Environment, Distributive Equity and Energy Savings: Capturing the Benefits Where They Are Needed

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Introduction

The benefits of demand-side economic approaches to energy utilization have been heralded and measured for the past two decades: expenditures by public utilities on both energy efficiency and load management on the customer side of the meter have grown from almost nothing to an estimated $2.5 to $3 Billion in 1992. This represents a range of 1.2 percent to 1.4 percent of this industry's $217 Billion in annual revenues. These commitments are expected to grow at rates up to 25 percent annually for the foreseeable future. Leading utilities are already committed to such investments in the range of 2 to 6 percent of revenues in particular service territories.

Over this same period of utility transformation, our economy underwent tremendous upheaval, felt strongly in the nation's cities and metropolitan areas.

While energy price and availability played significant roles in this upheaval, important parallel changes occurred in demographics (age and location), dispersion, disinvestment, and economic base.

Simultaneously, the ability to use create and use public authority to challenge these trends and their underlying causes increased tremendously as well. The ability to use the Civil Rights Act, the Community Reinvestment Act and all the environmental protection laws to address the consequences of development has been a significant contributor to the climate which favors a preventative and efficiency oriented approach to resource utilization (and its avoidance).

The pervasive cultural changes enabled by such policy change, including the rise of a permanent set of public interest organizations across a wide range of issues and interests is part of what must be acknowledged.

In October of 1991, the First People of Color Environmental Summit challenged both political leadership and mainstream environmentalism to recognize the discriminatory effects of (a) the co-location of health risks and racial minorities, and (b) the predominant underrepresentation of minorities on the Boards and staffs of both public interest and governmental agencies charges with environmental protection. The 1991 Intermodal Surface Transportation Efficiency Act, heralded for its explicit cross-referencing to the Clean Air Act Amendments of 1990, perhaps as importantly requires specific conformity with Title VI of the Civil Rights Act.

In the fall of 1993, environmental, social justice and community development organizations convened the Energy and Equity Roundtable to address both distributive equity and civil rights issues as they pertained to the energy efficiency movement.

When Congress passed the Energy Policy Act of 1992, it unfortunately was lacking key provisions strongly advocated by the efficiency community, including requirements for states to adopt integrated resource planning standards and programs, and strong tax measures (variously proposed as both carbon taxes and btu taxes). The failure convince Congress to include these provisions almost twenty years after the initial oil price shocks, especially considering the expanded recognition of the role of energy resource consumption in global climate change, may be a function of the failure to include any such equity imperative, as well as its lack of specific targeted benefits for urban areas and their residents.

The nation as a whole is asking a similar set of questions concerning issues of distributive equity across race, class and place lines. This is a healthy development during the tenure of a Federal Administration which has proposed investment-oriented initiatives around infrastructure, community development, health care, education, and environmental themes.

Recent (post-WWII to present) history can guide the efficiency community concerning the current and coming debates around all this.

How Did We Get to This Point?

Since 1940, at least half of metropolitan population growth nationally has taken place in the suburbs; metropolitan areas have expanded from one-quarter to more than three-quarters of the nation's population; and more than half the U.S. population now lives in metropolitan areas of over one million.

In Chicago and virtually every other metropolitan region, these shifts were facilitated, encouraged, and subsidized by public policies, which in turn were promoted and backed by various development interests.

Post WWII federal domestic policies encouraged the development of new areas while providing little incentive for the maintenance of existing areas and sectors. In effect, these included: (1) Investing in new highway and later airport facilities, rather than in mass-transit, inner-city rail and city roads; (2) Extending water and sewer mains and electric transmission lines at low or no cost to rural areas; (3) Making cheap credit available in developing areas while ignoring or even encouraging credit discrimination (redlining) against existing ones; (4) Neglecting the successful conspiracy to buy up and abandon much of the existing inner-city trolley systems and inter-urban electric railroads; and (5) Subsuming national policies on materials use and the environment within a dual context of support for extractive industries and expanded foreign trade.

A good indicator of the investment effects of this policy is the portion of gross national product devoted to public works, which from 1945 to 1960, shot up from 1.0 to 3.3 percent. It then maintained a level of 2.3% even throughout the inflationary 1960's and stands at 1.5% today.

The consequences of this discriminating form of counter-cyclical public works spending policy were devastating. Nationally, from 1958 to 1989, the federal government spent $213 billion on highways, but only $23 billion on railroads and transit.

How This Affected the Windy City: A Case Study

From 1970 to 1990 the percentage of developed land in the six county Chicago standard metropolitan statistical area (SMSA) grew 55 percent (46 percent for residential land uses alone) while the population rose just 4 percent (Figure 1). Northeastern Illinois lost an estimated 444 square miles or nearly one-quarter of its farmland between 1970 and 1990. Daily vehicle-miles-traveled (VMT) grew 49 percent from 1973 to 1990, and much more rapidly in the most recent years (Figure 2). Between 1970 and 1990, 165 municipalities, mostly in outlying areas, collectively gained over 1 million residents, while 90 municipalities, mostly at or near the region's center, experienced a net loss of 771,000.

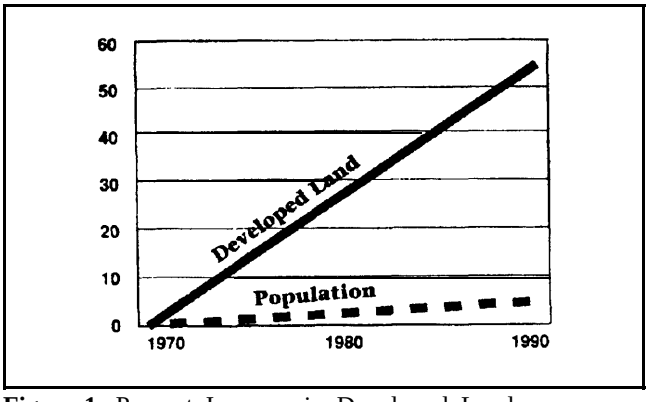

Figure 1. Percent Increase in Developed Land vs. Population in NE Illinois 1970-1990

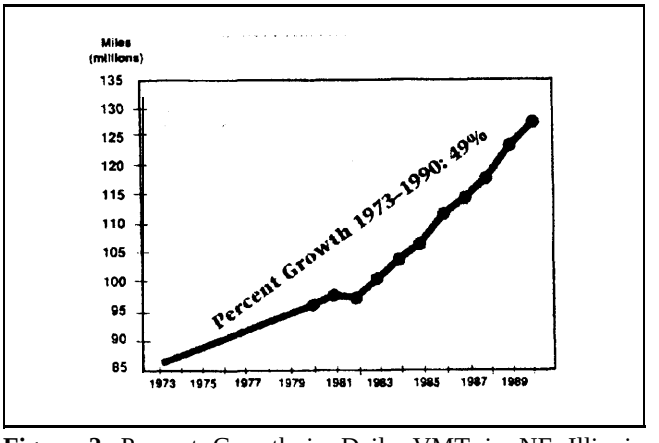

Figure 2. Percent Growth in Daily VMT in NE Illinois 1973-1990

During the same period, the suburban share of the region's employment grew from approximately 44 to 61 percent. Between 1980 and 1990, per capita income increased in 186 municipalities while it remained level or declined in 77 others. Declines were concentrated in older core communities and increases in newer suburban areas.

