Environment
http://www.cte.tv/index.html

Environmental Assessment Association
http://www.iami.org/eaa.cfm

Social Marketing Institute
http://www.social-marketing.org/

State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials
http://www.cleanairworld.org/scripts/stappa.asp

The Aspen Institute
http://www.aspeninstitute.org/

The Center for Energy Efficiency and Renewable Technologies
http://www.ceert.org

The Health Effects Institute
http://www.healtheffects.org

Literature on Program Planning and Evaluation

The following list provides information on communications planning, general evaluation, creating a survey, and analyzing and reporting data. Note that these entries are not exhaustive, nor do they represent formal endorsement by EPA.

Communication Planning

Beech, R.M., and A.F. Duke. 1992. Designing an effective communication program; a blueprint for success. Ann Arbor, MI: School of Natural Resources; Chicago, IL: US EPA Region 5; and Olympia, WA: Puget Sound Water Quality Authority.

General Evaluation Literature

Bennett, Dean B. 1988-89. "Four steps to evaluating environmental education learning experiences," Journal of Environmental Education. 20:2 (14-21).

Campbell, Donald T., and Julian C. Stanley. 1966. Experimental and Quasi-experimental Designs for Research. Boston, MA: Houghton Miffin.

Fitz-Gibbon, C.T. and L.L. Morris. 1987. How to design a program evaluation. Newbury Park, CA: Sage.

Guba, E.G., and Y.S. Lincoln. 1989. Fourth Generation Evaluation. Newbury Park, CA: Sage.

Herman, Joan L. (Editor). 1987. Program Evaluation Kit. Newbury Park, CA: Sage.

Herman, Joan L., Lynn Lyons Morris, and Carol Taylor Fitz-Gibbon. 1987. Evaluators Handbook. Newbury Park, CA: Sage.

Joint Committee on Standards for Educational Evaluation. 1981. Standards for Evaluations of Educational Programs, Projects, and Materials. New York, NY: McGraw Hill.

Kosecoff, Jacqueline and Arlene Fink. 1982. Evaluation basics: A practitioner's manual. Newbury Park, CA: Sage.

Neidermeyer, Fred C. 1992. "A checklist for reviewing environmental education programs," Journal of Environmental Education. 23:2 (46-50).

Patton, Michael Quinn. 1986. Utilization-Focused Evaluation. Newbury Park, CA: Sage.

Patton, Michael Quinn. 1987. How to Use Qualitative Methods in Evaluation. Newbury Park, CA: Sage.

Patton, Michael Quinn. 1990. Qualitative Evaluation and Research Methods. Newbury Park, CA: Sage.

Rossi, Peter H. and Howard E. Freeman. 1982. Evaluation: A systematic approach. Beverly Hills: Sage.

Rutman, Leonard, and George Mowbray. 1983. Understanding program evaluation. Newbury Park, CA: Sage.

Scriven, Michael. 1991. Evaluation Thesaurus (4th Edition). Newbury Park, CA: Sage.

Stecher, Brian M. and W. Alan Davis. 1987. How to focus on evaluation. Vewbury Park, CA: Sage.

Stewart, David W. and Prem N. Shamdasani. 1990. Focus Groups. Newbury Park, CA: Sage.

Stokking, H., L. van Aert, W. Meijberg, and A. Kaskens. 1999. Evaluating Environmental Education. IUCN: Gland Switzerland.

Worthen, Blaine R., and James R. Sanders. 1987. Educational Evaluation: Alternative Approaches and Practical Guidelines. White Plains, NY: Longman.

Creating a Survey

Bourque, Linda B. and Eve P. Fielder. 1995. How to conduct self-administered and mail surveys. Thousand Oaks, CA: Sage.

Fink, Arlene. 1995. The survey handbook. Thousand Oaks, CA: Sage.

Fink, Arlene. 1995. How to ask survey questions. Thousand Oaks, CA: Sage.

Fink, Arlene. 1995. How to design surveys. Thousand Oaks, CA: Sage.

Fink, Arlene. 1995. How to sample in surveys. Thousand Oaks, CA: Sage.

Fowler, Floyd J. 1995. Improving survey questions. Thousand Oaks, CA: Sage.

Fowler, Floyd J. 1993. Survey Research Methods (2nd Edition). Newbury Park, CA: Sage.

Frey, James H. and Sabine Mertens Oishi. 1995. How to conduct interviews by telephone and in person. Thousand Oaks, CA: Sage.

Henerson, Marlene E., Lynn Lyons Morris, and Carol Taylor Fitz-Gibbon. 1987. How to measure attitudes. Newbury Park, CA: Sage.

Analyzing and Reporting Data

Fink, Arlene. 1995. How to analyze survey data. Thousand Oaks, CA: Sage.

Fink, Arlene. 1995. How to report on surveys. Thousand Oaks, CA: Sage.

Fitz-Gibbon, C.T. and L.L. Morris. 1987. How to analyze data. Newbury Park, CA: Sage.

Jaeger, R.M. 1990. Statistics: A Spectator Sport (2nd Edition). Newbury Park, CA: Sage.

Litwin, Mark S. 1995. How to measure survey reliability and validity. Thousand Oaks, CA: Sage.

Miles, Matthew B. and A. Michael Huberman. 1984. Qualitative data analysis: a sourcebook of new methods. Beverly Hills, CA: Sage.

Morris, Lynn Lyons, Carol Taylor Fitz-Gibbon, and Marie E. Freeman. 1987. How to communicate evaluation findings. Newbury Park, CA: Sage.

Morris, Lynn Lyons, Carol Taylor Fitz-Gibbon, and Marie E. Freeman. 1987. How to measure performance and use tests. Newbury Park, CA: Sage.

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Appendix B: Tools from Your Peers

Hard copies of air outreach surveys and evaluation results from two partners are currently available through Appendix B of the *Toolkit*:

- Texas Natural Resource Conservation Commission (TNRCC) in partnership with the Alamo Area Council of Governments (AACOG). "Clean Car Care" Radio Remotes Post Marketing Report, including Car Care and Clean Air Survey and Car Care Survey Results Evaluation, 2001. AACOG formed a winning partnership with a popular local radio station, 99.5 KISS, and a local auto parts chain to produce a "Clear the Air Campaign" targeted to San Antonio area residents. The comprehensive campaign combines radio PSAs, gas pump advertisements, utility bill flyers, and distribution of a limited edition auto shade. The campaign was promoted on the KISS web site in 2000 and 2001, featuring car care tips and a contest for listeners to win monthly prizes. Attached tools focus on the radio remotes, where each attendee was invited to fill out the Car Care and Clean Air Survey. The results of the survey were tabulated and are presented in the Survey Results Evaluation.

