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Linking Transportation and Air Quality Planning:

Implementation of the Transportation Conformity Regulations in 15 Nonattainment Areas

The Harvard Conformity Report
executive summary

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Executive Summary

LINKING TRANSPORTATION AND AIR QUALITY PLANNING: IMPLEMENTATION OF THE TRANSPORTATION CONFORMITY REGULATIONS IN 15 NONATTAINMENT AREAS

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CHAPTER 1: THE CONFORMITY ASSESSMENT PROJECT

The Clean Air Act Amendments (CAAA) of 1990 require far-reaching efforts under the "transportation conformity" regulations to assure that transportation investments in nonattainment and maintenance areas are consistent with state commitments to meet national air pollution standards. This research documents how these regulations were implemented during the period 1991 through January 1998.

Focal Questions. Three questions have organized the study:

- How has conformity affected key agencies and constituencies' organizational capacity and relationships?
- How has conformity changed the transportation planning/programming process and its results?
- How has conformity changed air quality planning and regulation?

Although the research does not attempt to evaluate the technical dimension of conformity modeling, it seeks to place the technical process in the larger context of the institutional relationships involved.

Study Sites. The researchers chose a non-random sample of 15 nonattainment areas – Atlanta, Baltimore, Boston, Charlotte, Chicago, Denver, Houston, Milwaukee, New York, Northern New Jersey, Philadelphia, Phoenix, Portland, Salt Lake City, and San Francisco – to concentrate on large metropolitan areas with more severe air pollution problems. The sample does not include rural nonattainment areas, small metropolitan areas, or areas with minimal pollution problems.

In each area, the researchers consulted documents and publications and conducted personal interviews. In all, they spoke with more than 230 individuals knowledgeable about conformity, including representatives from MPOs, state air agencies, state DOTs, EPA and FHWA field offices, environmental advocacy groups, and other stakeholders.

CHAPTER 2: THE PURPOSES AND REQUIREMENTS OF TRANSPORTATION CONFORMITY

The conformity process is intended to ensure that a nonattainment (or maintenance) area will keep transportation-related emissions within the bounds needed to bring the state into compliance with (or maintain) the national ambient air quality standards – and thus to advance the public health goals of the Clean Air Act. But the statute and the regulations promulgated by EPA to implement them imply a broader set of purposes, and stakeholder groups have layered on additional expectations about how conformity would work. These extended purposes and expectations include:

- establishment of a procedural framework and incentives for analyzing transportation-related pollution,
- improvements in both transportation and air planning processes and establishment of tighter connections between them,
- improvements in public deliberation and decisions on transportation and air quality issues, and
- promotion of elements of the environmental advocacy agenda.

CHAPTER 3: IMPLEMENTING THE TRANSPORTATION CONFORMITY REQUIREMENTS

During the study period, each of the 15 study sites experienced at least some difficulty with the technical and procedural requirements of the 1993 transportation conformity regulations. These problems are considered in six categories: (1) **Emission tests:** passing the emission budget and build/no-build tests, (2) **Modeling procedures:** fulfilling the transportation modeling requirements, (3) **TCM implementation:** demonstrating timely implementation of those transportation control measures committed to in control strategy SIPs and maintenance plans, (4) **Fiscal constraint:** showing that the transportation plan meets the ISTEA fiscal constraint requirement, (5) **SIP failure:** triggering conformity problems because of problems with SIP submissions, and (6) **Human error:** experiencing conformity problems because of procedural confusion and/or data analysis mistakes.

The nature and consequences of these problems for the transportation planning process and air quality regulation varied significantly. (See Table 3-2 in the body of the report for the problems encountered by each nonattainment area.) In applying the specific emission tests of the 1993 regulations, five study sites encountered significant difficulties with the budget tests, which continued to pose serious problems for Atlanta, Charlotte, and Houston at the end of the study period in January 1998. The build/no-build test was problematic for even more areas, but the difficulties were less severe – and, because this requirement was substantially altered by the 1997 conformity amendments, the problem has become moot in most areas. No study area reported difficulty with the less-than-1990 test.

The other conformity requirements were generally less problematic than the emission tests. While a number of study sites had some difficulties gearing up for the network modeling requirements of the 1993 regulations, only New York City and Chicago faced serious conformity delays

as a result. The fiscal constraint requirement posed no serious problems for any areas, although Boston experienced a brief conformity delay because of this test. Initially, the provisions of the 1993 rule regarding SIP failures caused problems for a few areas; but the 1995 conformity amendments alleviated this issue. During the study period, only Salt Lake City suffered a conformity freeze or lapse because of SIP failure.