Manufacturing's share of the jobs in the Chicago economy fell 34 percent from 1969 to 1989. From 1979 to 1989, Chicago lost 130,000 manufacturing jobs while gaining 69,000 service jobs. The average factory worker in Chicago in 1989 made $14.22/hour while service workers earned $10.65/hour.

Between 1950 and 1990, the surface trolley system in Chicago was completely replaced with buslines, and available heavy rail in the Chicago Transit Authority (CTA) system was cut by at least 40 miles. Annual ridership dropped by some two-thirds, from 330 to 110 rides per person-year. During the same forty year period, population density in Chicago proper dropped from 16,000 to 12,000, in surrounding Cook County rose from 1,500 to 5,000, and in the four collar counties rose from 400 to 1,300 persons per square mile, respectively.

Meanwhile, because of new performance standards and pollution controls, total automobile hydrocarbon emissions dropped by half from 1970 to 1990, even as VMT almost doubled during the same period (Figure 3).

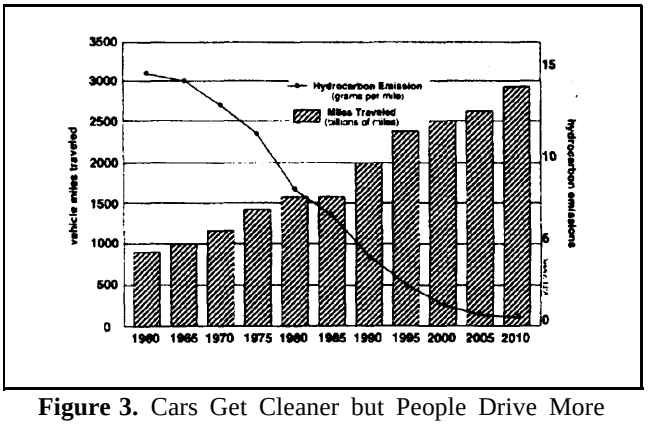

Figure 3. Cars Get Cleaner but People Drive More

The economic consequences on families and households are devastating. The city's Poverty Task Force showed that in 1990, 23 percent of households earned less than $10,000, 33 percent less than $15,000, 51 percent less than $25,000, and that it takes the modal household (unfortunately, increasingly a single-parent two-child household) at least $20,000 per year to meet basic needs on a no-frills basis, including the questionable assumption that a $60 monthly CTA pass will meet all household transportation needs. Figures from the 1990 Census indicate that for various age and community cohorts, household income in the region is twice that within the city. Overall, poverty is three times higher in communities of color.

The region must provide a level of services for a developed area that has grown by half with a nearly stagnant population, with an economy that has shifted its base significantly from manufacturing to services, real estate development and public works, and with a vast increase in the number of governmental units, both municipalities and special districts.

Is the Clean Air Act Alone a Sufficiently Powerful Tool to Reverse This Pattern?

The concentration of air pollutants in cities is a public health problem of epidemic proportions. Recent public health service studies show that deaths from asthma are on a steep rise nationally in these non-attainment areas. Chicago is now third highest in the country. Children in Los Angeles have been shown to be developing with significantly less lung capacity, and the health costs of non-attainment in that air basin have been shown to be $9.4 billion each year. Public health studies also show that both the burden and the susceptibility to such health effects is greatest in African-American and other communities of color.

In 1987, the state of Wisconsin sued the U.S. Environmental Protection Agency (EPA) administrator for failure to force Illinois to clean up Chicagoland's air, which is the source of much of the ozone found in southeastern Wisconsin and the Milwaukee region. Both areas share the dubious distinction of "severe" nonattainment status under the CAAA.

In the fall of 1989, federal Judge Terrance Evans presided over a settlement *(Wisconsin v. Reilly, Case #87-C-0395)* requiring unprecedented cooperation among the states of Illinois, Wisconsin, Michigan and Indiana, and the expenditure of some $13 Million by these states and USEPA to create the definitive urban airshed model and measurement program, tracking and allocating the sources, transport mechanisms, and destinations of urban ozone in the Lake Michigan airshed.

The resulting Lake Michigan Ozone Study (LMOS) has virtually completed its initial task, and just in time. Each of these four states are required to submit plans by November 15, 1994, to reduce its own emissions by 15 percent within two years (by November of 1996), and to submit evidence of this reduction. The states must continue to submit evidence of further reductions of at least 3 percent per year through 2007, by which time they must reach a total reduction goal of 67 percent to bring the region into compliance.

The CAAA regulatory framework envisions three strategies for achieving these reductions in the nation's 98 nonattainment areas—(1) cleaner cars; (2) cleaner fuels; and (3) reductions in vehicle miles traveled. Reductions in VMT can be achieved by any number of means, ranging from better mass transit to planning. The Act envisions some mandatory measures, such as putting the burden of

performance on employers of 100 persons or more. There are 5400 such employers in the Chicago SMSA, and 7000 in the affected LMOS region. Increasingly, however, employers are small. The remaining large employers are thus beginning to protest the program's requirements,

Cleaner cars and cleaner fuels are mandatory measures. Improved technology and tighter standards for emissions testing and inspections and maintenance programs, along with better cars and fuels, will help. But Figure 4 indicates that nationally, improvements in emissions will be wiped out by increased automobile use.