- Wisconsin Department of Natural Resources (WI DNR), Bureau of Integrated Science Services. Public Perception of Air Pollution and Congestion in Southeast Wisconsin: Changes Over Time 1993-1999, July 2000. This report summarizes the results of seven years of telephone survey research on air quality and transportation issues in southeastern Wisconsin. Survey participants were residents, selected through random digit dial from the six county non-attainment area. Sample sizes for the study range from 500 to 758 for the various years. The interviews were conducted by the Letters and Science Survey Center of the University of Wisconsin, Madison.

Additionally, the following links provide surveys and interviewer scripts, evaluation methodologies, and other tools successfully used by three air outreach programs:

- California Air Resources Board (CARB), EPA, and DOT/FHWA. Quantification Methods for Identifying Emission Reductions Resulting from Seasonal and Episodic Public Education Programs, including Quantification Method Reference Manual, Survey Instruments, and Regression Methodology, April 30, 2003. This research project developed a simple, low cost method for quantifying the travel and emission impacts of these programs, often called "Spare the Air" in California. The study developed survey methods and collected comprehensive travel data of a random sample of the general population and of individuals who said they responded to the Spare the Air message. The data, collected over two summer ozone seasons in Sacramento, allowed researchers to compare the travel behavior of the same individuals on both Spare the Air and regular (non-Spare the Air) summer days and of Spare the Air participants and non-participants. The study found a statistically significant difference between the self-reported vehicle trip reductions and measured vehicle trip changes due to Spare the Air programs among the Spare the Air participants. Applying the results of this study with simple and less costly surveys developed by the research team, air districts will be able to adjust future self-reported vehicle trip reductions and extrapolate them to the entire regional population of drivers within an acceptable margin of error. See ftp://ftp.arb.ca.gov/carbis/research/apr/past/98-318.pdf for the full report, including survey forms and methodologies.

- DOT/EPA. "It All Adds Up to Cleaner Air" Evaluation Questionnaire, Non-Annotated Format Interviewer Script, and Annotated Format Interviewer Script, September 27, 2002. The following links provide sample survey questions used by the program to help establish baseline data and track progress toward meeting transportation and air quality goals:

  - http://www.italladdsup.gov/pdfs/EPA_DOT_cleanerairSAQ8short.pdf (Evaluation Questionnaire);
  - http://www.italladdsup.gov/pdfs/EPA_DOT_cleanerairQ8.pdf (Non-Annotated Format Interviewer Script); and
  - http://www.italladdsup.gov/pdfs/EPA_DOT_cleanerairQannotated.pdf (Annotated Format Interviewer Script).

- Georgia Department of Transportation in cooperation with the US Department of Transportation. FY2000 (Phase I) Evaluation, FY 2001 (Phase II) Evaluation, and FY 2002 (Phase III) Atlanta TDM Framework Final Report. Information on Georgia DOT's structured program to analyze and measure the impact of a range of transportation demand management activities in Atlanta, including evaluation results and detailed factors and formulas used to calculate travel and emission reductions, can be found at http://www.tdmframework.org/html/evaluation.html.

Clean Car Care Radio Remotes
Post Marketing Report

Description of Program

KISS-Radio promoted clean car care through two 2-hour live remote broadcast events during the 9-month promotional period. These two remotes took place at two different O'Reilly Auto Parts stores, where KISS encouraged listeners to "Clear the Air". The first remote took place from 4 p.m. to 6 p.m. on Saturday, April 7, 2001. The second remote took place from 4:30 p.m. to 6:30 p.m. on Thursday, July 19, 2001.

Each remote included twelve pre-promotional announcements. These announcements were twenty seconds in length, promoting clean air tips and encouraging listeners to join them at the specified O'Reilly location. Four live reminders were aired promoting clean air tips and inviting listeners to join KISS-Radio at specified O'Reilly location. These live reminders are not scripted, therefore no scripts are attached. A KISS air personality hosted each event and KISS engineering and promotional staff helped execute each event.

KISS also provided an incentive to join them in "Clearing the Air" by giving away prizes from the KISS Prize Closet as well as theme related items and car care auto sunshades. O'Reilly Auto Parts donated tire-pressure gauges as additional prizes. These live broadcast events cost AACOG $8000.00 and production of 1,000 car care auto sunshades cost an additional $5,000.

The first remote was attended by approximately 80 people. The second remote was attended far more heavily, by approximately 150 people. According to market data generated by Arbitron and provided by KISS radio, the average number of people listening to KISS was approximately 11,300 during the first remote and approximately 11,900 during the second remote.

During each remote event, free gas-cap testing was offered and performed by AACOG staff, who also handed out car care and air quality informational materials. In addition, each attendee was invited to fill out the Car Care and Clean Air Survey (Attachment A). The results of the survey were tabulated and are presented in the Survey Results Evaluation (Attachment B).

Attachment A

AACOG
Alamo Area Council Of Governments

Car Care and Clean Air Survey

1. How often should you have your car's oil changed?

a. every 500-1,000 miles
b. every 3,000-5,000 miles
c. every 6,000-8,000 miles
d. every 10,000 miles

2. Your oil filter should be changed each time you get your oil changed?

TRUE FALSE

3. You can find your car's proper tire pressure. . .

a. in the owner's manual
b. inside the glove compartment
c. on the driver's side door
d. at least two of the above

4. Your car releases the most emissions

a. when it first starts up
b. when it is shut off
b. when it is idling
d. when it is accelerating

5. In San Antonio, _____ are the largest single source of the pollutants that make ground-level ozone (smog).

a. automobiles
b. power plants
c. trees
d. factories

6. Which of the following filters does your car have?

a. oil filter
b. air filter
c. fuel filter
d. all of the above

7. How much can a dirty air filter reduce your gas mileage?

a. 5%
b. 10%
c. 15%
d. dirty filters improve mileage

8. Which of the following can ground level ozone cause?

a. burning eyes
b. irritated nose and throat
c. difficulty breathing
d. headaches
e. nausea
f. all of the above

Answers: 1:b 2:T 3:d 4:a 5:a 6:d 7:b 8:f

Attachment B

Car Care Survey Results Evaluation

Q	Text	Percent Correctly Answered	Most Common Wrong Answer	% Correct - Female	% Correct - Male
1	How often should you have your car's oil changed?	93%	a	83%	100%
2	Your oil filter should be changed each time you get your oil changed.	92%	FALSE	92%	97%
3	You can find your car's proper tire pressure. . .	53%	a	58%	58%
4	Your car releases the most emissions. . .	32%	d	25%	32%
5	In San Antonio, _____ are the largest single source of the pollutants that make ground-level ozone (smog).	95%	b and d	100%	95%
6	Which of the following filters does your car have?	95%	b	92%	97%
7	How much can a dirty air filter reduce your gas mileage?	45%	c	50%	45%
8	Which of the following can ground-level ozone cause?	95%	c and a	92%	97%