CHAPTER 4: INSTITUTIONAL ROLES IN THE TRANSPORTATION CONFORMITY PROCESS

Fulfilling the purposes of conformity depends crucially on creating stronger institutional links between two sets of agencies – transportation and air quality – that operated quite independently of each other prior to enactment of the CAAA of 1990.

Contextual Conditions. For the core regional and state agencies involved in conformity – particularly MPOs, state and regional air agencies, and state DOTs – implementation of the conformity regulations created significant stresses, not merely in terms of what conformity itself required but also in the context of broader changes stemming from the CAAA and ISTEA. Even without the conformity requirements, air quality and transportation agencies faced substantial increases in workload as well as the need to develop new skills and to build relationships with other agencies.

Developing Technical Capacity. Conformity made significant start-up demands on MPO technical capacity and resources. Of the 15 study sites, New York City and Chicago had the most difficult experiences. Most of the MPOs in the study were subject to the network modeling requirements of the 1993 conformity regulations, and all needed to upgrade their modeling capabilities to meet the general requirements of conformity. Typically, MPOs had to hire additional in-house technical staff and/or consultants for this purpose. While conformity was often the decisive factor, these upgrades were also motivated by ISTEA's planning requirements and the provision of federal funds to strengthen planning capabilities.

For state air agencies developing necessary technical resources was also challenging. To meet a spate of new responsibilities under the Clean Air Act, including conformity, most air agencies hired additional staff members who had or could develop transportation expertise, but this took time; and new staff had to be assimilated to new institutional practices and cultures. By contrast with both air agencies and MPOs, state DOTs faced far less conformity-related pressure for technical capacity enhancement.

Both the U.S. Environmental Protection Agency and the U.S. Department of Transportation significantly contributed to the development of organizational capacity for conformity by providing technical assistance to state and regional agencies.

Establishing Interagency Consultation Procedures. The conformity regulations emphasized the need for effective interagency consultation at each stage of the conformity process. Consultation practices have emerged gradually as first the 1991 interim conformity guidelines and then the 1993 regulations have been implemented.

As a result of start-up challenges, many areas missed the window of opportunity for consultation that could have informed the first set of SIPs in the CAAA/ISTEA era. In a few areas, such

as Boston, Houston, and Milwaukee, broad-based SIP planning task forces were established. However, transportation planners in some other areas were not sufficiently aware of the importance of their involvement in SIP planning. Thus, emission budgets were derived implicitly from SIP inventories without enough consideration of their implications for future conformity determinations. Likewise, during the start-up phase, air planners were just beginning to establish their role in transportation planning and frequently felt that they had too little influence on the first post-ISTEA round of transportation plans and TIPs.

Typically led by the air agency, concerned agencies in most states began working on conformity SIPs in 1994. Many states finished work essentially within the allotted year, building on the experience gained in their initial conformity experiences. Most developed interagency consultation procedures with little disagreement, and a number regarded the exercise of specifying responsibilities and defining processes as quite useful in clarifying expectations about how conformity would be carried out. To accommodate forthcoming amendments to the conformity regulation, however, EPA moved the deadline for completed conformity SIPs into 1998. Conformity SIPs were therefore not complete in many areas at the conclusion of the study period in January 1998.

Consultation in Practice. Whatever the legal status of their conformity SIPs, though, the study areas have developed interagency consultation practices that go well beyond previous levels of interaction. Formal consultation goes beyond the mechanics of conformity in most, but not all, areas. Air agencies now typically participate in some fashion on the MPO committees where transportation decisions are made, so they have an opportunity to make suggestions or raise issues at a formative stage of policy development. Official interactions, however, tell only part of the story of interagency consultation. *Formal* consultation procedures have frequently helped to foster stronger *informal* working relationships and deeper understanding of the issues in a number of areas.

Many of the state and regional officials interviewed for the study stressed that, as a result of the formal and informal relationships that conformity has spurred, they have developed a much greater understanding of their counterparts' challenges and the constraints that shape their policy approaches. This makes it far easier to acknowledge problems and work together to solve them. Consultative relationships, once initiated, therefore tend to become reinforcing.