1. Programs for improved public transit
2. HOV and bus lanes
3. Employer-based transportation management plans, including incentives
4. Trip-reduction ordinances
5. Traffic-flow improvement programs that reduce emissions
6. Parking facilities for multiple-occupancy vehicle programs or transit service
7. Vehicle-use restrictions in downtown or other high-emission areas, especially during peak use periods
8. Programs providing for all forms of high-occupancy and shared-ride services
9. Programs limiting portions of roads or sections of metropolitan areas to nonmotorized vehicular use or pedestrian use (both time and space restrictions)
10. Bicycle use incentives in both public and private areas
11. Idling restrictions
12. Cold-start emission restrictions (in accordance with Title II)
13. Employer-sponsored programs to permit flexible work schedules
14. Programs and restrictions to promote non-single-occupant auto travel as part of the transportation planning and development efforts of a locality (new shopping centers, special events, and other centers of vehicle activity included)
15. Programs for new construction of and major reconstructions of paths, tracks, or areas solely for use by pedestrians or nonmotorized transportation when economically feasible and in the public interest
16. Programs to encourage the voluntary removal from use and the marketplace of pre-1980 light-duty vehicles and light-duty trucks

Figure 4. Transportation Control Measures in Clean Air Act Section 108 (f)

Curbing VMT is thus critical for meeting the federal ozone standard. Clean Air Act Section 108(f) provides a smorgasbord of measures that states can use to reduce VMT (Figure 5).

The 98 nonattainment areas are significantly affected by the CAAA's "conformity provision," which precludes federal funding for a state's transportation plan and projects unless they conform to the state's air-quality plan, (that is, both the regional and state transportation improvement plan or the "TIP" must conform to the state air quality implementation plan or "SIP"). In Chicago, with over half the emissions and all net growth attributable to mobile sources, and with VMT growing by some 3 percent annually, the focus of air-quality policy and action has necessarily shifted from the traditional concern over smokestacks to transportation.

How well does the CAAA do in reversing this trend? The conformity provision is a powerful tool. When used in conjunction with the "citizens suits" enforcement provision in Section 707 of the Act (formerly Section 304) it sets the stage for significant changes. This section was used in a Bay Area suit, in the LMOS settlement, and in a suit by the Conservation Law Foundation and other parties against the state of Massachusetts regarding the effects of the Third Tunnel/Central Artery project in Boston. Also helpful are the CAAA's requirements that all growth in VMT in nonattainment areas be offset by transportation control measures at a rate of 1.3 to 1. But taking action still requires new resources, particularly during a period when state and local governments are increasingly calling for direct funding assistance to accompany federal mandates.

Enter ISTEA (with sweetener, not just lemon)

The Interrnodal Surface Transportation Efficiency Act of 1991, or ISTEA (pronounced "ice tea") provided an opportunity to achieve the goals of the CAAA with a series of carrots and sticks. Specifically, the act:

1. Provides substantial flexibility in how funds within a state may be used. States may choose how to spend $24 billion in a new surface transportation program, at least half of the $21 billion allocated to the new national highway system, and apportionment funds;

2. Establishes a fully flexible $6 billion congestion mitigation and air quality (CMAQ) program, which could be considered a regional block grant program, administered by each region's metropolitan planning organization (MPO);

RESOURCE FLOW	"BIG SYSTEM"	SUPPLY SIDE	DEMAND SIDE	COMMUNITY/ "SMALL PLACES"
ENERGY	Utilities (Electric,Gas)	Power plants Pipelines Fuels	Energy efficiency Load management Renewable resources	Energy centers Retrofit programs Small businesses
SOLID WASTE	Government agencies Garbage agglomerates Waste Management Inc., Browning Ferris Industries	Landfills Incinerators	Material efficiency Recycling Repair, re-use	Buy back centers Curbside pickup Materials brokerage Materials Recovery Facility Biomass Utility
MOBILITY	Transportation agencies	Highways, vehicles, rail, airlines, airports	Place-efficiency Community Transportation Demand Side Management	Reverse commuting Job marketing Van pooling Community contracting Land use planning, zoning
INDUSTRIAL/ HAZARDOUS WASTE	Publically owned treatment works (POTW) or Sanitary water districts Industrial waste companies	Sewage treatment works Hazardous waste incinerators Hazardous waste landfills	Pollution prevention Waste reduction	Retrofit finance Technical assistance & information
WATER	Water utilities POTW/Combined Sewer Systems Flood/drainage Basin management	Water works Sewers & drainage Sewage treatment plants	Water efficiency Surface retention (Wetlands, waterways, landscaping etc) Xeriscaping: low water-use landscaping	Ecological restoration Tree planting, maintenance Landscape maintenance Retrofit programs
AIR	Environmental Protection Agencies Air Quality Management District		Energy efficiency Trip reduction Materials substitutions	See all above

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Figure 5. Big Systems/Small Places: Opportunities as if Place Mattered

3. Provides a substantial increase in funding for metropolitan areas;

4. Strengthens planning requirements, including requiring comprehensive transportation improvement plans at the state level for the first time and doubling funding for metropolitan planning;

5. Levels somewhat the intermodal playing field, providing $31.5 billion for transit funding the same federal match (80-20) for transit as for highway projects, and for local as for interregional projects;

6. Dedicates an additional $3 billion for transportation enhancements that include scenic and historic preservation, bicycle and pedestrian facilities, and landscaping;

7. Gives higher priority to the maintenance of highways and transit systems than to new construction;

8. Specifies that air-quality and environmental concerns be addressed directly along with economic impacts in regular reviews of the regional and state transportation improvement plans and forbids funding for road expansions that enhance capacity for single-occupancy vehicles;

9. Creates for the first time, a Bureau of Transportation Planning statistics to aid both in planning and in public access to information;

10. Requires that long-range plans be fiscally constrained, in terms both of first costs and lifecycle costs ;

11. Requires conformity with Title VI of the Civil Rights Act; and

12. Requires public participation in all of the above.

"ISTEA directed transportation agencies to shift from a focus on construction ("let's build our way out") to a focus on system management and to demonstrate true conformity between state clean air plans and transportation plans and projects," says Hank Dittmar, executive director of the Surface Transportation Policy Project. "ISTEA was a conceptual shift in agency focus as significant as had ever occurred in national transportation policy."

So What Does All This Mean for Planning Professionals and Agencies?

The combination of planning tools in ISTEA and CAAA carries several important implications for both planners, advocates and practitioners of demand-side approaches to resource utilization.

First, new tools are needed to validate the assumptions stated in transportation and air-quality plans. The Bay Area and Lake Michigan lawsuits led directly to millions of dollars to develop the necessary computer tracking and

modeling tools, with capacity far beyond that present in the usual geographic information systems.

For example, Federal agencies and leading planners cooperated with the environmental group, the 1000 Friends of Oregon, to develop LUTRAQ, an integrated and interactive set of land-use, transportation and air quality programs. The Lake Michigan Ozone Study has developed sophisticated "photochemical grid" models to attribute sources, transport, and destination of urban ozone to help ensure that each state and MPO in the region has the best available baseline against which to propose sensible alternatives.