OVERALL RESULTS	*Percentage*
Average Score	76%
Female Average Score	74%
Male Average Score	78%

Sixty individuals chose to fill out this survey. Results showed that the average score was 76%, with females scoring slightly below average and males scoring slightly above average. Scores were obviously dampened by three of the eight questions, those regarding proper tire pressure, emissions release, and air filters. Of those three, the one that represents the greatest misunderstanding or lack of knowledge is emissions release. Most individuals thought that cars released the most emissions when accelerating. This indicates a need to further educate the local public as to emissions released by cold cars, how long it takes a car which is turned off to be “cold”, and the emissions savings that are, therefore, related to trip-chaining. The tire pressure question results are less disturbing because most who answered incorrectly indicated that they could find the tire pressure in the owner’s manual, which is true, just not the best answer for the question. Likewise, the air filter question was less disturbing because most incorrect responses overestimated the effect of a dirty air filter, which means that the basic knowledge of a dirty filter reducing mileage is understood. Responses to the rest of the questions indicated above average knowledge of local pollution problems and car care issues.

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Public Perception of Air Pollution and Congestion in Southeast Wisconsin

Changes Over Time: 1993 – 1999

Prepared by the Wisconsin Department of Natural Resources Bureau of Integrated Science Services

July, 2000

TABLE OF CONTENTS

INTRODUCTION

Purpose

This report summarizes the results of seven years of telephone survey research on air quality and transportation issues in southeastern Wisconsin. By analyzing data from all of the study years together, researchers can identify trends and begin to understand opinions during the DNR/DOT joint transportation and public information campaigns.

The Study

The study is based on seven telephone surveys conducted between 1993 and 1999 with residents of southeastern Wisconsin. Survey participants were residents, selected through random digit dial from the six county non-attainment area. Sample sizes for the study range from 500 to 758 for the various years. The interviews were conducted by the Letters and Science Survey Center of the University of Wisconsin, Madison.

Report Organization

After the introduction, the report is divided into two parts. First, a brief section on external factors discusses weather-related events and air quality control programs. Next, the majority of this report consists of tables which describe specific topics covered in the surveys. A brief discussion associated with each table discusses results for 1999, the most recent study year, and for trends over the entire study period.

Findings

1. In General

With a few exceptions, opinions and attitudes towards air quality and issues related to air quality did not change significantly during the study period.

2. Awareness of and Concerns About Air Pollution

There has been a steady decline in public concern for air quality, water pollution and waste management. Only suburban sprawl shows a modest increase in concern.

Residents of southeastern WI are generally not concerned about air pollution at home or in the broader southeastern WI area. Additionally, the beliefs that air quality has stayed the same and that WI has less air pollution than its neighbors to the south remained constant over the study period.

3. Sources of Air Pollution

The numbers of people who believe that most pollution originates in WI decreased slightly in the years 1994–-1997, but then increased again in 1998 and 1999.

Concern (those who rate “very serious”) about truck and bus pollution declined steadily from 1994 through 1997. Concern about pollution from fumes released during the pumping of gasoline jumped up in 1995, but then dropped to earlier levels. Concern about factory smoke also declined slightly over the study period.

Roughly two fifths of respondents consistently believe that traffic congestion contributes a great deal to air pollution.

4. Ozone Awareness

Awareness of ground level ozone does not appear to have increased over the study period. While almost nine out of ten respondents consistently said they heard about ozone, roughly one third report having heard the expression "ground level ozone". The numbers of those having heard the expression "ground level ozone" declined slightly from 1995 through 1999.

5. Concerns About Health Effects of Air Pollution

The numbers of people who believe that air pollution is "very harmful" to people's health in the area where they live have not changed over the study period. Additionally, the number of people reporting family members suffering from an air pollution-related illness has not changed. With the exception of an increase in visits in 1999, the numbers of people with health problems related to air quality who visited a doctor or emergency room because of poor air quality remained constant.

6. Commuting Patterns

With the exception of a small decline in 1995, roughly four fifths of people regularly drove to work alone throughout the study period.

The number of respondents reporting that their employers encouraged them to try alternatives to driving increased in 1994, and remained constant until 1999 when the numbers decreased. However, most people consistently perceive that public transportation to and from work is not convenient. With the exception of a slight decrease in 1995, the number of people who *never* use public transportation has not changed.

7. Willingness to Make Changes for Air Quality

The percentages of those willing to consider carpooling or vanpooling fluctuated slightly around 50 percent during the study period. Numbers peaked in 1993 with a lower peak in 1997 leading to the lowest percentage measured (45%) in 1999. By the end of the study period, fewer people were willing to consider carpooling or vanpooling.

Roughly one in ten people are willing to combine errands, roughly three fifths are willing to carpool at least one day a week, and roughly one third are willing to use public transit at least one day a week. Except for a drop from the first year, willingness has not changed significantly for any of these actions.

Little has changed over the study period in terms of respondents actually having made changes to reduce air pollution. In fact, awareness that respondents, personally, would have to make changes to have cleaner air declined slightly but steadily over the study period.

With the exception of the first year, the numbers of people saying they *do not have* enough information about air quality (roughly 50%) have not changed significantly.

8. Reformulated Gas

Fewer people in 1999 (73%) say they have ever purchased reformulated gas than do those in 1995 and 1996. Oddly, at the same time, 1995-1999, the numbers of people who *prefer* reformulated gasoline have modestly increased.

9. Clean Air Requirements and Campaigns

Awareness of the Ozone Action Day campaign and recollection of the expression "it all adds up to cleaner air" have not changed over time. Recollection of seeing or hearing ads promoting transportation alternatives "this summer" have decreased slightly from 1998 to 1999. At the same time, how people are informed of these ads has remained constant.

Something occurred in 1995 to increase levels of awareness that WI is required to improve air quality, but by 1997 the effects of that occurrence had largely evaporated. Beliefs in the level of air pollution laws have also remained fairly constant. Between one third and two fifths believe that air pollution laws *have not gone far enough*.

10. Temperature, Ozone Action Days and Exceedences

The numbers of exceedences, Ozone Action Days, and days above 90° F peaked in 1995 and have remained relatively low for the remainder of the study period.

11. Ozone Reduction Programs

Several state and federal initiatives related to the reduction of ozone were first implemented in 1995, a year which, coincidentally, is also noteworthy for the high number of Ozone Action Days and exceedences.

EXTERNAL FACTORS

Any number of factors can be influential in changing people's attitudes, opinions and behaviors. Public information programs are implemented, for instance, in an attempt to change people's opinions. In order to have a better understanding of the survey results, it is useful to be aware of factors which may (or may not) have influenced responses. This section focuses both on weather-related events and programs aimed at reducing ozone.