In some areas, however, consultation is relatively limited and focused to a great degree on formal interactions such as committee meetings, review of proposed conformity determinations by air quality planners, and comments by transportation planners on proposed SIP budgets or mobile source control measures.

Even in areas where strong consultative relationships have developed, important limitations remain. Where close interagency relationships develop, they do not transcend or submerge distinct institutional interests and perspectives in conformity. Nor do they fundamentally change disparities of bureaucratic or political power. Agency personnel continue to represent their own agencies and may not always be able to find common ground with their colleagues on specific matters. As a result, while state air agencies provide important technical inputs to conformity analysis in a number of study sites, they have generally been *reactive* rather than proactive participants in conformity. Resource limitations and the opportunity costs of using this scarce capacity for conformity are a major barrier. Because a number of air agencies have little in-house technical expertise on transportation demand modeling, they are uncomfortable probing that dimension of

conformity even when they have serious reservations about how the MPO is handling it. Perceived political weakness of air agencies relative to transportation counterparts is another barrier. In only a few instances identified in the study sites have air agencies been aligned against transportation agency positions in major conformity disputes.

Federal Agency Roles. The conformity regulations give DOT the final authority to decide whether an MPO's conformity determination should be approved. In practice, FHWA has taken the lead in this review, working closely with EPA and FTA. The federal agencies also consider comments from interested stakeholders (most often environmental advocacy groups). Serious objections from a key stakeholder typically trigger intensive review of the MPO's conformity analysis.

FHWA has generally worked with FTA and EPA to reach consensus on a federal position, sometimes managing discussions at multiple levels of the agencies. In only one instance in the study sites – Atlanta – has there been severe disagreement between DOT and EPA.

In each state in the study, FHWA has division offices in the same city in which the state DOT headquarters is located. Therefore, its air quality staff members generally have direct access to their counterparts in state and regional agencies and often provide technical assistance and advice.

EPA field staff, operating from only ten regional offices, do not have comparable access in many instances. They have nonetheless played active roles in implementing conformity – providing technical assistance, troubleshooting on major issues, advising and consulting with national headquarters staff, working with states and MPOs to develop conformity SIPs, and dealing with the conformity consequences of control strategy SIP revisions or disapprovals. However, EPA's involvement in conformity at the MPO/nonattainment area level has been significantly more variable, and weaker overall, than FHWA's – to a great degree because EPA lacks a state-level presence equivalent to FHWA's divisions.

FTA also has only regional offices, and its conformity role has generally been less extensive than either FHWA or EPA's.

At the headquarters level, FHWA staff in Washington provide technical backup, interpret agency policy, promote inter-area consistency, and manage liaison with EPA headquarters staff. EPA's mobile source headquarters staff, primarily based in Ann Arbor, Michigan, played the lead role in drafting the transportation conformity regulations and the subsequent amendments (in close consultation with DOT, whose concurrence was required by the statute). EPA headquarters has also played a continuing role in interpreting the regulations, coordinating regional office mobile source specialists to ensure national consistency, and has communicated regularly with state and regional transportation and environmental agencies and other stakeholder groups.

Stakeholder Roles. The conformity regulations require both that the public have opportunity to comment on conformity analyses before the determination is made and that MPOs fulfill the requirements of the DOT metropolitan planning regulations, which more generally mandate public participation in transportation planning. Using these paths of access, environmental advocacy groups have been the most active non-governmental stakeholders in conformity, playing key roles in about one third of the 15 study sites and a more limited role in most others. To track conformity well, however, is time-intensive and requires significant technical skills. To partici-

pate effectively, therefore, environmental advocates have had to make efforts that, in many respects, parallel the involvement of personnel from the core public agencies. In several study sites, strong environmental groups that have focused on transportation issues more generally have therefore strategically chosen *not* to become actively involved in the conformity process. And not every study site has advocacy groups capable of effective participation.

Business associations are the only other stakeholder group active in conformity – and then only in a few nonattainment areas.

The Broader Visibility of Conformity. At least up to the conclusion of the study period – January 1998 – conformity had not generally been effective in focusing the attention of high-level appointed policy makers and elected officials on the issues of transportation and air quality. The complex and highly technical nature of the conformity process has been a barrier to expanding participation in the planning arena beyond the core group of planning and policy officials who deal with it on a regular basis.