Second, it is possible for the first time to place a value directly on environmental and economic contributions made not only by shifting transportation modes (for example, from cars to mass transit, bicycling or walking) but also by reducing the demand for transportation.

Thus, developed oriented to transit, bicycles, and pedestrians can all be seen to have value in the struggle to verse vehicle trip growth. Planners can now analyze the overall effects of zoning that stresses end uses and amenities, and urban growth boundaries such as those in Oregon and Washington. Equitable access to meaningful jobs through housing and community development strategies has become a critical component of the fight for clean air.

Third, community design and land-use patterning become necessary components of the required vision. Community organizations in Chicago suggested that the shrinkage in ridership on the Lake Street elevated line (renamed the Green Line) could be reversed by doing transit-oriented design around each station. The U.S. Department of Transportation and the CTA found this compelling enough to commit to rebuilding the line with "economic development zones" around each station. CMAQ finds were subsequently committed to community-based planning processes in this corridor. Similar efforts are underway with community organizations and agencies in the Bay Area. While there is considerable, justifiable excitement about such approaches in the planning and architectural communities (under the rubric of "neotraditional design" as applied in suburban and newly developing areas, the examples cited have, for the first time, applied the same basic principles to the revitalization of existing, inner-city communities.

Fourth, additions to mass-transit capacity take on new urgency and value. A partnership between the Regional Transportation Authority and local economic development organizations in Chicago added rail capacity to bring commuters from job-poor to job-rich communities. One recent evaluation of the project showed a fare box recovery ratio of 101 percent. Specialized bus and van services have been operated for more than a decade in cities like Atlanta and Chicago. And the projected $150 billion expenditure in the 30-year Los Angeles area transportation plan has provided a lively debate over the equity effects of spending money on fixed rail versus flexible route buses.

Fifth, the mandated role of citizen advocacy and participation suggest the possibility of new, up-front partnerships to avoid unnecessary conflict. In the Chesapeake Bay region, the Washington Regional Network for Liveable Communities has engaged an impressive array of citizen advocates and transportation agencies working together toward a consensus vision of that region's development future. There are now over forty such coalitions working in all parts of the country, who are beginning to collaborate effectively on strategy and practice.

Sixth, legal and regulatory tools that may not usually be regarded as the "stuff" of transportation or air-quality planning provide value as well. There are incentives in the Community Reinvestment Act for lenders to reinvest responsibly in their primary service territories, as well as civil rights legislation that mandates equitable distribution of housing, job benefits, and public investment. The least-cost and integrated resource planning requirements of dozens of state public utility commissions for energy utilities are now looked to as a possible strategy for coping with non-energy resources, such as water and sewer utilities.

All of these aid in the challenge of developing our regions sensibly. They also suggest that the large and politically sustainable coalition that is needed to achieve the vision outlined in ISTEA may indeed exist.

Lessons for the Energy Efficiency Community

The ISTEA framework has many features which no existing or previous energy policy legislation encompasses. It directly addresses both State-level and metropolitan concerns, necessary in this era of metropolitan growth and fractured governmental authority. It provides direct funding to answer the concerns raised by government regarding unfunded mandates. It provides tools for achieving both regional equity, as well as addressing equity across race and social class lines. And it puts both economic and environmental goals on an apples and apples basis.

What does all this mean for the energy efficiency community?

We have no such framework at the Federal level. Pieces of such a framework exist in various states and localities around the country. Issues of equity have proven

extremely difficult if not impossible to deal with in front of public utility commissions; only in states which have mandated low-income participation has there been consistent attention to targeting demand-side resources to special needs populations. The costs of public participation in front of regulatory bodies is often prohibitive, ironically even more so when attempting to utilize the current generation of cost-effectiveness tests for "external" benefits, such as air quality.

The Energy Policy Act of 1992, as originally proposed, would have included a minimum requirement for each state to meet in establishing procedures for integrated resource planning. That it failed to be included could well be a function of the inability of this Act to capture the public attention.

Why should this be? Carbon-based and BTU taxes, like all taxes, tend to be applied regressively. While special interests were blamed for prevailing in this situation, it is equally true that neither the efficiency community nor the Administration sufficiently heard the concerns expressed by the overwhelming majority of individuals and institutions who are "small users" of energy. Previous Acts, particularly those passed during the Carter administration, did a better job of recycling energy taxes into weatherization assistance, payments assistance, planning, and other activities which directly appealed to those who needed help, whether in paying directly, reducing use, or planning and policy development to lower future use within cities and regions overall.

The coalition which promoted EPACT was apparently insufficiently strong and committed to achieve such commitments.

ISTEA, by contrast, was supported by and passed by a sufficiently broad network, including community development activists, civil rights, professional and environmental organizations who came together with municipalities and other jurisdictions looking for ways to rejuvenate regional planning, return federal dollars to urban areas, attain transportation efficiency, and realize the goals of the Clean Air Act Amendments of 1990.

This experience suggest several options for the efficiency community. (1) We could consider the ISTEA/CAAA framework as a model for energy legislation to be created; (2) we could use the framework as it exists to directly address energy efficiency opportunities at the regional and state levels; (3) we could broaden the current experience in dealing with environmental externalities associated with fuel consumption, both at the state PUC and CAAA Title IV (acid rain prevention) to attempt to capture the benefits of demand-side approaches specifically at the urban regional and community levels; (4) we could ignore the framework, and continue to focus largely on efficiency improvements in buildings, appliances, and automobiles; and (5) we can take stock of the comparisons and limit ourselves to stimulating a whole new class of least-cost models (least-cost transportation planning, integrated water and materials resource planning, etc.), and not take stock of the so-called economic and social externalities.

Some Modest Proposals

The environmental movement has been learning the hard way that it doesn't pay to ignore social equity concerns, and it costs politically to provide insufficient tangible benefits to assure support at the local level.

Figure 5 ("Big Systems, Small Places") suggests that three kinds of shifts are necessary for achieving policy and programmatic outcomes from which such support can result.

First, a shift from supply-side to demand-side resource utilization economics is necessary.

Second, a shift from general market economics to place-oriented economics (or community economics) is required to legitimize the essential urban character of a satisfactory solution.

Third, the connections must be drawn between a sufficiently broad base of constituencies for the necessary support to occur.

In addition to the ISTEA experience, can we identify at least one other sustained effort which over time has addressed these conditions? The experience of the community economic development movement is instructive here.

In the late 1960's and early 1970's, the attention of the civil rights and community organizing movements turned to the practice by lending institutions referred to above, redlining or the systematic denial of credit to older communities.