Because weather plays a role in the development of ozone, we wanted to see what the conditions were like during the study period. Additionally, we wanted to find out what air quality control programs were implemented. For both weather and programs, 1995 is the most significant year of the study period. Temperatures, Ozone Action Days and exceedences peaked in 1995. Additionally, 1995 was the year that several State and Federal programs and initiatives were first implemented. This section discusses weather-related events and the air quality programs that were in place during the study period which affect the general public.

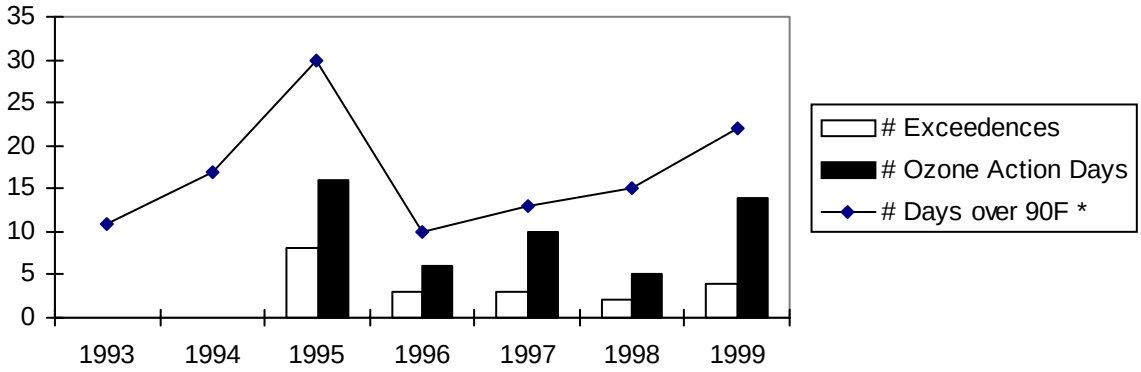
Weather-Related Events

The definitions below are helpful for our discussion of weather-related events.

- Number of days over 90° F at Chicago O'Hare Airport. A measure used as a predictor for when Ozone Action Days are called in southeastern WI.
- Ozone Action Day (OAD). Day in which ground level ozone is expected to reach unhealthy levels. OADs are called by the WI DNR at which time industries are notified via fax or email, and the public is notified through all media outlets and electronic highway signs.
- Exceedence Day. Day in which ozone exceeds the one-hour federal standard of 124 ppb.

Figure 1 below shows that both the number of days over 90° F at Chicago O'Hare Airport and the number of WI exceedences both peaked in 1995. OADs also peaked in 1995. Although exceedences remained relatively low during the years following 1995, the number of days over 90° F gradually crept up again. Usually, exceedences occur when temperatures are 90° F or higher. The two have diverged somewhat recently, with exceedences not tracking the high temperatures as closely as before. Meteorologists suggest that because emission control strategies over the past 20 years have been so successful, weather conditions must be "exactly right" for ozone formation to occur (hot, hazy, stagnant). Looking at the weather-related events during the study period, it appears that with the exception of 1995, ozone conditions were fairly benign. Exceedences were considerably more frequent in the 1980s. [In Figure 1, * represents days over 90° F at Chicago O'Hare Airport – used as aid in determining when to call Ozone Action Days in southeastern WI. Source: Bureau of Air Management, WI Department of Natural Resources.]

Figure 1: Days over 90F, Exceedences, Ozone Action Days Southeastern WI



Programs

As the WI DNR has done in the past, it continued to offer programs geared toward improving air quality in southeastern WI during the study period. The timeline in Figure 2 below shows the programs that were geared toward or affected the general public during the study period. Just as 1995 was significant for ozone, it was also a remarkable year for program offerings. Several programs and initiatives were begun that year, must of which continued throughout the period. See Table 1 for a brief description of each program.

Figure 2: Program Timeline for Study Period

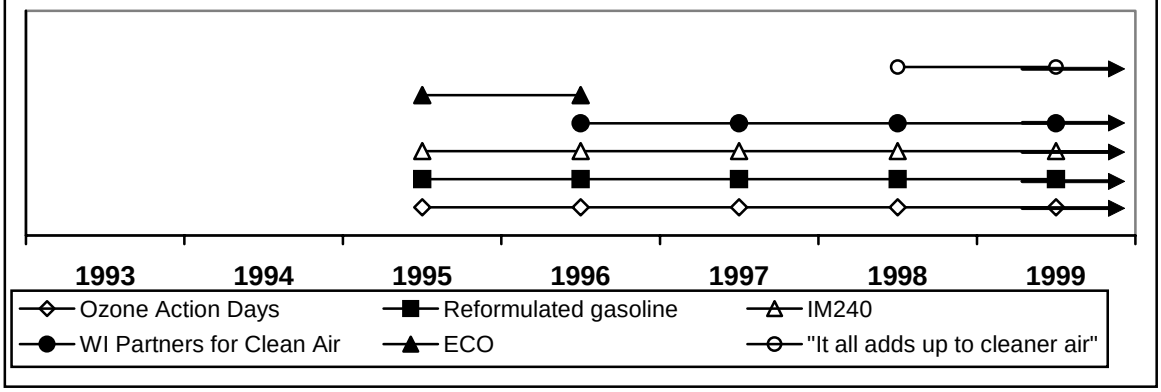


Table 1. Program Descriptions

Introduction of Reformulated Gas Reformulated gasoline was introduced to southeast WI customers in January of 1995 as part of a federal initiative to improve air quality.
Ozone Action Days The Ozone Action Days program was introduced in the summer of 1995. Ozone Action Days are declared when projected weather conditions favor the build-up of unhealthy levels of ground level ozone. At these times, the general public as well as industry and businesses are encouraged to postpone activities that contribute to the formation of ozone. The public is alerted through the media and by electronic highway signs that there may be an exceedence day. "Partners" (business/industry partners of the WI Partners for Clean Air Program) are specifically alerted so that they may choose to enact one or more actions from a broad range to reduce their pollutants. WI state government agencies also modify their plans to reduce pollution when Ozone Action Days are called.
IM240 (Enhanced Inspection and Maintenance) IM240 was implemented in December of 1995. The program represented a change in the existing inspection and maintenance process in that it requires a more thorough vehicle inspection.
ECO The Employee Commute Options Program (ECO) was a federally mandated program implemented in the summer of 1995. The program focused exclusively on working with large businesses/industries (over 100 employees) to encourage commuting.
WI Partners for Clean Air The Partners program took the place of ECO. In addition to promoting commuting, the program expanded its emphasis to multiple methods of reducing air pollution. Also, unlike ECO, the Partners program is voluntary. Partners (business/industry) can choose how they want to improve air quality from a variety of options. Additionally, the Program incorporates the Ozone Action Days program, and it includes general public awareness campaigns which focus on steps people can take to improve air quality.
OTAG In the summer of 1996, the Ozone Assessment Transport Group (OTAG) formed to look at long range transport issues. News focused on air pollution transport from places as far away as St. Louis or Ohio.
"It all adds up to cleaner air" A Federal EPA/DOT program promoted by WI Partners for Clean Air. The program works to reduce traffic congestion and to improve air quality through education. People are educated through TV, radio, newspaper and public distribution of various educational materials.

