

Industrial Voluntary Agreements in Context

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SUMMARY

The term “voluntary agreements” is defined by the International Energy Agency as “essentially a contract between the government and industry, or negotiated targets with commitments and time schedules on the part of all participating parties.” The targets are often set through negotiation, and industry often meets the targets with the help of supporting policies and programs from the government. This concept is an alternative to the command and control regulation that has characterized most environmental policies up until now. By offering flexibility, voluntary programs hope to inspire innovation that will maximize the impact of the program while minimizing the cost of achieving the target.

The voluntary agreement is typically made up of the following elements:

- The setting of a target, usually by negotiation between government and industry, though it can also be proposed and/or set by industry or government. This target should be based upon an assessment of the energy efficiency or greenhouse gas (GHG) emission reduction potential of the plant/company/industry.
- The offer of considerations by government to industry for meeting the targets, often taking the form of monetary incentives or regulatory relief and typically called supporting policies or programs. It is essential that industry know what the government is willing to provide in terms of support prior to making a commitment to a certain target.
- Acceptance of the target and a commitment to meeting it by industry.
- Finally, monitoring and evaluation to assess the continuing progress toward meeting the target.

The details of each element can vary significantly, with each approach offering benefits and limitations. One of the most important issues is the meaningfulness of the targets. Carbon and energy intensity of industry in the United States continues to improve, as it has for the past century, so targets must represent a commitment that exceeds business as usual. Examples of initiatives exist (both domestically and internationally) that have successfully balanced the benefits and limitations of each element.

In spite of a lack of leadership by the federal government, some industries and industry groups have begun to propose their own initiatives. The most prominent initiatives offer at least a framework for building meaningful progress, though the targets offered are often less challenging than can be achieved with a strong effort. What is clear is the continued lack of effort on the part of the federal government toward offering meaningful support for industry voluntary commitments. This effort is necessary in order to realize more significant progress on energy efficiency and greenhouse gas reductions.

INTRODUCTION

The term “voluntary agreements” is defined by the International Energy Agency as “essentially a contract between the government and industry, or negotiated targets with commitments and time schedules on the part of all participating parties” (IEA 1997a). The targets are often set through negotiation, and industry often meets the targets with the help of supporting policies and programs from the government. This concept is an alternative to the command and control regulation that has characterized most environmental policies up until now. By offering flexibility, voluntary programs hope to inspire innovation that will maximize the impact of the program while minimizing the cost of achieving the target.

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In recent years, the term “voluntary agreements” has been bandied about in the United States as the solution to many social ills while very limited effort has been made to learn from the experiences of the over-300 voluntary agreements in Europe (IEA 1997a, 1997b; Paton 2002), to understand the details of agreements, or to establish what is actually expected of the partners. Voluntary agreements are frequently offered as an alternative to regulation and have of late been discussed and implemented in the context of global climate change. However, these agreements also offer promise as a public policy strategy in the United States for dealing with all manner of public concerns, such as emissions of criteria pollutants and consumption of energy or a specific fuel (e.g., natural gas).

Voluntary agreements gained prominence following the United Nations Conference on Environment and Development (UNCED) of 1992 that set the international mechanisms in motion that led to the drafting of the Kyoto Protocol in 1997. Since the establishment of the United Nations Framework Convention on Climate Change (UNFCCC), many countries began to take concrete actions under this agreement to address climate change by setting goals to limit the emissions of GHGs. Among the strategies used for the industrial sector are voluntary agreements. Notable in its absence has been the United States.

Under the Clinton Administration, modest action was taken in the United States because of Congressional opposition motivated in part by potentially affected industries such as coal, oil, and electric utilities. With the arrival of the Bush Administration in 2001, the Executive

Branch repudiated the Kyoto Protocol, and questioned the science supporting it. Since that time the rest of the world has continued to move forward, and even the Bush administration and many of its supporters from industry have begun to acknowledge the global climate problem (Ball and Fialka 2002; White House 2002). The Administration has offered voluntary programs as the strategy of choice for the industrial sector, but so far has pursued only modest efforts.

If voluntary agreements are to be effective, it is important to understand what they are, as well as what they are not. This report will define industrial voluntary agreements in an energy and environmental context, characterize their primary elements, identify successful examples, and propose the next steps for moving toward a national dialog.

PURPOSE OF VOLUNTARY AGREEMENTS

The concept of voluntary agreements was introduced to the United States in the 1980s as an alternative to the command and control regulation that had characterized environmental policies in the United States up until that point. While prescriptive, command and control strategies such as emissions or energy efficiency standards work for mass-market items such as cars and consumer appliances, critics argued that the approach has had unintended negative consequences for complex economic sectors (such as industry) where each plant is unique. To mandate a specific technology or approach can result in unproductive capital investments while discouraging investments that may achieve the desired result while producing significant productivity benefits.