The core public agencies have also had limited success in drawing the general public's attention to conformity. In most of the study sites, there is scant media coverage of the transportation planning process in general and conformity in particular. Unless controversy arises, conformity is an inherently difficult subject for newspapers, let alone television or radio, to report. Its highly technical nature, revolving around complex regulatory requirements and arcane modeling procedures, diminishes its accessibility to both generalist reporters and the public.

To the extent that the core agencies have attracted public attention to conformity, they have relied primarily on organizing and formally announcing public meetings, placing notices in their newsletters, and – increasingly – posting notices and technical documents on MPO websites. Consequently, very few unaffiliated citizens have availed themselves of opportunities for involvement, even when MPOs and others have exerted considerable effort to secure participation.

However, in several areas that have experienced long conformity lapses (such as Denver, Charlotte, and Atlanta) the level of media coverage has increased, including newspaper coverage that explains the policy issues as well as describes the conflict. This makes the issues more accessible to the public. Under these circumstances, moreover, senior policy makers and elected officials are also more likely to become active in trying to resolve the conformity problems.

CHAPTER 5: CONFORMITY EFFECTS ON TRANSPORTATION AND AIR QUALITY PLANS

Effects on Transportation Plans and Programs. Firm conclusions about impacts of conformity on transportation plans/programs are premature because of the dynamics of transportation planning and project development. The regulations were not in effect during the *formative* years of many of the projects in transportation plans/programs that were subject to conformity during the study. In effect, the conformity regulations were applied to the *final* stages of planning. It is not surprising, therefore, that the effects of conformity have been felt more clearly in the planning *process* than in the substance of the plans themselves.

During the period in 1991-1993 that the interim conformity guidance was in effect there was considerable initial uncertainty about what this unfamiliar procedure entailed and how it had

to be documented, but most MPOs experienced relatively little difficulty demonstrating conformity against this standard.

HIGHWAY PROJECTS IN HIGH-GROWTH AREAS. Under the 1993 regulations, as amended, conformity's impacts on highway projects have been felt primarily in a number of the high-growth areas in the study – Atlanta, Charlotte, Denver, Houston, Salt Lake City – which found passing conformity's emission budget tests problematic during the study period.

Except for Portland, the high-growth study areas tend to have substantial dispersed land development and a significantly rising level of vehicle-miles traveled (VMT). As a consequence, they typically have major highway capacity expansion plans. These areas generally have transit systems with much smaller mode shares than the typical low growth area in the study – and their growth is primarily occurring at the peripheries of the metropolitan area where providing high-quality transit service is problematic. On the air quality side, because these areas, with the exception of Houston, have less severe ozone problems than the low growth areas in the study, they have earlier attainment deadlines. Consequently, they must show required reductions, net of VMT growth, more rapidly than the lower-growth areas.

The effects of the difficulties that Atlanta, Charlotte, Denver, Houston, Salt Lake City had in passing conformity emission budget tests ranged from delays in proceeding with certain planned projects, to scaling back the design scope of others, to eliminating certain projects from proposed transportation programs. Atlanta and Charlotte were experiencing conformity lapses at the time the study concluded in January 1998.

HIGHWAY PROJECTS IN LOWER-GROWTH AREAS. Implementation of the conformity rule has had far less impact on transportation plans/programs in the older, relatively low growth metropolitan areas in the study – Chicago, New York, Baltimore, Boston, Philadelphia, Milwaukee, northern New Jersey, and San Francisco. Although these areas typically have more serious pollution problems, they generally have mature highway infrastructure networks, well established transit systems, and relatively slow VMT growth. As a result, many projects in their transportation plans/programs have neutral or positive air quality benefits. These projects include reconstruction and maintenance of the roadway system and most investments in transit. Thus, conformity has not required major adaptations of transportation plans in these areas because there are few major capacity expansions on the table, the mix of projects already includes many with air quality benefits, and technology measures are being adopted in the SIP.

These areas, however, have not yet met their stiffest conformity challenges. In the absence of attainment demonstrations for these areas, the emissions budgets that they have met come from 15% VOC reduction SIPs and subsequent RFP SIPs. Moreover, at the end of the study period, some had not yet determined conformity against 1999 RFP levels.

ONGOING HIGHWAY IMPACTS. How Charlotte and Atlanta would resolve the lapse problems noted above was not clear at the conclusion of the study period in January 1998. What these situations and other less dramatic cases in the study suggest, however, is how difficult institutionally and politically it is for MPOs and state DOTs to make changes in their transportation plans and programs. Given the difficulty of extricating projects from plans, and the length of time that will elapse before projects in the pre-ISTEA pipeline are exhausted, it is not surprising that major changes in the contents of regional transportation plans have been few.