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TABLES OF STUDY RESULTS

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TABLE 1: ENVIRONMENTAL CONCERNS FOR WISCONSIN

	1993	1994	1995	1996	1997	1998	1999
	Percentages rating the issues as "very serious"						
Pollution of lakes and streams	44%	40%	40%	40%	37%	34%	27%
Disposal of solid waste	46%	39%	36%	37%	35%	35%	30%
Loss of open space to residential development	26%	25%	31%	33%	34%	33%	31%
Pollution of air	33%	31%	32%	35%	29%	27%	28%

Question: *Now I'll read you a short list of environmental concerns in Wisconsin. For each, please tell me whether you think the problem is very serious, somewhat serious, not too serious or not at all serious. Pollution of lakes and streams? Disposal of solid waste or garbage? Loss of open space to residential development? Pollution of air?*

Interpretation

Current Year — For 1999 the survey results suggest that concern about air pollution is comparable to concerns about other environmental issues. Less than a third of those surveyed (28%) regard it as a "very serious" problem.

Trends 1993-1999 — It appears that there has been a modest but steady decline in public concern about water pollution, waste management and air quality. In only one area, suburban sprawl, does it appear that there has been a slight increase in public concern. Nearly one-third of those surveyed rated this as a "very serious" problem.

TABLE 2: PERCEPTIONS OF THE SEVERITY OF AIR POLLUTION BY PROXIMITY TO RESPONDENTS' COMMUNITIES

Air pollution ratings by location	1993	1994	1995	1996	1997	1998	1999
	Percentages						
In southeastern WI							
Very serious	18%	17%	15%	16%	14%	16%	13%
Somewhat serious	51	48	50	42	48	47	44
Not too serious	27	30	29	35	30	33	34
Not at all serious	4	5	5	7	8	4	9
In respondent's community							
Very serious	12%	12%	12%	12%	11%	10%	14%
Somewhat serious	34	31	31	25	27	29	28
Not too serious	41	41	41	44	39	47	40
Not at all serious	13	16	15	18	22	14	18

Question: *These next questions relate to air quality in southeastern Wisconsin, including Kenosha, Racine, Milwaukee, Ozaukee, Waukesha and Washington counties. First, how serious a problem do you feel air pollution or smog is in southeastern Wisconsin? Now think about the city, town, village or rural area where you live. How serious a problem do you feel air pollution or smog is?*

Interpretation

Current Year — In 1999, few people thought that air pollution in southeastern WI or in their own communities was "very serious". Ratings were roughly the same for each, with 13% saying air pollution in southeastern WI was "very serious" compared to 14 percent in their own communities.

Trends 1993-1999 — Results for 1999 are consistent with those from previous years. Few respondents think that air pollution either at home or in the broader southeastern WI are "very serious". Concern for each of these areas has not changed significantly over the seven years studied.

TABLE 3: PERCEPTIONS OF CHANGES IN SOUTHEASTERN WI AIR QUALITY

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Gotten better	21%	20%	21%	23%	18%	23%	17%
Gotten worse	25	27	29	21	23	20	27
Stayed the same	54	53	50	55	59	57	56

Question: *In the last three to five years, would you say that air pollution in southeastern WI has gotten better, worse or has stayed the same?* (Previous surveys asked in last three years).

Interpretation

Current Year — Most respondents in 1999 (56%) believe that air quality in southeastern WI has stayed the same in the last three to five years.

Trends 1993-1999 — Results for 1999 are roughly the same as for previous years. For the most part, people think that air quality has not changed.

TABLE 4: PERCEPTIONS OF OTHER STATES AS A SOURCE OF WISCONSIN'S AIR POLLUTION

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Weather patterns can carry air pollution	96%	97%	95%	94%	97%	94%	95%
States where pollution originates							
Most pollution originates in WI	58%	50%	46%	52%	47%	56%	58%
Most pollution originates in other states	27	36	42	36	42	36	33
Pollution comes from both in and out-of-state sources	15	14	12	11	11	8	9

Question: *Do you think that weather patterns can carry pollution from one region to another? As far as you know, does most of the air pollution in Wisconsin come from sources inside the State or outside the State?*

Interpretation

Current Year — Almost everyone (95%) recognizes that weather patterns can carry air pollution from region to region. However, most respondents in 1999 (58%) believe that most Wisconsin air pollution originates in Wisconsin. One third (33%) believe that most Wisconsin air pollution originates in other states.

Trends 1993–1999 — The understanding that weather patterns can carry air pollution has remained steady over the study period. At the same time, beliefs in where Wisconsin's pollution originates have fluctuated slightly, with 1995 and 1997 being low years. During those years, beliefs that most pollution originates in other states saw a corresponding increase.

TABLE 5: COMPARISON OF AIR POLLUTION LEVELS IN SOUTHEASTERN IN WISCONSIN TO OTHER STATES

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Southeastern WI has more pollution	3%	6%	4%	6%	3%	2%	4%
Has the same levels	26	21	20	20	20	24	24
Has less pollution than other states	71	73	76	74	77	73	72

Question: *In your opinion, how does air pollution in southeastern Wisconsin compare to that of urban areas in other states such as Illinois or Indiana?*

Interpretation

Current Year — The vast majority of people (72%) believe that Wisconsin has less air pollution than its neighbors to the south such as Illinois or Indiana.

Trends 1993-1999 — People consistently believed throughout the study period that Wisconsin has less air pollution than its neighbors to the south.

TABLE 6: PERCEPTIONS OF THE SOURCES OF AIR POLLUTION

	1993	1994	1995	1996	1997	1998	1999
	Percentages rating the source as "Very Serious"						
Exhaust from trucks and buses	44%	47%	45%	43%	37%	–	–
Exhaust from automobiles	39%	41%	37%	40%	34%	–	–
Smoke from factories or mills	22%	20%	23%	18%	15%	–	–
Air pollution from power plants	18%	15%	18%	13%	14%	–	–
Smoke and ash from burning leaves	11%	10%	8%	7%	10%	–	–
Fumes released during the pumping of gasoline	10%	11%	17%	11%	10%	–	–
Exhaust from small engines such as lawnmowers or motorboats	6%	9%	7%	8%	6%	–	–

Question: *These next few questions deal with different sources of air pollution. For each of the following, please tell me how serious a problem you think it is in southeastern Wisconsin.*

Interpretation

Trends 1993–1997 — The percentages of people rating various sources of air pollution as a "very serious" have, for the most part, remained constant over the study period. The two exceptions are "exhaust from trucks and buses", and "fumes released during the pumping of gasoline". Concern about exhaust from trucks and buses declined steadily from 1994 through 1997. Concern about fumes released during the pumping of gasoline jumped up in 1995, but then dropped to earlier levels. Concern about smoke from factories or mills also declined slightly over the study period.