The fundamental concept of a voluntary commitment is that rather than specifying specific behavior, government and industry negotiate a goal (occasionally either party proposes and/or sets the goal), and the regulated party is allowed to meet the target by whatever means it finds most effective. In general, voluntary agreements are long term—usually 5 to 10 years, allowing for decisions and investments to be made more strategically as equipment is turned over. Thus flexibility in the solution path represents the major element of voluntary agreements. Allowing different segments in the economy to commit to targets appropriate to their unique situations has been shown to encourage innovation and produce the desired result at a lower cost to the firms, while maximizing overall benefits for society (Delmas and Terlaak 2000; Dowd, Friedman, and Boyd 2001; IEA 1997a; 1997b).

ELEMENTS OF VOLUNTARY AGREEMENTS

A voluntary agreement is an actual or implied contract between two parties, and consists of the normal elements of a contract: offer, consideration, acceptance, and verification. Usually the first party (the one making the offer) is a government entity, with the second party being the entity that undertakes an action in response to the offering—in the case of industry, an individual company or facility, or a trade association.

Many people in the public policy community have focused on the commitment by industry, without acknowledging the need for significant consideration from government. These people's somewhat naive hope appears to be that industry will view "doing the right thing"

as sufficient reward to motivate investments. However, experience shows that voluntary agreements that include significant government support have been the most successful (Delmas and Terlaak 2000; Dowd et al. 2001; IEA, 1997a, 1997b). This disconnect between hopes and reality particularly applies to energy-intensive industries that account for most of the energy consumption and emissions of GHGs, as well as other pollutants. These industrial companies would experience the greatest cost impacts, while operating on much lower profit margins than do most higher-value industries. These energy-intensive companies' products tend to be commodities and thus are less likely to benefit from positive publicity. In the current global economy, there is some motivation to move the high-emitting, low-margin industries overseas due not only to regulatory considerations, but also to purely economic considerations such as lower labor cost and closer proximity to raw materials and emerging markets. Therefore, many of these companies may need more substantial considerations to motivate changes to their domestic operations.

Thus the crafting of voluntary agreements must be undertaken with caution, and in consultation with the affected companies so that the desired outcomes are achieved and undesirable impacts are minimized. As one chemical industry spokesperson once said, "We want to do the right thing. We have children and grandchildren too. Just don't make it hard for us." (Cicio 1996).

Voluntary programs are designed to send a signal to the private sector on issues of importance to the public, such as national security and environmental protection. The goal of voluntary programs is to encourage all or a portion of the private sector to reduce energy consumption or emissions of some pollutant (e.g., carbon dioxide) from base levels that would occur under a business-as-usual scenario. While the focus of late for most public discussions has been on GHG emissions reductions, as will be discussed in the following program examples, some of the most successful initiatives have addressed other pollutants or energy use. For the purposes of the remaining discussion, we will focus on GHG emissions, though the approach could be applied to other pollutants or energy use as well. We will next explore the implications of the elements of these agreements.

Offer

The commitment that is asked for from industry needs to balance the specific goals of emissions reductions with other societal goals, such as economic growth and employment, as well as the limits of technology. While a purpose of setting the goal is to encourage innovation, the limits of technology and physics also mean that the goal needs to be reasonably achievable. The commitment should be based on a mutually agreed-upon assessment of the actual potential for GHG emissions reductions within the industry or the company. Such assessments provide both industry and government with complete knowledge of what can be accomplished at what cost and establish the basis for negotiation and target-setting. Once the assessment has been completed, government and industry can work together to determine a reasonable target based on the potential, as well as the supporting policies and programs that the government can offer to assist industry in achieving the desired goals.

Consideration

The “consideration” portion of the agreement is frequently overlooked in the United States. Some domestic environmental groups operate as if industry should undertake these agreements out of the goodness of its heart. While many industrial companies are well intentioned, in a profit-making context it is difficult for a company to enter into an agreement unless there is some return on the investment to the company.

The consideration component can take a number of different forms, as we will see from the next few examples. Among the most common are incentives such as public recognition, monetary incentives, and in-kind services. In addition, avoidance of new regulations can also prove a valuable consideration to industry. Each method is intended to offer tangible value to the industry or firm.

Public Recognition

Public recognition for commitment has been among the most popular consideration domestically because its cost is modest, but unfortunately the benefits to a company can also be modest as well. For some high-profile companies dependent upon consumer decisions, public recognition can be of value. However, most energy-intensive companies are involved in commodity markets where public differentiation is difficult. Past programs, such as the U.S. Environmental Protection Agency’s (EPA) *Climate Wise* have discovered that their recognition is of greater value within the company than to the public at large (Elliott and Pye 1999).

Direct Monetary Incentives

Monetary incentives are perhaps the most direct compensation that industry can be afforded in response to voluntary commitments. This approach has been the preferred approach in Europe, with a combination of avoiding certain taxes (e.g., energy or carbon taxes) combined with grants. Tax-only incentives are in general more complex. Monetary incentives can take several forms.

- **Tax credits.** This has been one of the preferred methods in the United States for the past twenty years. Two approaches have predominated: investment credits where a portion of the investment cost is deductible from income tax owed; and unit credits that are granted for each unit of production or emissions reduction. The latter has been applied to renewable energy in the form of electric production credits.

