

WRAP Policy

Renewable Energy and Energy Efficiency As Pollution Prevention Strategies For Regional Haze

**Prepared by the
Air Pollution Prevention Forum
For the Western Regional Air Partnership**



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Executive Summary

The Regional Haze Rule (Rule) requires each state to prepare a State Implementation Plan (SIP) and includes a separate section (Section 51.309) which allows the nine states that participated in the Grand Canyon Visibility Transport Commission (GCVTC) to base their SIPs on the regional recommendations of the GCVTC. Tribes wishing to assume the regional haze requirements outlined in the Rule may, according to the Tribal Authority Rule (TAR), seek approval under 40 CFR 49 to be treated in the same manner as States. Tribes may adopt Tribal Implementation Plans (TIPs) that include all of the Section 308 or 309 provisions of the Regional Haze Rule or only “severable” provisions applicable to their specific situation.

The Western Regional Air Partnership (WRAP) was established by western states and tribes to coordinate and oversee implementation of the GCVTC recommendations and provide policy and technical tools to assist states and tribes in filing regional haze implementation plans. The GCVTC concluded that renewable energy and energy efficiency measures could result in “emissions reductions, improvements in visibility and provide secondary environmental and economic benefits to the region.” Accordingly, EPA requires states choosing to file a SIP under Section 309 to include descriptions of programs and policies each state will rely on to “preserve and expand energy conservation efforts” and to contribute to meeting the regional goal for renewable energy established by the GCVTC.¹

The WRAP created the Air Pollution Prevention Forum (AP2 Forum) to develop policies and programs states and tribes could adopt to demonstrate progress towards achieving the GCVTC 10/20 renewable energy goal and to increase the use of energy efficiency in the nine state GCVTC region.

The AP2 Forum and its Tribal Issues Committee developed energy efficiency and renewable energy policy and program recommendations for states and tribes over a three-year period. In addition, the AP2 Forum commissioned ICF Consulting Group to conduct a regional analysis of the emissions and economic impacts of implementing the AP2 Forum’s policy and program recommendations. The results of the regional modeling analysis, which apply to both states and tribes, demonstrated energy efficiency and renewable energy could result in emissions reductions, improvements in visibility, energy costs savings and provide secondary environmental and economic benefits to the region.

The WRAP has not specifically adopted every one of the 40-plus policy and program recommendations developed by the AP2 Forum in this policy statement. However, the WRAP Policy is informed by and embodies the results of the AP2 Forum’s examination of barriers, policy analysis, economic modeling results and recommended policies and programs to increase

¹ The GCVTC recommended that “[t]he goal of the states in the Transport Region should be to achieve annual additions in order that renewables will comprise 10% of the regional power needs by 2005 and 20% by 2015.”

the use of energy efficiency and renewable energy in the GCVTC region. Based on the AP2 Forum's modeling, it can also reaffirm conclusions of the GCVTC that found "renewable energy and energy efficiency measures could result in "emissions reductions, improvements in visibility and provide secondary environmental and economic benefits to the region."

It is the policy position of the WRAP that state and tribal implementation of both the renewable energy and energy efficiency policy and program recommendations of the AP2 Forum, as appropriate to circumstances within each jurisdiction, will reduce emissions and electricity production costs in the region, will result in a larger emissions benefit than either measure by itself, and will contribute to fulfilling the SIP and TIP requirements of the Regional Haze Rule. The most significant progress towards meeting the GCVTC renewable energy goals and increasing the use of energy efficiency in the region is accomplished through the adoption of state and tribal policies that provide financial incentives. States and tribes in the WRAP region should also adopt complementary policies that will improve the efficiency of the market place. Finally, the WRAP acknowledges that federal policies and regional actions have important roles in removing market barriers and increasing the development of renewable energy and deployment of energy efficiency technologies and practices in the WRAP region.

The policy adopted by the WRAP is purposely broad. The WRAP acknowledges state and tribal diversity in the nine state region and recognizes that circumstances unique to each jurisdiction such as climate, culture, social, economic, regulatory and political conditions will dictate which policies and programs recommended by the WRAP and AP2 Forum are most appropriate for individual states and tribes. Accordingly, the WRAP's policy statement should be viewed as guidance for the region as a whole. As individual circumstances warrant, states and tribes may use these policy statements to provide a regional context in developing renewable energy and energy efficiency policies and programs that are appropriate to use in their individual implementation plans for regional haze.