TABLE 7: COMMUTERS' RATINGS OF THE SEVERITY OF TRAFFIC CONGESTION AND ITS CONTRIBUTION TO AIR POLLUTION

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Severity of traffic congestion							
Very serious	–	14%	14%	20%	15%	–	–
Somewhat serious	–	35	33	29	34	–	–
Not too serious	–	51	39	37	36	–	–
Not at all serious	–	0	14	14	15	–	–
Congestion's contribution to air pollution							
A great deal	–	–	42%	43%	41%	–	–
Some	–	–	47	46	48	–	–
Not much/nothing	–	–	11	11	11	–	–

Question: *How serious is the problem of traffic congestion in your area? Overall, how much do you feel that traffic congestion contributes to air pollution?*

Interpretation

Trends 1993-1999 — The vast majority of respondents believe that traffic congestion makes some or a great deal of air pollution. Roughly two fifths consistently believe that traffic congestion contributes a great deal to air pollution. Few people believed the severity of traffic congestion was "very serious". Percentages remained relatively stable during the four years the question was asked except for a slight increase in 1996.

TABLE 8: AWARENESS OF ATMOSPHERIC AND GROUND LEVEL OZONE

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Heard about ozone	87%	87%	93%	90%	90%	91%	88%
Heard about upper ozone layer	85%	90%	86%	89%	88%	84%	85%
Heard about ozone closer to the earth	47%	51%	46%	51%	44%	43%	43%
Heard expression "ground level ozone"	–	–	34%	32%	32%	25%	29%
Heard about ozone alerts	67%	73%	87%	85%	82%	85%	82%

Question: *Have you read or heard anything about (ozone)? Have you ever heard of the upper ozone layer? Have you ever heard about (a different kind of ozone closer to the earth)? Have you ever heard the expression "ground level ozone"? Have you ever heard of ozone alerts or warnings in your community?*

Interpretation

Current Year — Most people have heard about "ozone" (88%) and the "upper ozone layer" (85%). However, awareness wanes for ground level ozone. Roughly two fifths (43%) have heard about ozone closer to the earth, and only 29% have heard the expression "ground level ozone". Despite this limited knowledge of ground level ozone, most people (82%) have heard about ozone alerts.

Trends 1993-1999 — Despite years of air quality and ground level ozone education, 1999 is, for the most part, representative of previous years in the study period. One exception is people's awareness of ozone alerts, which jumped in 1995 and remained somewhat high throughout the rest of the study period.

TABLE 9: CONCERNS ABOUT THE HEALTH EFFECTS OF AIR POLLUTION

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Family member with health problem caused or made worse by air pollution	27%	30%	28%	27%	27%	31%	32%
Did poor air quality cause this person to visit a doctor or an emergency room?	–	–	42%	40%	46%	44%	55%
Believes that air pollution harms people's health in the area where they live							
Very harmful	6%	7%	10%	9%	9%	9%	9%
Somewhat harmful	43	41	38	39	39	43	42
Not too harmful	36	37	37	34	36	35	34
Not at all harmful	15	14	16	18	16	12	15

Question: *Do you or any of your family members have a health problem that you think may be caused or made worse by air pollution? And did poor air quality this summer cause this person to visit a doctor or an emergency room because they had difficulty breathing?*

Interpretation

Current Year — One in three (32%) families included someone who suffered an illness that was caused by or made worse by air pollution in 1999. Of those people who were ill, just over one half (55%) visited a doctor or emergency room because of it. Despite such a high incidence of self reported air pollution-related illness, only one in ten people (9%) believe that air pollution is "very harmful" to people's health in the area where they live.

Trends 1993–1999 — Although more people visited the doctor or an emergency room due to an air pollution-related illness in 1999 than in earlier years, the numbers of people who believe that air pollution is "very harmful" to people's health in the area where they live have not changed over the study period. Additionally, the number of people reporting family members suffering from an air pollution-related illness has not changed.

TABLE 10: INSPECTION AND MAINTENANCE ISSUES

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Owned a vehicle that failed the emissions test	11%	16%	24%	23%	17%	20%	20%
Action taken when failed test							
Repaired vehicle	90%	83%	83%	81%	80%	82%	88%
Wavered vehicle	4	6	8	5	5	5	1
Something else	6	11	9	14	15	13	11

Question: *Have any of your cars ever failed the vehicle inspection emissions test? Did you get the car repaired so that it passed the test or did you receive a waiver?*

Interpretation

Current Year — One fifth (20%) of the population owned vehicles that failed the emissions test. Most of these people (88%) subsequently had their cars repaired.

Trends 1993-1999 — The numbers of people whose cars failed the emissions test have held steady since 1995. The response to failure, primarily repairing the car, has not changed during the study period.

TABLE 11: COMMUTING PATTERNS IN THE SIX COUNTY NON-ATTAINMENT AREA

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Drive alone	83%	83%	76%	83%	85%	82%	83%
Take public transportation	4	3	4	2	2	2	2
Carpool/Vanpool	8	7	7	8	7	6	9
Walk	4	3	4	1	2	2	3
Bike	<1	1	1	<1	<1	1	<1
Something else	<1	3	8	5	3	6	4

Question: *How do you get to work? Do you usually drive alone, ride a bus, carpool with one or more people, vanpool, ride a bicycle, walk or something else?*

Interpretation

Current Year — A strong majority of commuters in the non-attainment area drive to work alone. Slightly more than four-fifths (83%) say they are solo commuters.

Trends 1993-1999 — There has been scant change in the way people get to work. In only one year does there appear to have been a decline in solo commuting: 1995. This was also the year in which the DNR rolled out the Employee Commute Option and emphasized increases in vehicle occupancy. Solo commuting quickly rebounded when this emphasis was abandoned.

TABLE 12: FIRM SIZE AND EMPLOYERS' EFFORTS TO ENCOURAGE EMPLOYEES TO FIND ALTERNATIVES TO DRIVING TO WORK ALONE

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
More than 100 employees at place of employment	46%	50%	48%	–	–	49%	49%
Employer encouraged employees to try alternatives to driving	19%	32%	35%	–	–	33%	24%

Question: *"As far as you know, does your employer have 100 or more employees working the same day at your work site? Has your employer encouraged you to commute to work by some other means than driving alone?"*

Interpretation

Current Year — One quarter of those who work for an employer with more than 100 employees report that their employer encouraged them to find an alternative to solo commuting.