Unfortunately, as business tax rates have fallen and tax credits have proliferated, the effectiveness of tax credits has diminished. The alternative minimum tax (AMT) and maximum business credit limit both can constrain some companies’ ability to use the credits. With less tax being paid and more credits available, many companies are unable to use all the credits currently available to them, so the addition of new credits may offer only marginal benefit (Elliott 2001). An alternative may be to make the credit apply toward payroll taxes instead of income taxes. The former are paid based on employee

salaries (Hoerner 1997). However, such a step would either reduce funds available for Social Security or require the Treasury to reimburse the Social Security trust fund. Both of these options would face political challenges in the current tight fiscal environment.

Also, the tax credit approach for energy efficiency investments can be difficult to implement for the industrial sector since most investments are not purely energy saving or emissions reducing, but also confer other significant benefits, many of which are greater than any energy cost savings (Elliott, Laitner, and Pye 1998).

- ***Accelerated depreciation.*** The rate at which an investment can be depreciated can have significant tax benefits for a company. The depreciation can be applied to early retirement of existing equipment that has not yet been fully depreciated, or to new equipment installed. Acceleration of depreciation has the effect of reducing taxable income, and thus reducing taxes paid. However, in a similar manner to the tax credits, the ability of companies to use these credits may be limited under the AMT (Elliott 2001).
- ***Grants.*** Payments can be made to industry either to co-fund investments in new equipment or based on performance, such as emissions reductions. Direct payments address some of the problems currently faced by tax strategies. Unfortunately, grants are among the most expensive options for the Treasury because the payment must be made directly from the Treasury in the year the grants are incurred.
- ***Low-interest financing.*** The offer of financing for investments at a rate below market can effectively reduce the cost to companies of making investments. Financing can either be offered directly, or as loan guarantees and interest rate subsidies offered through commercial lenders. The latter approach has seen some success because the loans are offered through financial institutions that have existing relationships with the recipient, and these programs can be less costly to administer because the financial institution has the infrastructure already in place (Shipley, Elliott, and Hinge 2002). Loans, however, entail some of the same problems involved with investment tax credits in that most industrial investments are not purely energy or emissions reducing. Also, most businesses prefer grants equal to the interest subsidy (Nadel 1990).

In-Kind Services

An alternative to direct financial incentives is to provide in-kind services to those industries that commit to the program target. In effect these are financial incentives because the industry receives valuable services without having to pay for them. This method can reduce the cost of compliance, or in some cases can provide additional benefits that normally result from investments in new technology (Elliott, Laitner and Pye 1997). In addition, some of the services that can be offered by government may not be readily available in the private marketplace, such as access to expertise at national laboratories. However, it is important these services be structured to actually meet the needs of industry.

Regulatory Avoidance

As will be seen from the examples in the next paragraph, avoiding new regulations can prove a potent incentive to industry. From industry's perspective, new regulations result in added cost related to demonstrating compliance along with a decrease in operating flexibility. This incentive approach, however, carries a public policy risk if industry does not follow through with the commitment. This risk can be mitigated by making continued avoidance contingent upon actually achieving the targets.

Among the regulations most commonly mentioned for avoidance are emissions regulations. However, other regulations such as tax and anti-trust can also be important. As mentioned earlier, avoiding a tax has been effective in Europe where energy and/or carbon taxes are larger; some other energy-related taxes may also be possible targets in the United States. Federal antitrust regulations can limit the sharing of information among competitors and the undertaking of cooperative research that can cost-effectively help companies meet their targets. Providing implicit or explicit wavers from antitrust action, as has been done under the U.S. Department of Energy's (DOE) Industries of the Future program, can facilitate the development of these projects.

Commitment

In response to the offer, industry commits to achieve some target over a specified period of time, typically 5 to 10 years. The commitment can be made on an individual facility, a company-wide, or industry-wide basis. Each approach has its benefits and its limitations.

- ***Facility.*** A commitment at the facility level is in some ways the easiest but most limiting option. Since information at the facility level is readily accessible, it is easy to assess the current GHG emissions, and the commitment can easily transfer with ownership. In addition, staff at the facility has a clear target at which to shoot. However, by tying the commitment to a given facility, opportunities for looking for the lowest cost reductions across a number of facilities are lost. This may result in a less aggressive overall reduction commitment than could be sustained on a broader basis. In addition, many individual plants do not have sufficient available resources to undertake the assessment and tracking required—this has been a problem encountered with many industrial, energy efficiency programs (Shiple, Elliott, and Hinge 2002). Because each plant is unique, an individual target will likely be required for each facility. Some facilities will already be efficient and have limited opportunities to further reduce emissions, while others will have abundant opportunities. The need for plant-level agreements increases the complexity for both the industry and the program administrators. Reporting at the plant is required for a sample of the plants by the U.S. Census. These data are not publicly available due to confidentiality, so may be of limited value to such a program.
- ***Company-wide.*** This type of agreement has many practical attractions. The company represents the standard element of private sector governance in the United States. While it would seem that this type should be simple to implement, for some large companies the detailed information necessary to evaluate target levels and assess compliance can be a

problem. Information is not collected in a uniform manner, and with frequent changes in individual plant ownership can make establishing a corporate base line a moving target. For example, it took over 18 months for BP to integrate Amoco facilities into its internal tracking after the merger of the two companies (Blower 1999). However, because a limited number of companies account for most of the emissions, this approach offers some administrative simplification relative to the plant-level approach. Similar to the facility level, a different target will need to be set for each company since some have historically been more proactive in this area than have others, so have less cost-effective reduction potential.