As a result of conformity, though, it appears that proposals for major highway capacity enhancement, while not precluded, are less likely to move into preliminary planning phases than they might have previously, if they seem likely to be "emission budget busters." Because major highway projects may threaten *financial* as well as emission budgets, moreover, this effect is strongly reinforced by the fiscal constraint requirement of ISTEA.

EFFECTS ON TRANSIT, OTHER TCMS, AND LAND-USE PLANNING. Because a number of conformity stakeholders, particularly environmental advocacy groups, expected that conformity would promote specific elements of their transportation policy agendas, this study has investigated whether conformity has had an impact on transit, other transportation control measures (TCMs), and land-use planning.

In the 15 study sites, conformity considerations seem to have reinforced – but not determined – transit policies in two areas (Denver and Portland). At the end of the study period in January 1998, however, transit planning in the others had been much less affected by conformity. Contrary to the cited expectations, most rapidly growing metropolitan areas in the study, including those that have experienced conformity difficulties, had not found transit's emission benefits sufficient grounds to encourage major investments. However, the areas that already have extensive transit networks have found the emission benefits of continued investment helpful in demonstrating conformity.

Only two areas (Boston and Baltimore) reported adopting a TCM specifically for conformity purposes. In others, the availability of CMAQ funding has probably increased the attractiveness of some TCMs relative to other possible expenditures; and several areas routinely used an off-model analysis of TCMs to pass the build/no-build test. Because most TCMs show only modest air quality benefits, however, other factors have driven their inclusion in area plans; they have not been programmed specifically to capture air quality benefits.

Some proponents of conformity hoped that modeling transportation/land use links would also lead to consideration of alternative land-use scenarios in the planning process and wider acceptance of land-use regulation as a viable policy option for reducing mobile source emissions. However, with the exception of Portland among the 15 study sites, the impact of conformity on actual land-use decision making has been limited by the distribution of institutional responsibilities and the politics of land use regulation.

Conformity and Air Quality Planning. During the start-up phase of CAAA/ISTEA implementation, conformity did not have a large influence on the first rounds of SIP planning, primarily because of competing statutory demands and the timing of the 1993 regulations.

As areas have moved through subsequent rounds of air quality and transportation planning, however, conformity has had more impact. In the face of conformity problems, some areas have adjusted or amended mobile source budgets. Other areas have proactively reassessed emission budgets to anticipate and deal with looming conformity problems. For example, to deal with PM_{10} conformity problems in 1994, the Denver region established out-year budgets that increased over time, while it mitigated emissions in the downtown area to keep them within allowable limits. In 1995, Salt Lake City added ten years to its ozone maintenance plan, matching the time frame of its transportation plan, to ease problems of passing the NO_x budget test for ozone. Portland pro-

actively established out-year emission budgets in its 1996 ozone maintenance plan to make future conformity determinations less difficult.

Just as air planners have become more significant and involved stakeholders in transportation planning, transportation planners have become more active stakeholders in air planning. In most ozone nonattainment areas, they have been much more involved with the 9% and attainment year budgets than they were with the 15% VOC reduction SIPs, although in several areas (e.g., Atlanta, Philadelphia, and New York City) they did not get deeply involved in negotiations until after preliminary budgets had been set and transportation agencies had to react through comments. Overall, this involvement represents a major change in the practice of transportation and air quality planning. Even where bureaucratic relations have not been smooth, the previously separate planning and regulatory processes have become far more tightly linked than ever before.

Conformity has spurred this process in two main ways: (1) by stimulating greater scrutiny of and refinements in the current data and forecasting techniques for transportation demand, and (2) by forcing planners and policy makers to identify, confront, and more directly assess the options they have for reducing mobile source and other emissions.

The complexity of the modeling process and the inter-relationships between conformity and SIP modeling, however, have sometimes made it difficult to get to the heart of these issues. All of the areas that have had serious problems passing the budget tests (Atlanta, Charlotte, Denver, Houston, and Salt Lake City) initially responded by attempting to alter the modeling underlying mobile source emission budgets or to enlarge the mobile source share of the aggregate budget to accommodate high VMT growth rates.