The creation of a Federal data base of "deposit vs. investment" information, geographically indexed by small areas, made possible the negotiation of a rational basis for community reinvestment. The creation (at this movement's suggestion) of an economic incentive for equity investments in low-income real estate development (through a low-income housing tax credit) made it possible to

organize a network of "intermediary" support organizations, which provide stable, predictable sources of both debt and equity financing and training for capacity building.

In effect, this intermediation has done for low-income housing what the McDonald's Corporation did for hamburger stands: provided a franchising mechanism for their rapid and successful proliferation. From the year that the tax credit passed (1985) to 1992, the census of active community development corporations swelled from 200 to 2000. Consider the achievements of these and related organizations:

(1) Over 2,000 urban community development corporations, have developed 320,000 housing units, 17.4 million square feet of commercial/industrial space; (2) hundreds of lenders have formed partnerships with CDC's, developers and government in response to and/or to take advantage of Community Reinvestment Act requirements; (3) over 40 Community Development Loan Funds and three community development banks are regularly packaging socially responsible investments in housing and community ventures; (4) over 200 community development credit unions act as consumer credit cooperatives, and un unknown but growing number package credit for micro-enterprise development; (5) tens of thousands of community-based social service agencies, ranging from settlement houses to multi-service community centers package financial and informational assistance, ranging from housing and other financial counseling to low-income energy bill payment assistance to many, many others; (6) around 80 specialized industrial retention organizations, usually partnerships of community, labor, business and religious organizations advocate public policy change, package employee ownership business opportunities and conduct necessary training in the name of industrial retention and renewal; (7) thousands of local school reform organizations are beginning to directly address the costs of local education. In Chicago and elsewhere, they are assuming direct responsibility for financial planning to meet operating budgets, as are public housing tenant management organizations and local parks advisory councils. Local government is often the largest consumer of natural gas and electricity, and energy costs can typically account for 15 to 40% of such non-personnel operating expense.

Can we identify a set of actors who are playing similar roles in addressing energy efficiency at the local level? Perhaps not specifically. A close set would include: (1) Some 1,200 Community Action Agencies have weatherized over 3.9 million units of low income housing from 1979 to 1989, currently growing by some 450,000 units per year; (2) Hundreds of municipal governments and counties have set up energy offices, many of which support local community activities. In some thirty North American cities, these offices are jointly developing meaningful local responses to climate change, and the cities of Portland Oregon, San Francisco and San Jose, have collaborated together for five years in a "Sustainable Cities" program, to provide a context for simultaneous economic and environmental improvement; and (3) an uncertain but soon-to-be-determined (through survey work for the President's Council on Sustainable Development) number of coalition-building efforts under the broad rubric of "sustainable communities" organizations.

Building Sustainable Politics for Efficiency

The efficiency community needs to take stock of its values if it expects to succeed. The United States is a nation of many material and financial riches, which the previous analysis shows to be inequitably distributed. Responsible public interest leadership must act in the name of distributive equity if it expects to succeed.

Why is this so? We are increasingly a nation of urban and metropolitan regions which are increasingly left out of state-level regulated and market-oriented strategies for environmentally driven performance. The majority of the population is increasingly poor and unable to cope; continued changes in family, age and racial demographics will likely worsen, not improve the situation.

More importantly, we are a nation where our central cities and their surrounding inner-ring suburbs are becoming one large stranded investment. Unbridled real estate development and tourism create a situation where the bulk of new investment gravitates either to downtown areas or to the edge. Apologists for such strategies speak of "people voting with their feet, " and of the "myth of community development. " These tend to be the same interests who attack all new regulations as unfunded mandates, invoke the takings and commerce clauses of the Constitution to challenge environmental protection, and use risk analysis to attack policy to address global climate change.

Fairness Pays

Over the past four years, the Center for Neighborhood Technology, working in conjunction with a network of community sustainability advocates, has attempted to identify the necessary components of an integrated and politically sustainable vision. More recently, this framework is being used in conjunction with several task forces of the President's Council on Sustainable Development to guide their deliberations as well.

The necessary components, we believe, are as follows. First is a strategic policy statement across several substantive dimensions which is based directly on an integrated set of values. The substantive areas we chose are labeled

Materials Use and Reuse, Sustainable Manufacturing, Transportation and Air Quality, and Community Energy. Figure 6 exhibits value statements concerning Healthy Environment, Empowered Communities, and Productive Work for each area.

Second are a series of objectives and tools for organizing. Based on experience over the past two decades including that of the civil rights, community development, and environmental movements, the tools identified are labeled Information Required for Accountability and Action, Laws and Regulations, and Areas/Points of Intervention. These tools are exhibited as Figure 7.

Third are the means for capturing the economic benefits in communities and regions. These are exhibited in Figure 8 and include Information Required for Economic Opportunity, Economic Incentives and Mechanisms, Financial and Technical Intermediaries, and Local Development Capacity.

This sort of matrix can be difficult to work with, and there are many other ways of assembling the necessary jigsaw puzzle of effective social change.

This type of analysis, nonetheless, is what has preceded the establishment of the effective coalitions mentioned above, and is presented here as a challenge to energy efficiency advocates for consideration.

Place Matters: Moving from Energy Efficiency to Location Efficiency and Social Equity

What can the efficiency movement to lend to the general movement for a sane urban economic development approach?

First, it appears that we have a sustainable movement toward demand-side approaches to resource utilization. The most conservative measure of money spent in the name of the environment, dollars spent for direct compliance with environmental laws, shows and growth from $25 Billion in 1972 to $120 billion in 1992, and a projected growth as a percentage of GNP from 2.1 percent in 1990 to 3.0 in 2000. OECD estimated that in 1991, per capita expenditures on environmental goods and services were $313 in the U. S., $214 in all OECD countries, and only $8 in the rest of the world.

These estimates do not include many other costs and investments, such as those in end-use energy efficiency, industrial and commodity material reuse and recycling, truly demand-side investments in design of products, facilities and communities, nor do they capture the trends driven by "green" marketing of products and services.