The issue of “credit for early action” is critical to acceptance of this approach by industry leaders (Jacobson 1999). This “credit” recognizes the energy and emissions reductions from past actions of a company. If future regulations are put in place mandating reductions, companies that have assumed a leadership role do not wish to be placed at a disadvantage by their competitors who have not yet implemented similar programs, so still have low-cost reduction opportunities available to them. This issue exists because some companies anticipate that there will be future targets or caps. They anticipate this because the rest of the Annex I countries are moving ahead in reducing GHG emissions. Many of companies are international and are thus dealing with emissions reduction schemes in other contexts and countries. Many U.S. companies also have concerns about confidentiality of the reporting since facility-specific data can be of competitive value to competitors.

- ***Industry-wide.*** Establishing a commitment for a given industry offers perhaps the greatest flexibility in that a single target can be set for the industry, and individual companies can contribute different reductions toward that target based upon the costs of the available reduction opportunities. This approach, however, does require that the association take part in negotiating individual targets with its member companies. Also, it is important that there exists an association that represents a majority of the GHG-emitting companies of that industry. This approach also can help address confidentiality concerns in that reporting is done to a third party, the association. This method does have some hurdles in this country, in part as a result of anti-trust laws. The U.S. Department of Justice has not looked favorably upon competitors sharing information and engaging in joint planning activities (Kluthe 1998). Also, getting competitors to agree to the allocation of reductions across companies may be difficult in many industries.

The reductions in the commitment can be absolute or relative. Absolute commitments involve reducing the total from some base level of use or emission, while the relative commitments are usually presented as an intensity, such as emissions or energy per ton of product, or pounds of emissions per dollar of value of shipment. Each approach has its unique appeal, but also poses implementation challenges.

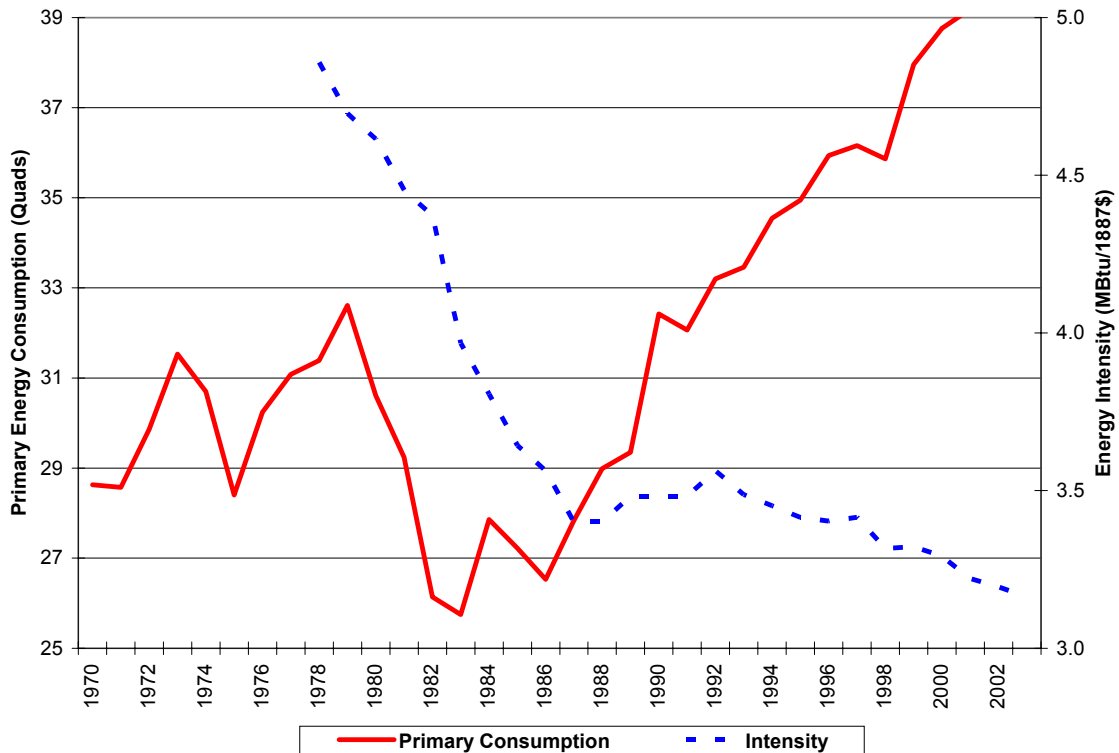
- ***Absolute commitments.*** Having an absolute target is very appealing from a public policy perspective. You know in advance what level of savings you can expect from each agreement. However, the commitment can also be met by out-sourcing energy-intensive sub-processes, or by reducing production at domestic facilities while increasing it

overseas, thus making the commitment in large part meaningless from a global perspective. This situation is exactly why a good monitoring system is essential, as has been recognized in some other countries.