Although the conformity rule does not require areas to put TCMs in the SIP, some environmentalists believed that the protection given SIP TCMs would encourage areas to do so. During the initial round of SIP planning, however, conformity proved to be a *disincentive* for inclusion of TCMs in SIPs because delay of a SIP TCM could cause a conformity lapse, jeopardizing the flow of federal funding for all transportation projects. Portland is the only study area that placed TCMs in the SIP specifically to ensure their implementation even if political opposition arose.

Some areas considered the ramifications of conformity when choosing SIP measures other than TCMs. With the notable exception of Phoenix, however, few adopted mobile source control measures that were not mandated by the CAAA. Three study areas (Chicago, Houston, and Phoenix) requested NO_x waivers, at least in part to avoid problems with the conformity NO_x build/no-build tests. Denver adopted air quality measures outside of the SIP to pass PM_{10} conformity, while avoiding the hurdles of an amendment to add measures to the SIP. In Maryland, although conformity did not influence the initial form of the state inspection and maintenance (I/M) program, the governor vetoed a bill adopted by the legislature in 1997 that, by making I/M voluntary, would have resulted in EPA disapproval of the Baltimore SIP and imposition of a conformity freeze.

CHAPTER 6: TOWARD A NEW PLANNING "ARENA"

Planning Improvements. The interviews conducted for this study reveal a broad professional consensus that conformity-related improvements in planning methods are genuine and

valuable not only for air quality regulation but also for other planning purposes. Conformity requires transportation planners to use advanced analytic tools and the latest available planning assumptions to forecast transportation demand and mobile source emissions. Coupled with the infusion of ISTEA funds to hire technical staff and collect more recent, often more detailed, data about demographic trends, land use, and travel behavior, conformity has thus led to significant improvements in planning capabilities in all of the study sites, though in varying degrees. Improvements in transportation planning have served not only to focus transportation planners on the goals and requirements of the Clean Air Act but also have had a direct effect on air quality planning.

Divergent Perspectives on Regulation. It is important to distinguish, however, between acceptance of air quality analysis for *planning* purposes as opposed to *regulatory* purposes. Conformity shapes key policy decisions, allotments of large sums of federal aid, and legal authority to proceed with projects. As a result, many transportation and air planners continue to have significant differences about how the conformity analysis is conducted and what impacts it has on the quality of decision making.

Some transportation planners resent the absolute priority that air quality goals have over all other goals in transportation planning. Many question the validity of using the model outputs for making conformity determinations, arguing that conformity conveys a false image of precision. These feelings are sometimes intensified because of inconsistencies between the planning assumptions incorporated in SIPs and those in the conformity analysis. These inconsistencies do not always make it more difficult to demonstrate conformity. If they do, though, transportation planners often express frustration that the complexities and slowness of the state regulatory and federal approval processes make it quite time consuming – and often impractical within the time frame of regular transportation planning cycles – to update SIP planning assumptions.

By contrast, many air planners and environmental advocates contend that the modeling results provide a sufficiently good approximation of current reality and future development patterns to warrant their use for conformity, especially given their view that it is critically important to achieve Clean Air Act goals. Others argue that emission models underestimate mobile source pollution, so that transportation projects get the benefit of the doubt. Some suspect that MPOs shade the transportation demand analysis to produce favorable results.

Another divergence in the perspectives of transportation and air planners results because conformity permits the modeling to take "credit" for improvements in vehicle emission control systems or beneficial changes in fuel composition only when these are mandated by federal regulations and/or adopted in legally enforceable regulations by the state. Many transportation planners and advocates regard this as an artificial feature of the planning system. They contend that it is poor policy to be forced to forgo transportation projects which would otherwise be permissible simply because the time frame of decision making on national technology policies is independent of – and therefore imperfectly synchronized with – the timing of their conformity decisions. By contrast, many air agencies and environmental advocates assert that until such controls are legally mandated, it is inappropriate for conformity to recognize still-speculative emission reductions. Once transportation projects are approved, they argue, it is difficult or impossible to halt them or scale back if emission reductions from technology measures do not materialize.

Confronting Conformity Difficulties. In the framework of the CAAA of 1990, conformity is an analytic "trip-wire" to alert policy makers to inconsistencies between two sets of policies – air quality planning (codified in state implementation plans) and transportation planning (codified in transportation plans and programs). In the 15 study sites, this reconsideration tends to occur in distinct phases. First, planners carefully re-examine the modeling on which the conformity analysis is based to confirm that a problem exists and to discover its magnitude. When conformity difficulties are significant, they must then deal with the institutional and political dynamics of changing either the transportation plan/program or the applicable SIP so that conformity can be demonstrated.