	MATERIALS USE AND REUSE	SUSTAINABLE MANUFACTURING	TRANSPORTATION AND AIR QUALITY	COMMUNITY ENERGY
STRATEGIC POLICY OBJECTIVE	To shift from waste generation and disposal to policies and strategies that optimize the conservation and recycling of materials; to promote community economic development; and to improve the quality of the environment.	To promote industrial retention through pollution prevention, energy efficiency and increased productivity; to shift from minimalist "environmental remediation" to comprehensive economic and ecological restoration; and to support local and regional markets, culture and rules which value industry as a full and permanent partner for sustainable communities.	To minimize transportation demand by supporting local and regional self-reliance; to minimize dependence on motorized transportation through increased availability of mass transit, local amenities, community security, and pedestrian and bicycle access, resulting improvements in air quality; and to re-knit the regional fabric by supporting decent surface intercity transport, including higher-speed rail and waterway systems.	To shift energy investments from supporting and increasing supply to decreasing demand by promoting energy efficiency and renewable resources and to target benefits in low-income communities.
VALUES: Healthy Environment	The reuse of scrap materials has the potential to conserve energy, eliminate the need for waste incinerators, save landfill space, decrease the generation of water pollution and reduce virgin resource use.	Toxins should not be released into the environment or workplace. Industry should substitute safer materials and processes; minimize remaining risks; constantly improving. Prior environmental contamination requires comprehensive economic and ecological restoration.	Place matters. Densely populated communities and regions are resource-efficient, if amenities and work are proximate. Sprawl is both damaging and politically, economically and environmentally non-sustainable. Transportation systems have largely developed recently without regard to human and ecological well-being; future development needs to be fully costed.	Communities and facilities should be designed to use energy efficiently; to the extent possible, energy demand should be met by renewable sources. Energy should have minimum pollution and health effects, and should not generate unconvertible, non-reusable wastes.
VALUES: Empowered Communities	Scrap-based industries provide communities with more equitable and diverse economic development opportunities that can be more easily influenced and managed compared to large "end-of-pipe" waste disposal projects.	Communities have a right to know about local and regional flows of materials and energy, including those which threaten human and ecological health. Communities have a right to the authority and resources necessary to minimize and counteract such threats, both by cooperative assistance and by enforcement of law. Industry and public agencies have a right to reasonable opportunity to change behavior and to necessary technical and financial assistance. Communities with persistent health threats have a right to reparations, including economic conversion and compensation.	Communities have a right to basic health, education and security amenities, affordably and equitably distributed with maximum local ownership opportunities. Communities have a right to know about local and regional flows of capital and credit and to redirect capital and credit towards working community economies. The conservation of existing communities should have the first claim on transportation resources.	Resources should be retained locally as much as possible, or else community economies will suffer. In exchange for the monopoly granted utilities, communities have a right to equitable, quality, and affordable services, and to reasonable stewardship of financial and natural resources. Investments in energy efficiency and renewable resources should be made equitably and investments in unnecessary supply or capacity should not be publicly funded.
VALUES: Productive Work	Recycling creates more jobs than conventional waste disposal methods. Reuse and recycling operations are often labor-intensive and can be a source of entry and skilled level positions. Additional jobs can be created locally by attracting industries that will turn recovered materials into finished products.	The retention of good paying urban manufacturing jobs requires ongoing investment in small industrial plants for increased productivity, pollution prevention and energy efficiency; cleanup and restoration of contaminated sites,providing jobs in cleanup and transformation of "brownfield" sites into viable sites for new industries; and that industrial markets take full advantage of environmentally-driven demand.	The work that most needs doing is in the places that most need work. The abandonment of and disinvestment from once-thriving central city and industrial areas both fuels and is fueled by fear of crime, racism, environmental threats and political motivations. Publicly regulated investment should be oriented to and screened for employment and environmental impacts. Land uses and transportation systems should support the right to work. Good paying jobs and amenities should be proximately, universally and competitively accessible by public transport.	Dollars spent on energy and invested in energy efficiency should result in targeted economic benefits for community residents and institutions. The full costs and benefits of current investment patterns should be fully disclosed and energy-related opportunities to retain/create jobs for low-income workers should be directly and fully valued, not treated as "externalities."

Figure 6. Four Strategies for Sustainable Communities: Strategy and Values

	MATERIALS USE AND REUSE	SUSTAINABLE MANUFACTURING	TRANSPORTATION AND AIR QUALITY	COMMUNITY ENERGY
TOOLS FOR ORGANIZING	Objective: To empower citizens to shape materials use and recycling policies as a central component of a jobs and environment strategy.	Objective: To empower citizens to reduce threats to community and worker health from industrial emissions; to retain manufacturing as an essential part of a diverse economy.	Objective: To empower citizens to use existing and emerging institutions to shape land use, transportation, and air quality policies as the core of a sustainable development strategy.	Objective: To empower citizens to minimize energy demand and costs and to capture the benefits of energy reinvestment as an essential part of a community jobs strategy.
Information Required for Accountability and Action	• Regional materials and waste flows and destinations • Government institutions and programs that influence economic development • Potential recycling allies from groups with strong interest in economic development, environmental improvement and industrial retention • Model policies and strategies that promote conservation of materials and recycling	• Analysis of capital investments for conventional treatment and for pollution prevention • Industrial toxic releases and their destinations • Toxic releases from Publicly Owned Treatment Works (POTWs) • Inventory of contaminated sites and ecosystems • Input/output model of local/regional employment and production • Inventory of POTW actions for pollution prevention	• Lending and investment patterns • Governmental expenditures and investment patterns • Geographic information system • Integrated land use/transportation/air quality model • Inventory of comparable situations • Regional air quality studies (e.g. Lake Michigan Ozone Study/North East Ozone Commission)	• Input/output model of local and regional energy capacity, flows and jobs by sector, community, facility, including both supply and demand • Governmental energy use by building and community • Disclosure of utility investment patterns by existing vs. developing areas, including types and beneficiaries of demand management and efficiency investments • Inventory of comparable situations
Laws and Regulations	Existing: • 1872 Mining Act; 1920 Mineral Leasing Act • Lake Michigan Ozone Study • Clean Air Act and RCRA reauthorizations • ISTEA (recycled content, planning and environmental review provisions) • Federal/State market development programs • Basel Convention on Hazardous Waste Transport; GATT • National Defense Stockpile Act; Defense Production Act • National Environmental Policy Act Proposed: • Mandatory content and procurement standards • Bans on toxic and difficult-to-recycle materials • Disposal diversion credits and landfill phaseout • Full cost pricing and materials impact statements • "Green-by-design" requirements • Shift "depletion" to "repletion" allowances • Recycled content provisions for real estate development and building materials	Existing: • Clean Water Act • Clean Air Act • Resource Conservation and Recovery Act • Comprehensive Environmental, Resource, Compensation and Liability Act • Safe Drinking Water Act • Treaties and interstate agreements on Great Lakes water diversion, water quality and air quality Proposed: • North American Free Trade Agreement • Change Clean Water Act to shift funds from sewage treatment pollution prevention • Promote legislation that improve cleanup of contaminated sites in urban areas, including Environmental Receivers and Environmental Enterprise Zones • Locally-controlled economic conversion	Existing: • Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and Clean Air Act Amendments of 1990 • Community Reinvestment Act of 1977 as amended • Staggers Rail Act • Aviation Safety and Capacity Expansion Act • Airport and Airways Development Act • Oil Pollution Act • International Maritime Pollution Agreement • State laws governing mass transit, school financing and other amenities • Civil Rights Act Proposed: • State urban growth boundaries • Transit-oriented development/planning/zoning regulations • Fair share funding for inner city community amenities (schools, security, transit, infrastructure) • Inclusionary zoning • Flexible, intermodal funding for transportation trust funds	Existing: • National Energy Policy Act of 1992 • State and local performance codes • Montreal protocol on CFC Phaseout • UN Framework Convention on Climate Change • State public utility acts • Securities and exchange laws • Municipal and state utility franchises and laws Proposed: • Treaties on acid rain transport • Settlements on ozone transport • Energy and carbon tax incentive/sanction proposals • Requirements of least-cost, integrated resource planning on full cost-benefit basis • Changes in state law governing public utility commissions (PUC) • Changes in PUC regulations • Energy building codes • Energy guidelines for planned developments and zoning
Areas/Points of Intervention	• Federal, state and local legislative bodies • Regulatory systems • Economic development organizations • State market development programs • Siting and permitting authorities • Community planning groups • Electoral politics • State and regional solid waste plans and zoning, especially scrap yards and material recovery facilities Proposed: • President's Materials Policy Commission	• Electoral politics • Judicial and regulatory systems • State, county and local legislatures • Congress, especially local delegations • Local POTW • Designated Remedial Action Plan Districts • Planned manufacturing districts • Revolving loan funds for POTWs through US EPA	• Electoral politics • Judicial and regulatory systems • State, county local legislative bodies and Congress • Lending regulators and secondary loan markets • Metro planning organizations re: air quality conformity and local Transportation Imp. Plans • State DOT's re: mandated Trans. Improvement Plans • State environmental departments re: State Implementation Plans • Mass transit agencies	• Electoral politics • Judicial and regulatory systems • State and local legislative bodies, Congress • Federal Energy Regulatory Commission • Security and Exchange Commission • Public utility commissions • State and local utility franchises • Public utilities governing bodies