From the industrial perspective, absolute commitments can prove problematic because of the dynamic nature of industry. The output of each facility will vary due to market changes and mix of products, and in some cases the actual products produced at a given facility may change over time. In addition, it is common for individual facilities to change ownership on a regular basis, so the number and mix of facilities owned by a company may change over time. These changes make it difficult for a company to easily commit to an absolute target.

- **Relative commitments.** Commitments based on reduction in intensity address some of these concerns. As output fluctuates, either due to market forces or corporate changes, the committed level of savings remains the same. This approach fits well within existing industry practice, where measures such as cost and energy are tracked on a per unit basis. The intensity targets can be factored into the corporate planning process. In contrast to other sectors of the economy, where intensities are often increasing, the U.S. industrial sector has experienced a historical decline in energy intensity (see Figure 1). The overall rate of decline in economic energy intensity (energy use per \$ GDP) has recently averaged slightly above 1 percent. The decline in the GHG intensity rate (GHG emissions per \$ GDP) has been greater due to an industry shift towards natural gas with its lower carbon emissions levels (Alliance et al. 1997). During the late 1970s and early 1980s, the rate of economic energy intensity decline in the United States exceeded 2 percent, due to motivation from the energy shocks of the 1970s (Alliance et al. 1997). Legislation pending before Congress has proposed a level of 2.5 percent per year (Congress 2003) for industries to enter into voluntary agreements. While this level should be readily achievable for many non-energy intensive industries, we feel that for the energy-intensive industries, an overall target rate approaching 2 percent may be more realistic. The actual level would depend upon the specific industry and various external market factors, such as rate of capacity utilization.

However, the relative commitment approach poses a challenge from the public policy perspective in that, with continued economic growth, absolute emissions can increase even with aggressive intensity targets. An easy solution to this problem may not exist if the competing goal of continued economic growth in the industrial sector is also to be accomplished. It should be pointed out that the industrial sector's share of both energy use and emissions has been declining for the past quarter century (see Figures 2 and 3).

Figure 1. Industrial Energy Consumption and Intensity (ACEEE from EIA data)

Verification

Verification is the critical final component. As noted above, it is important that the saving commitments are realized. If the targets are not achieved, the agreement is violated, much as a contract is broken, and mechanisms should be in the agreement clearly spelling out the result of such a breach.

EXAMPLES OF SUCCESSFUL PROGRAMS

Following are three programs that reflect different approaches to the structuring of voluntary agreements. The first reflects an agreement to reduce a family of ozone-depleting gases, perfluorocarbons, which also happen to be significant GHGs. This program makes use of regulatory avoidance and in-kind assistance. The two European programs are both targeted at GHG emissions reductions. These programs make use of regulatory avoidance and direct incentives.

Figure 2. Share of Total National Primary Energy Use (Source: EIA 2003)