Trends 1993-1999 — Between 1993 and 1994 there was a significant increase in the proportion of respondents reporting that their employer encouraged them to find alternatives to solo commuting. This proportion remained constant between 1994 and 1998. In 1999, however, there was a decline in the proportion of respondents reporting such encouragement from their employers.

TABLE 13: USE AND PERCEPTION OF PUBLIC TRANSPORTATION

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Convenience of public transportation between home and work							
Very convenient	11%	9%	15%	13%	12%	14%	12%
Somewhat convenient	12	13	13	13	13	13	13
Not too convenient	9	12	11	11	11	12	8
Not at all convenient/available	68	65	61	63	64	62	66
Frequency of use of public transportation to get to work							
Never	83%	84%	79%	85%	89%	81%	88%
Less than once a year	1	3	3	1	1	2	1
Once or twice a year	6	5	7	5	3	7	4
Once or twice a month	2	2	3	3	1	3	3
Once or twice a week	1	1	3	1	1	2	1
Regularly	6	5	6	4	4	5	3

Question: *Would you say that the public transportation service between your home and work is very convenient, somewhat convenient, not too convenient or not at all convenient to use? How often, if ever, do you take public transportation either to or from work?*

Interpretation

Current Year — One fourth of respondents say that public transportation between home and work is convenient. However, 88 percent never use it for getting to work and only four percent use it more than once or twice a month.

Trends 1993-1999 — Throughout the duration of the study period, most people consistently say that public transportation to and from work is not convenient. With the exception of 1995, the number of people who never take public transportation has not changed significantly during the study period.

TABLE 14: WILLINGNESS TO CONSIDER CARPOOLING

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Respondent has tried car/van pooling	34%	31%	33%	34%	33%	34%	27%
Willingness to consider car or vanpooling							
Definitely consider	21%	16%	17%	19%	18%	17%	17%
Might consider	40	33	30	32	35	30	28
Would not consider	32	30	38	35	33	41	47
Unable to consider	7	21	14	14	14	12	8

Question: *Have you ever tried carpooling or vanpooling? Are carpools or vanpools something you would definitely consider doing, might consider doing or would not consider doing?*

Interpretation

Current Year — Just over one fourth (28%) of respondents report ever having tried carpooling or vanpooling. Forty five percent say they would consider either form of transportation.

Trends 1993-1999 — The percentages of those who have tried carpooling or vanpooling have remained fairly constant over the study period. Willingness to consider carpooling or vanpooling was highest in 1993 followed by a significant decrease in 1994. Willingness peaked again, though at a lower level in 1997 only to fall to the lowest level measured by 1999.

TABLE 15: STEPS RESPONDENTS ARE WILLING TO TAKE TO IMPROVE AIR QUALITY

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Willingness to combine errands							
Willing	93%	87%	89%	90%	88%	92%	88%
Not willing	7	7	8	7	8	6	10
Doesn't apply	–	5	3	2	4	2	2
Use public transit at least one day a week							
Willing	41%	27%	30%	29%	25%	33%	26%
Not willing	50	46	50	49	51	52	56
Not available	9	27	19	22	24	15	18
Willingness to carpool at least one day a week							
Willing	71%	54%	61%	61%	62%	58%	58%
Not willing	29	23	24	23	25	29	33
Not able to carpool	–	23	15	16	13	13	9
Willingness to pay ten cents more per gallon for clean fuel							
Very willing	34%	34%	–	–	–	–	–
Somewhat willing	39	36	–	–	–	–	–
Not too willing	10	12	–	–	–	–	–
Not at all willing	17	18					

Question: *. . . a list of suggestions for improving air quality? Would you be willing, somewhat willing, not too willing or not at all willing to (combine errands to make fewer automobile trips)? How willing would you be to do the following . . . to use public transit at least once a week? . . . to carpool at least one day a week? . . . to pay ten cents more a gallon for cleaner burning gasoline?*

Interpretation

Current Year — Willingness to take certain steps to improve air quality varies according to the action. It appears that as the action becomes less convenient, people are less willing to implement it. While almost 9 out of 10 respondents would be willing to combine errands to reduce automobile trips, just over one half (58%) would be willing to carpool at least one day a week. Only one fourth (26%) express any willingness to use public transit at least one day per week.

Trends 1993-1999 — Aside from the first year, willingness to take certain steps has not changed significantly for combining errands or for using public transit at least one day per week. Willingness to carpool at least one day a week increased slightly in 1995 and began to decline slightly in 1998.

TABLE 16: FEELINGS OF PERSONAL RESPONSIBILITY FOR IMPROVING AIR QUALITY

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Belief that individuals can do something about air pollution							
Can do a lot	58%	53%	52%	51%	50%	55%	48%
Can do a little	40	43	44	46	47	43	46
Can do nothing	2	4	4	3	3	2	6
Awareness that they personally will have to make changes in order to have cleaner air	59%	54%	51%	48%	46%	48%	43%
In past year, made changes to reduce air pollution in area	40%	34%	39%	39%	36%	46%	37%

Question: *Do you think individuals can do a lot, a little, or nothing at all about air pollution? In general, do you feel that you, personally, will have to change anything you do in order for your community to have cleaner air? In the past year, have you made any personal changes in what you do day to day I order to help reduce air pollution in your area?*

Interpretation

Current Year — A strong minority of people believe that individuals can do a lot about air pollution (48%). A minority (43%) also believes that they personally will have to make changes to have cleaner air, but even fewer (37%) have actually made changes in the past year to reduce air pollution in the area.

Trends 1993-1999 — Despite active air pollution awareness campaigns in southeastern Wisconsin, little has changed over the study period in terms of actually having made changes to reduce air pollution. In fact, awareness that respondents personally would have to make changes to have cleaner air declined slightly but steadily over the study period. Consistently, more people know they would have to make changes than actually do make the changes.

TABLE 17: RESPONDENTS' DESIRE FOR ADDITIONAL INFORMATION

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Level of information about air quality							
Too much information	1%	3%	5%	3%	4%	2%	3%
Not enough information	57	46	43	48	48	53	49
The right amount	42	51	52	50	48	45	48
Saw or heard information about air pollution in SE WI recently							
Yes	36%	47%	58%	44%	42%	–	–
No	63	51	42	56	58	–	–

Question: *In general, do you feel that you have too much, not enough, or about the right amount of information about air quality? Do you recall seeing or hearing information about air pollution in southeastern Wisconsin in the past few months?*

Interpretation

Current Year — One half (49%) of the population say that they do not get enough information about air quality.