Figure 7. Four Strategies for Sustainable Communities: Tools for Organizing

	MATERIALS USE AND REUSE	SUSTAINABLE MANUFACTURING	TRANSPORTATION AND AIR QUALITY	COMMUNITY ENERGY
COMMUNITY ECONOMIC DEVELOPMENT	Objective: To enable job creation as a result of material reuse and recycling, particularly in communities that need work; to integrate materials conservation and reprocessing into all aspects of local and state economic development; to encourage and assist private investment.	Objective: To ensure: access by small manufacturers to state-of-the-art technical and financial resources and markets necessary for plant modernization and retention; local job creation from environmental restoration; and that generally meaningful, good paying work results locally from economic conversion activities.	Objective: To support, promote, and value community investment and development for its transportation and air quality benefits and to redirect infrastructure investment in ways that support accessible work opportunities in existing communities and throughout the metropolitan area.	Objective: To integrate energy efficiency into other community development and job creation strategies for low-income communities and to build local manufacturing and service capacity to serve the markets created by increased energy reinvestment.
Information Required for Economic Opportunity	• Materials flow data from selected industries for new recycling ventures and products • "Missing links" or areas where reprocessing activity can be strengthened or expanded. • Technical and financial assistance models for recycling businesses • Potential new end uses for applications for recyclable materials	• Disclosure of public capital expenditures • CRA disclosure of industrial lending • Inventory of regional technical capacity • Industrial early warning systems	• Public capital budget disclosure • Comprehensive CRA disclosure of lending patterns • Inventory of local development capacity • Neighborhood early warning and intervention systems	• Energy markets analysis • Distribution of cost burden, effects on living standards and cost of business • Rates and regulations
Economic Incentives and Mechanisms	Existing: • Disposal diversion credits • CRA-driven provision of credit Proposed: • Tax credits for equipment purchases • Government educational assistance • Recycling market development zones • Recycled commodities trading • Procurement policies • Financial assistance for cleaning up contaminated property • Materials Investment Tax Credits • "Repletion" allowance (i.e. converse of depletion allowance) for secondary materials	• POTW plant modernization investment as alternative to expanded sewage treatment capacity • Tradable effluent permits • Waste reduction tax credits • Targeted State/EPA revolving loan funds with increased match for prevention • Linked deposit financing (state and local) • CRA-driven industrial credit provision	• ISTEA flexible funding targeted to community security, amenities and transit-oriented development. • Development fees and rebates • Tradable air permits, acid rain allowances, emissions credits • Targeting of infrastructure investments • Transit-efficient mortgages and pedestrian incentives • CRA-driven credit provision • CAAA transportation offsets; trip reduction incentives, and enhanced transit pass support • Americans with Disabilities Act-driven fin. incentives	• Integrated resource planning/full cost planning by PUCs and utilities • CRA-driven neighborhood energy lending • Linked deposit financing (state and local) • Third-party shared savings and performance contracting • Utility funding of local demand-side management • Energy-efficient mortgage lending and related secondary market purchasing • Weatherization assistance programs
Financial and Technical Intermediaries	• Local and state government market development agencies • Recycling partnerships and loan funds • Operating foundations and investment banks • Franchises of small-scale recycling ventures • Environmental board of trade • Equity syndications of material tax credits • Accelerated scrappage programs for motor vehicles, appliances and equipment	• One-stop "HMO" for small industrial sectors (packages and brokers dollars, technical assistance, R&D, training and market development assistance) • Environmental Receivers • Industrial materials exchanges • Technology innovation and commercialization centers • Prevention partnerships/investment and loan funds	• Community environmental board of trade • Regional, city-wide design and planning centers • Public interest law centers • Job linkage/reverse commute programs • Fair housing networks • Community development banks, loan funds, investment partnerships, equity funds • Coop housing and ownership transfer centers • Local job development agencies	• Regional/city-wide support for community energy centers • Franchising intermediary for energy conservation ventures • Energy banks, credit unions • Regional bulk purchasing cooperatives for materials, appliances, services
Local Development Capacity	• Community development corporations • Economic development organizations • Specialized non-profit recycling ventures • Business associations • Specialized non-profit environmental ventures • Neighborhood environmental investment centers and local banks • Local recycling franchises and independent business initiatives	• One-stop financial/technical environmental assistance centers • Industrial development organizations • Flexible manufacturing networks • Community banks • Ownership succession projects • Industrial job training programs	• Community organizations and neighborhood planning groups • Community development corporations and job development agencies • Control and service initiatives (school reform, community policing, local maintenance contracting) • Community paratransit	• One-stop community energy centers • Community development corporations • "Energy islands" (neighborhood energy planning and locally-scaled utilities) • Light manufacturing of conservation materials and devices • Local materials and service cooperatives

Figure 8. Four Strategies for Sustainable Communities: Community Economic Development

Second, it appears that these investments support work at a "good enough jobs" level. Studies for the Pacific Northwest region, and for the ACEEE, which indicate typical average wages of around $15 per hour, are supported by related data sets from the Bureau of Labor Statistics. Currently, both the U.S. Senate and House of Representatives have passed versions of an environmental technologies act to boost the current support for various kinds of technology development centers, and which also provide support for "community-based partnerships and alliances for environmental technology."