Through the process of reconsidering planning assumptions and modeling techniques, the transportation agencies seek to reduce the possibility that conformity penalties might result from "technical" difficulties in the modeling rather than "real" future problems revealed by conformity forecasting of emissions. Environmental agencies, in turn, seek to discover whether the analysis has been conducted appropriately and whether genuine conformity problems exist. As a result of such scrutiny on both sides, errors have been discovered, improved estimates of key parameters have been secured, and refinements of modeling methods have been introduced.

Within the community of core conformity stakeholders – transportation and air agencies and active stakeholder groups – the character of the consultation process appears to have important consequences for the credibility and longer term effects of the analytic process. In areas with less intense interagency consultation practices, reassessment of modeling methods is likely to be performed primarily by MPO staff, sometimes with little visibility to other agencies and stakeholders. But MPO autonomy comes at a cost: reduced confidence by outsiders in the results. By contrast, when the analytic issues of conformity have been the focus of careful "upfront" discussion and debate among interested agencies and stakeholders, transportation planners are more likely to regard any remaining problems in demonstrating conformity as "real" rather than modeling artifacts; and air planners and advocacy groups are less likely to harbor suspicions that conformity has been demonstrated by technical manipulation. As successive cycles of conformity analysis are undertaken, effective interagency consultation creates greater mutual confidence in the analytic process.

The professionals, however, are not conformity's only "audience." Conformity was also clearly intended to get policy officials, elected executives, legislators, and a broad array of stakeholder groups to confront the *policy* dimensions and tradeoffs of transportation and air quality. Data from the 15 study sites, however, suggests that it can sometimes be problematic to move discussion of conformity problems beyond the relatively small circle of transportation and air quality professionals and the few stakeholder representatives who deal with it on a regular basis. In some of the study areas, this has led to considerable delay in confronting the roots of their conformity problems.

Responding to Conformity Problems. In the event of conflict between transportation plans and air quality commitments, the conformity regulations permit an MPO or state, in principle, to resolve the inconsistency by making changes to transportation plans/programs, SIPs, or both. As a practical matter, however, it has often proven more difficult to make such changes than some of the architects of conformity anticipated.

To disaggregate the final package of projects that appear in a regional transportation plan or program is politically arduous and time consuming. Many environmental advocates and air

planners have been frustrated that the transportation planning/programming process has proven less pliable than they hoped or expected. This problem is exacerbated by the weak link between transportation planning and land use regulation that exists in virtually all of the study sites, except Portland.

Seeking changes on the air quality side – i.e., in the state implementation plan – encounters other kinds of difficulties. Depending on the state, this may take many months, sometimes more than a year. To go through the SIP revision process is almost always to delay the normal schedule for developing and initiating new plans/programs. Seeking changes in a SIP is also burdensome for air planners. They often have competing priorities for time and resources, including meeting *new* SIP development responsibilities. Not unlike the political process that produces transportation plans, emission budgets usually represent consensus policies established after long periods of negotiation among stakeholders from different emission-source sectors. Reopening budget allocation decisions can ignite politically potent inter-sectoral disputes. Air planners are therefore often reluctant to manage SIP revisions.

While changing plans is difficult on both sides, it is ultimately transportation plans that are placed at risk by conformity difficulties. This was clearly intended by the legislative architects of the conformity provision of the CAAA of 1990. But it is also true that the officials with direct responsibilities for the program at risk – in MPOs and state DOTs – have direct influence over only *some* of the potential ways of resolving inconsistencies between transportation and air quality plans. To the extent, therefore, that conformity is meant to allow even-handed consideration of the *means* of resolving inconsistencies between transportation and air quality plans, the difficulties in changing SIPs and the disparities in the timing of the two planning processes is problematic.

Conformity as an Evolving Process. This study is a snapshot of conformity during a particular period; but like any regulatory process, conformity is evolving and responding to new situations. In addition to the issues noted, conformity must adapt to the new National Ambient Air Quality Standards for ozone and particulate matter, which will make new areas subject to regulation. New tools for analyzing transportation demand and the effects of transportation policies on pollution are in development. The impact of conformity over the long run on transportation planning/programming may be greater than it has been to date – as new plans and projects take account of conformity in their formative stages, not just as they are being finalized.