Trends 1993-1999 — With the exception of the first year, the numbers of people saying they do not have enough information about air quality have not changed significantly. This may suggest that the information sources the DNR uses to disseminate information are not sufficient or that the DNR is simply not providing enough information.

Fewer people recently saw or heard information about air pollution in SE WI recently in 1996 and 1997 than in 1995.

TABLE 18: EXPOSURE TO AND ATTITUDES TOWARD REFORMULATED GASOLINE

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Ever purchase reformulated gas?							
Yes	–	–	84%	84%	82%	69%	73%
No	–	–	10	7	10	14	12
Never heard of reformulated gas/don't know	–	–	6	9	8	17	15
Prefer conventional or reformulated gas?							
Prefer conventional	–	–	71%	55%	53%	48%	51%
Prefer reformulated	–	–	14	24	24	36	32
No preference	–	–	15	21	23	16	16
Last type of gasoline purchased							
Conventional	–	–	20%	21%	–	–	–
Reformulated	–	–	69	69	–	–	–
Don't know	–	–	11	11	–	–	–
Last gasoline purchased							
Ethanol	–	–	–	–	–	42%	40%
MTBE	–	–	–	–	–	1	1
Neither MTBE nor ethanol	–	–	–	–	–	4	4
Not sure/Don't know	–	–	–	–	–	52	55
Heard of ethanol as gas additive	–	–	–	–	–	91%	92%
Heard of MTBE as gas additive	–	–	–	–	–	39%	37%

Table 18 (Continued)

Question: *Have you purchased reformulated gasoline? Given a choice, would you prefer to buy conventional gasoline or reformulated gasoline? Think about the last time you purchased gasoline. Did you purchase conventional gasoline or reformulated gasoline? Did the last gasoline you purchased contain Ethanol, MTBE, neither or are you not sure what it contained? Have you ever heard of ethanol as a gasoline additive? Have you ever heard of MTBE, an ether, as a gasoline additive?*

Interpretation

Current Year — Three fourths of respondents report having ever purchased reformulated gas. Another 15 percent say they have never heard of it before, or don't know if they have ever purchased it. Although most have purchased reformulated gas, most (51%) prefer conventional. Roughly one half (55%) are not sure about the type of the last gasoline they purchased. By 1999, nine out of ten people say they have heard of ethanol as a gas additive, but far fewer, 37 percent, report having heard of MTBE.

Trends 1993-1999 — Fewer people in 1999 (73%) say they have ever purchased reformulated gas than do those in 1995 and 1996. Oddly, at the same time, 1995-1999, the numbers of people who prefer reformulated gasoline have increased modestly.

TABLE 19: CONCERNS ABOUT REFORMULATED GASOLINE

	1995
	Percentages
Concerns about reformulated gas	
Health	60%
Car's performance	72%
Car's mileage	69%
Car's acceleration	49%
Smell	45%
Effects on small engines	58%
Opinions on whether reformulated gas produces less pollution than conventional gas	
Less than conventional gas	37%
Same as conventional gas	45
More than conventional gas	17

Question: *First, the way reformulated gasoline smells. Is this a concern for you? (Other concerns for you) the possible health effects of reformulated gas, the effect of reformulated gas on you car's performance? . . . on you car's gas mileage? . . . on your car's acceleration? . . . on lawn mowers, outboards or other small engines? In you opinion, does reformulated gasoline produce less pollution, the same amount of pollution or more pollution than conventional gasoline?*

Interpretation

In 1995, one half or more people in southeastern WI were concerned about the effects of reformulated gasoline on various aspects relating to their health and their car or other small engines. Additionally, 45% were concerned about the smell of reformulated gas. It appears that many people did not see much benefit to reformulated gas – roughly three fifths of people said that reformulated gas produces the same amount or more pollution than conventional gas.

TABLE 20: RESPONDENTS' AWARENESS OF VARIOUS CLEAN AIR PROMOTIONAL CAMPAIGNS

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Aware of Ozone Action Day campaign	–	–	84%	80%	79%	82%	80%
Recall expression "it all adds up to cleaner air"	–	–	–	–	–	20%	22%
Recall seeing Partners for Clean Air ads promoting transportation alternatives this summer?	–	–	–	–	–	60%	52%
Where did you see/hear the ads?							
Radio	–	–	–	–	–	63%	62%
Paper	–	–	–	–	–	42%	38%
TV	–	–	–	–	–	22%	74%

Question: *Were you aware of this Ozone Action Day campaign? Before I mentioned it, do you recall seeing or hearing the expression "it all adds up to cleaner air"? The Partners for Clean Air have run advertisements that encourage people to combine errands, to maintain their cars, and to find alternatives to driving their cars. Do you recall seeing or hearing these ads this summer (Partners for Clean Air)? Did you hear them on the radio? Did you read about them in the paper? Did you see them on TV?*

Interpretation

Current Year — While two fifths (80%) of people were aware of the Ozone Action Day campaign, only one fifth (22%) recalled the expression "it all adds up to cleaner air". Just over one half of respondents recalled seeing or hearing ads promoting transportation alternatives this summer. Most people saw or heard them on TV (74%) or the radio (62%). Almost two fifths (38%) report seeing them in the paper.

Trends 1993-1999 — Awareness of the Ozone Action Day campaign and recollection of the expression "it all adds up to cleaner air" have not changed. Recollection of seeing or hearing ads promoting transportation alternatives "this summer" have decreased slightly from 1998 to 1999. At the same time, how people are informed of these ads has not changed.

TABLE 21: RESPONDENTS' AWARENESS THAT THE FEDERAL GOVERNMENT REQUIRES WISCONSIN TO IMPROVE AIR QUALITY

	1993	1994	1995	1996	1997	1998	1999
	Percentages						
Heard that WI is required to take steps to improve air quality	66%	66%	81%	76%	72%	67%	67%
Have air pollution laws							
Gone too far	–	–	–	18%	16%	9%	13%
Not far enough	–	–	–	36	39	43	37
They are just about right	–	–	–	46	44	47	50

Question: *Have you hard that the State of Wisconsin is required by the federal government to take steps to improve the air quality in southeastern WI? Do you think that laws and regulations for controlling air pollution have gone too far, not far enough or are they just about right?*

Interpretation

Current Year — Two thirds of people have heard that Wisconsin is required to take steps to improve air quality. Additionally, there appears to be support for improving air quality – while one half of respondents say that air pollution laws are just about right, 37 percent say laws have not gone far enough.

Trends 1993-1999 — Something occurred in 1995 to increase levels of awareness that WI is required to improve air quality, but by 1997 the effects of that occurrence had largely evaporated. Beliefs in the level of air pollution laws have also remained fairly constant.