This paper's discussion suggests that the efficiency movement needs to apply the enthusiasm exhibited for catalytic change in national and international markets to places and regions. This implies the necessity of a shift toward both location efficiency and toward social equity, respectively.

Twenty years ago, studies on the costs of sprawl conducted for the Council on Environmental Quality and the Department of Housing and Urban Development, indicated that savings of 47% in capital costs, 43 percent in land costs, 11 percent in governmental operating and maintenance costs, and 44 and 33 percent in energy and water costs, respectively, could be achieved in urban economic development. How? By applying planning and incentives for densely populated, amenity-served communities, rather than allowing (and subsidizing) suburban sprawl patterns.

More recent studies by the Urban Land Institute and the American Farmland Trust, and this year by Apogee Research for the Conservation Law Foundation, tend to validate these types of findings.

These savings are based on "direct" costs only, and do not include the social costs of low density, sprawl development including physical separation of social classes and races, the isolation of the young, old and poor who cannot either afford or operate a car, and the opportunity costs to regions and the nation as a whole associated with tying up much of the national wealth permanently in stranding our central cities where most of our pre-existing investments and people reside.

Concerns about returning to a location centered model of action are as follows:

1. *If central locations much more efficient, why would the current trend still be toward firm relocation to suburban and exurban areas?* Schlar and Hook at Columbia University observe that a principal reason is that the increases costs resulting from firm and individual location are not borne directly but rather by public taxpayers and employees. As a result, important efficiency gains from central locations are lost. Some early evidence now exists to show that every time a firm relocates from a central city to a suburban location the number of automobile trips made by the firm's employees increases up to 12 times.

2. Why, *if the free market is so efficient, as it affects the environment, is the overall economy so inefficient?* Observers from economist Nicholas Pigou in the 1920's to Paul Hawken today note that markets can be superb at setting prices but incapable of recognizing full costs. And what may look efficiency within a narrowly construed set of parameters may be totally insensitive to long-term, lifecycle considerations, and inequitable in its application. Additionally, markets may often be defined by parties for whom place does not matter, including corporations and even public interest advocates, and, as we have seen, public policy may support subsidization of the abandonment of once-thriving areas in favor of newly developing ones.

3. *Can we cite any recent experience which substantiates and demonstrates location efficiency and fairness together?* Perhaps not totally yet. ISTEA is still a new framework, and it is far too early to claim victory on all fronts which it has opened. However, we should note some intriguing work in progress which may help us all "crack the code" . . .

It has been hypothesized in the San Francisco Bay Area by the Natural Resources Defense Council, in the Washington D.C. area by planner Patrick Hare, and in Chicago by the Center for Neighborhood Technology, that persons residing in densely populated, transit-rich communities will tend to use their amenities and the transportation alternatives, and that the associated reduction in automobile use will be considerable.

Recently research for NRDC appears to confirm this. A detailed analysis of communities in the Bay Area indicates that such households may typically expect to experience an average of $390 per household per month, regardless of average community income. In recent months, a working group of public interest organizations and lenders has been working to validate these findings, and to create a market for "location-efficient mortgages," which could go far in reducing the gap in affordable housing, and the cash stream from which could, it has been proposed, be used to underwrite pre-paid, universal access to mass transit as well as aiding local government in meeting the locational requirements of the Civil Rights Act.

The Administration has made full enforcement of the Community Reinvestment Act a priority. The Federal National Mortgage Association recently committed to increasing its authority by $1 trillion; it should be noted that this is an entity which is already familiar with and utilizes a similar principle to location efficiency in the form of the "energy efficient mortgage" instrument.

This is but one example of the potential potency of utilizing the learning and experience of the efficiency movement in conjunction with place-oriented constituencies.

Recommendations for the Energy Efficiency Community

(1) We must become players in regional planning and development overall, not just set standards and demonstrations in response to real estate development in general; (2) We must bring public energy utilities into the discussion, under the accountability umbrella of regional growth management and social equity; (3) We must become increasingly be involved in synergy-based opportunity areas, such as the environmental technology arena and ISTEA, and in efforts to place location and resource efficiency squarely in the toolkit for economic development; (4) We must take the time necessary to identify key alliances, sufficient for a sustained effort at shifting public policy and private resource investment; (5) We must clarify our relationships with the utility industry and its regulators. Controlling regional growth seems not to be dealt with on the utility service territory or the State PUC levels, even though growth management laws are often passed by state legislatures. The energy efficiency community has much to offer to bring these fractured authorities into conformity with each other; (6) Address environmental and economic equity issues head on. We need to better screen our proposals for their distributive effects, and we need to work hard to not end up as one more elite group of experts who are not representative of the population at large and unable to see the larger benefits of supporting energy efficiency as part of an urban economic development toolkit.

We must also start asking where the economic capacity to achieve efficiency needs to be located. The American public, by and large, is justifiably suspicious of free trade agreements and deliberate globalization in general. That in 1994, only two factories domestically manufacture compact fluorescent lamps, two companies assemble buses, and only one manufacture passenger rail cars, makes it difficult to see the benefits of efficiency as tangible. It has been suggested that the advent of flexible manufacturing may enable the rapid proliferation of manufacturing opportunity, perhaps even the franchising of such opportunity as was discussed for the community development movement. If the cause of low international "competitiveness" is low productivity returns on investments of both public and private capital, then certainly it is both the case that demand-side resources (products and services) are not exempt from such locational questioning, and in fact are worth even more as a part of the solution when so addressed.

These critiques and concerns are not just the responsibility of the energy efficiency movement. These are rather fundamental concerns being dealt with seriously everywhere. In this regard, I am reminded (as in many other venues, of the response of Wes Birdsall to the national reporter who wanted to know the history of his "project" to make Osage Iowa energy efficient, to which he responded, "this wasn't a project, my friend, we've made energy efficiency a way of life here."

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