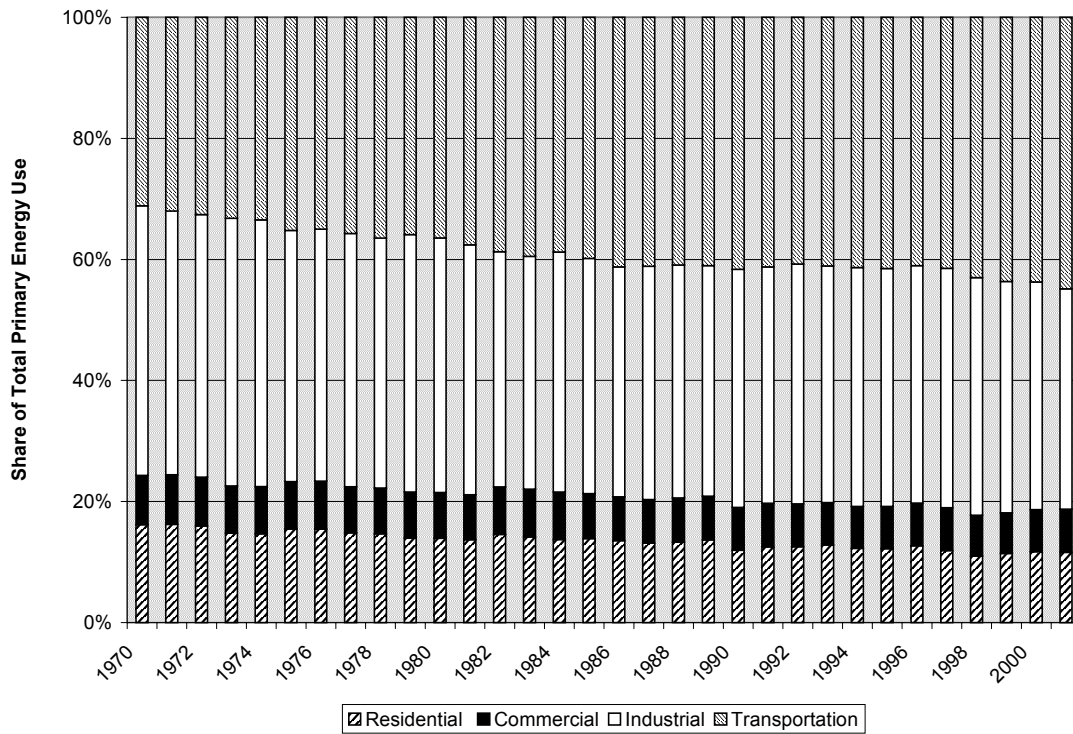
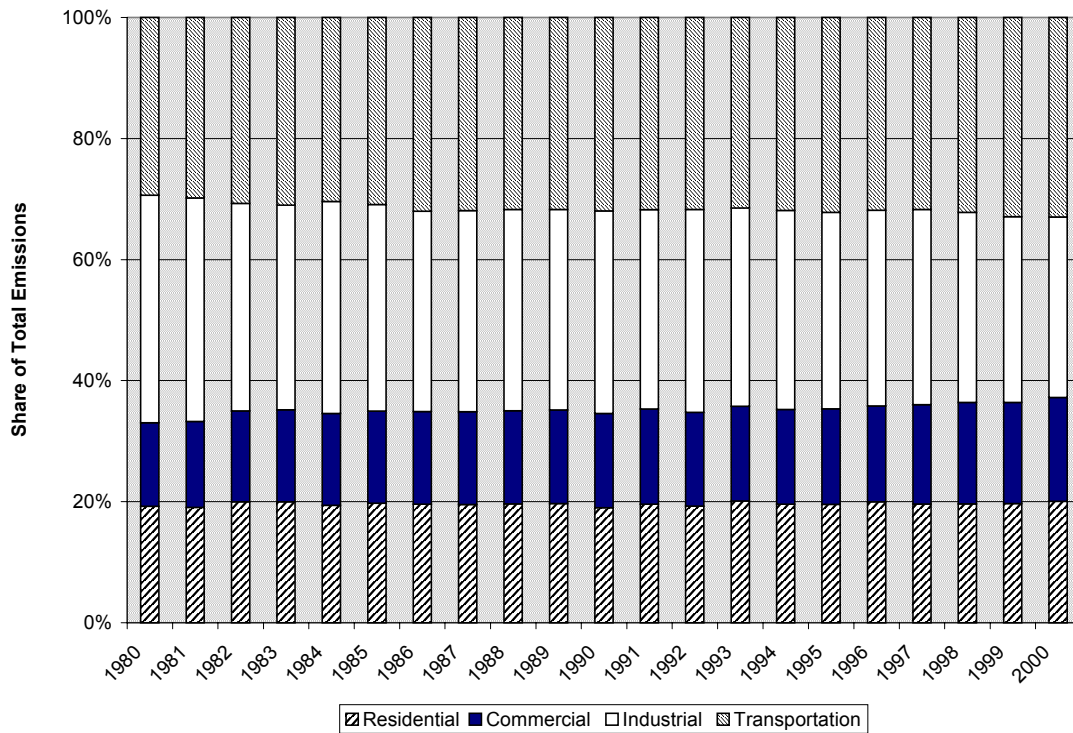


Figure 3. Share of Total Carbon Emissions by Sector (Source: EIA 2003)



U.S. EPA Voluntary Aluminum Industrial Program

The Voluntary Aluminum Industrial Program (VAIP) is considered to be among the more successful American voluntary programs. This program is administered by EPA in an effort to reduce the significant perfluorocarbon (PFC) emissions from the aluminum industry. The focus of the program is to increase the production efficiency of aluminum while reducing emissions of PFCs. The industry reports monthly tracking data to EPA, including the frequency and duration of high PFC-emitting anode effects, as well as production data. In exchange, EPA provides technical assistance and financial support regarding industry efficiencies and productivity. The goal of the VAIP is to decrease the overall PFC emissions from the aluminum industry by 45 percent from 1990 by the year 2000. In 1998, the last date of evaluation, the program was 98 percent of the way toward its goal (EPA 2003a). Implicit in this agreement was an understanding that if the industry met its voluntary commitment, EPA would not issue prescriptive regulations of PFCs.

Netherlands

In 1990, the government of the Netherlands developed the Second National Environmental Policy Plan for the reduction of GHGs; one portion is the participation of industry through the Environmental Protection Act. The Netherlands had a national goal of reducing CO₂ emissions by 3 to 5 percent below 1989 levels by 2000—in the case of industry, primarily using Long Term Agreements on Energy Efficiency (LTAs). To facilitate these agreements, the Dutch government approached each major industry to conduct a joint study of energy efficiency potential, and the industry responded with a Letter of Intent to conserve energy. Using the energy conservation potential value provided by the industry, the government developed the target for efficiency improvements in the industry. Once these terms were agreed upon, the declaration was signed. These agreements, which covered about 90 percent of total industrial energy use and 1,250 companies, generally included a target level of a 20 percent increase in energy efficiency from 1989 levels by 2000 (Kerssemeeckers 2002; Nuijen 1998). In exchange for industry completing these LTAs with the government, the government agreed to not set any other energy efficiency regulations for industry for the duration of the contract. Furthermore, the government agreed to support the program through financial incentives, detailed audits of energy use, and co-ordination of energy efficiency measures aimed at improving efficiency within that industry. The government and the companies reserved the right to alter the agreement in the event of major policy changes. The LTAs were designed to be flexible for both government and industry.

Evaluating these programs is complex given the flexibility and variation among the agreements. Both government and industry estimate that half of the accomplished energy efficiency would have occurred under a business-as-usual scenario, but also agree that the other half of the savings makes the LTA program successful (Story 1996). Evaluations of the LTAs have found that the agreements helped industries to focus attention on energy efficiency and find low-cost options within commonly used investment criteria (Korevaar et al. 1997; Rietbergen, Farla, and Blok 1998). Although the agreements themselves proved to be successful and cost-effective (Rietbergen et al. 1998), various support measures were implemented within the system of voluntary agreements. Thus while the effort was successful, it is difficult to attribute the energy savings to a specific policy instrument; rather,

the savings was the result of a comprehensive effort to increase implementation and development of energy-efficient practices and technologies in industry by removing or reducing barriers. This emphasizes the importance of offering a package instead of a set of individual measures, which may give the idea of competing measures or instruments rather than a concerted action. Evaluations also found that the costs of voluntary agreements, from the perspective of the government, were about \$50/tonne of carbon reduced compared with the costs of about \$140/tonne of carbon reduced through subsidy schemes (Blok 2002). At the end of the LTA period in 2000, industry had achieved an overall reduction of 22.3 percent, surpassing the 20 percent target (Kerssemeeckers 2002).

Germany

The Declaration of German Industry on Global Warming Prevention represents the voluntary agreements between energy-intensive industries and the German government (Ramesohl and Kristof 1999). The German Federal Association of Industries and five other industrial associations published a declaration on climate change and industry in 1995. The final version of the declaration was published in 1996, stating: “Industry and Trade¹ are to reduce their specific CO₂ emissions or specified energy consumption by 20 percent by 2005, using a base year of 1990.” (Storey 1996) The declaration also included a monitoring process that could be used to evaluate the success of the program. According to estimates, 70 percent of total industrial energy producers have signed the voluntary agreement (Ramesohl and Kristoff 1999). Industry expected in return for these efforts that the government of Germany would allow private industry to be responsible for the CO₂ reductions and the government would not take any further regulatory or energy tax actions.

In evaluating this program, the monitoring system had to identify and separate “status quo” behavior and extraordinary efforts to increase energy efficiency and decrease emissions trends by industry. Evaluations of the German Declaration program found a lack of extraordinary efforts by industry, as the targets set were low and could be mostly achieved by the natural trend towards higher efficiency in industry (Ramesohl and Kristoff 1999; Storey 1996). In response to these criticisms, the agreement was re-negotiated and strengthened in 2000 (GBMU 2000). The targets were set higher and the government recommitted its support to implementing these agreements.

POSSIBLE PROGRAM STRATEGIES FOR THE UNITED STATES

Based on the information discussed above, we suggest two national policy strategies for structuring voluntary agreements to reduce GHG emissions that should be considered. The first is setting voluntary targets for either energy use or carbon emissions or both, with accompanying monetary incentive to subsidize implementation if the targets are achieved.

The second allows an industry or company to voluntarily opt into an emissions trading program, and then allocates emissions based on an output basis. Companies that are more

¹ “Industry and Trade” refers to what in the United States would be considered manufacturing.

efficient or emit less will have excess credits to sell so are rewarded for their prior investments in efficiency and pollution prevention.

Voluntary Targets with Monetary Incentives

Under this scenario, industry trade associations or individual companies are encouraged to enter in agreements with the government for reduction in GHG intensities. In exchange, participating industries would be eligible for grants and loans to finance the investments needed to meet these targets. This is the approach that has been used in Europe. It offers the advantages of reducing the administrative burden for both the industries and government, and allows the industries the greatest flexibility in meeting the targets.

One option is to transfer responsibility for dealing with the credit for early action issue to the trade association and its member companies. It would be expected that the association would receive grants to cover the administrative and technical costs associated with its oversight of the agreement. Individual companies would be eligible for an incentive to cover a portion of the investment required to meet the target.

While there are many advantages from a government perspective, this approach does have a few difficulties. The first is that it could be costly to the Treasury. To achieve significant reductions would likely require billions of dollars in administrative and investment co-funding over the life of the agreements. In addition, unless a real regulatory option is retained for non-compliance (e.g., refund of grant or taxes credits), problems may be encountered if targets are not achieved. This problem would be particularly difficult if some companies within an industry complied, while others did not.

Market-Based Emissions Trading and Emissions Caps

This approach looks to use the regulatory system to provide the incentive for industry to reduce emissions. For this approach to be implemented, an emissions trading program would need to be established, similar to the ones under current discussion, usually referred to as “multi-pollutant (multi-P) regulation.” This approach would build upon the success of the SO₂ emissions trading program, and include energy efficiency in the mix (York 2003).

Under the current Clean Air Act SO₂ regulations,(as well as most currently proposed) multi-P programs, only utilities participate in the trading program. Under our proposal, an industry would be allowed to voluntarily opt into the trading program. Emissions would be added to the trading pool based on their output, including indirect emissions from electric power generation. The emissions would be based on an intensity allocation that would approximate the industry average. If a firm emitted in excess of its allocation, it would be required to purchase credits from companies with an excess of credits. Having excess credits available for sale would reward companies that made investments to reduce emissions. When the overall cap is reduced, the allocations would be trued up to reflect changes in relative production among companies (EEA 2003). This approach directly addresses the issue of credit for early action in that it rewards the most efficient firms and penalizes the least efficient. If inter-sectorial trading is allowed, the trading market would allow the reductions to come from the least costly source. In addition, this approach would not require

government expenditures other than to cover the administrative costs. Some progressive industries have expressed interest in this approach because it allows them to meet their environmental commitments in a flexible manner without giving an advantage to those with a less stellar environmental record.

This approach does face a number of challenges. Some in the multi-pollutant debate have been advocating an auction allocation that would raise funds to be used to compensate affected sectors of the economy (e.g., coal miners), although a mix of auction and allocation based on past emissions performance is possible, if not likely. In addition, this approach would require a rethinking of the U.S. air quality regulatory system in tandem with the crafting of the required legislation. Without the suggested opt-in provision, major sources of carbon emissions, such as the electric power, petroleum, and coal industries, would likely find caps objectionable, and would oppose this approach.

RECENT DOMESTIC DEVELOPMENTS

In addition to the consideration of voluntary agreements in pending legislation (Congress 2003), the federal government has recently met with leading business interests to establish a voluntary framework for energy efficiency improvements (Ball and Fialka 2002). The companion initiatives of The Business Roundtable's *Climate Resolve* (BRT 2002) and the Bush Administration's *Climate Vision* (DOE 2003a) exhibit some of the elements of successful voluntary programs using a model similar to the Dutch initiative. The initiatives bring industry together through a trade association representing over 150 companies, with an overall commitment of an 18 percent reduction in economic energy intensity by 2012. This goal has been severely criticized as nothing more than business-as-usual. Commitments in the initiatives are industry specific. Some targets for industries such as coal mining and steel are for energy-intensity reduction. Other industries, such as automotive manufacturing and aluminum, are setting greenhouse intensity reductions. The participating companies span the major industrial sectors (including mining and manufacturing, but also including railroad and electric utilities industries), with the goal of engaging 100 percent participation by companies in these industry groups.

While the *Climate Vision* initiative offers a promising framework, it does illustrate the limitations of a reliance on relative commitments. The overall intensity targets for the manufacturing sector appear very close to the intensities that would be anticipated from autonomous energy-intensity trends that are well documented (see, for example, Alliance et al. 1997). Credible analysis of the proposed targets is beyond the scope of this piece, but is needed before the targets can be considered reasonable.

In addition, new considerations offered by the Bush Administration appear very limited. In fact, the recent FY 2004 budget request (DOE 2003b) indicates a reduction in the commitment to many existing programs cited in the various initiative documents (BRT 2002; DOE 2003a) and in the Administration's own *National Energy Policy Report* (NEPDG 2001). Among the proposed programs that could be cut is the DOE's Office on Industrial Technologies *Industries of the Future* program, which is slated for a reduction of more than half. The EPA *National Environmental Performance Track* (NEPT) program is designed to

reward and motivate top environmental performance by industries (EPA 2003b). Industrial companies that sign up for the program must implement environmental management systems, have excellent environmental compliance records, and agree to quantified commitments to improve their environmental performance above existing regulations. In return for this, the company or facility gets recognition and regulatory flexibility. It is too early to begin to evaluate results from this program. While the various existing government programs have contributed to the declining energy and GHG intensity of the industrial sector, it is clear that new initiatives will be needed to increase the rates of improvement already exhibited by the industrial sector.

At the state level, New Jersey has established a goal to reduce its GHG emissions by 3.5 percent from 1990 levels by 2005. The state draws upon voluntary agreements with public- and private-sector organizations as well as regulatory initiatives in order to reduce emissions (Pew 2003). Also, Delaware just announced a voluntary program designed to give manufacturers incentives to surpass state environmental and conservation standards (Montgomery 2003).

CONCLUSION AND NEXT STEPS

The last two years have seen limited action at the federal level on domestic GHG emissions. As the rest of the industrialized world continues to take serious action, many multinational companies are seeking to take independent action to head off international regulatory actions. The Pew Center for Global Climate Change has served as a point for organization of the most progressive companies (Pew 2002). As mentioned above, groups such as The Business Roundtable have also begun dialogues on the topic (Ball and Fialka 2002). The dialog has been started. What is needed now is the discussion of concrete proposals such as those set forth above.

While the numerous private sector initiatives on voluntary commitments are laudable, it will take a government-based program that sets aggressive targets to encourage significant participation and emissions reductions. This program will have to address several key issues:

- Provide a measure of protection for those who take early action;
- Address the cost of an incentive, either direct spending or through granting of some tradable asset such as an emission credit;
- The need for flexibility in how the emissions reductions are realized; and
- How to balance the need to reduce GHG emissions with a desire to promote continued economic growth.

This situation represents not just an issue of environmental and energy security, but also an economic challenge for the United States if it is to continue to play a leadership role in the world economy.

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