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WRAP Policy on Renewable Energy and Energy Efficiency

The policy and program recommendations the AP2 Forum have been developed over a three-year period through a stakeholder-based consensus process. . As is the expectation of all WRAP forums, the objective of the AP2 Forum was to provide a policy, program and analytical framework that would be available for states and tribes to consider in responding to the SIP and TIP requirements of the *Pollution Prevention* section of the Regional Haze Rule. WRAP has not specifically adopted every one of the 40-plus policy and program recommendations developed by the AP2 Forum. However, the WRAP Policy on renewable energy and energy efficiency is informed by and embodies the results of the AP2 Forum’s examination of barriers, policy analysis, emissions and economic modeling results and recommended policies and programs to increase the use of energy efficiency and renewable energy in the GCVTC region.

WRAP Policy

Following on the findings of the Grand Canyon Visibility Transport Commission (GCVTC), the WRAP finds that energy efficiency and renewable energy can be effective tools to reduce regional haze and, if adopted by states and tribes in the Transport Region, could result in emissions reductions, improvements in visibility, energy costs savings and provide secondary environmental and economic benefits to the region. The WRAP expects these tools will be implemented by states and tribes in a manner consistent with local economic, regulatory, political conditions and in a way that protects cultural resources unique to these jurisdictions. The WRAP believes that states and tribes² can make progress towards meeting the GCVTC 10/20 renewable energy goal³ and increase the use of energy efficiency technologies in the Grand Canyon Visibility Transport region, and adopts the following policy statements:

1. Joint implementation of the AP2 Forum’s renewable energy and energy efficiency policy and program recommendations will reduce emissions and electricity production costs in the region, will result in a larger emissions benefit than either measure by itself, and will contribute to meeting the SIP and TIP requirements of Section 309(d)(8).

² Under the Regional Haze Rule (40 CFR 51.309(d)(12)) and the Tribal Authority Rule (40 CFR 49.1-49.11), tribes within the Grand Canyon Visibility Transport Region may, but are not required to, receive delegation of federal authority to adopt Tribal Implementation Plans (TIPs) under Section 308 or 309 of the Regional Haze Rule. Tribal selection of Section 308 or 309 is independent of the strategy adopted by the state(s) in which the tribe is located. In addition, tribes may apply for approval of “reasonably severable” elements of Clean Air Act programs. Further, deadlines for plan submittal that apply to states do not apply to tribes. Where a tribe opts not to develop a TIP, EPA may work with the tribe to adopt a Federal Implementation Plan (FIP) if necessary and appropriate to protect air quality.

³ The GCVTC goal is: 10 percent of generation from renewable resources in 2005 and 20 percent in 2015. With respect to the requirements of Section 309(d)(8), achieving the 10/20 goal is not mandatory or “enforceable.” This section of the rule does establish an “enforceable” requirement for States “to assess progress toward a goal established by the GCVTC with respect to renewable energy”. To the extent they are not able meet the goal, States are required to provide an explanation of why the goals cannot be met. See *Federal Register*, Vol. 64, No. 126, page 35754, July 1, 1999. *Regional Haze Regulations Final Rule*.

2. State and federal economic incentives and policy changes are necessary if states and tribes are to successfully make progress towards meeting the GCVTC 10/20 renewable energy goal (10 percent of generation will come from renewable energy by 2005 and 20 percent by 2015) and increase energy efficiency in the Transport Region.
3. Electricity consumers in the Transport Region should be given the opportunity to choose renewable electricity products and services through viable green marketing or green pricing programs.
4. States and tribes should take policy actions to improve the efficiency of the market place, such as providing 1) access to information about the price, sources of power and environmental impacts of their power purchases, and 2) accurate price signals.
5. States and tribes should: encourage utility and/or State sponsored demand side management programs; develop minimum energy efficiency standards for buildings; and modify regulatory approaches to include in SIPS and TIPS credit for emissions reductions of criteria pollutants from energy efficiency measures.
6. Actions should be taken to reform transmission access, pricing and interconnection policies that create barriers to the movement of renewable energy generation from generators to customers.
7. An emissions cap-and-trade program is an economically efficient method of achieving emissions reductions and provides economic incentives to develop renewable energy generation and energy efficiency measures.
8. Some policies are more effective if implemented on a regional scale. States, tribes and regional energy organizations should act in concert to: establish a regional institution for issuing and trading renewable energy certificates; institute a regional generation tracking system; reform transmission management practices that discriminate against intermittent renewable resources; and participate in energy efficiency market transformation programs.
9. States and tribes should support Federal policies that would increase development of renewable energy in the Transport Region including extension of the federal production tax credit for wind, biomass and geothermal through 2015, or until these renewable energy resources become cost-competitive in the region.
10. States and tribal governments and federal agencies should “lead-by-example” by becoming early adopters of renewable energy and energy efficient products, services, and practices in a manner that protects cultural resources.

The policy adopted by the WRAP is purposely broad. The WRAP acknowledges state and tribal diversity in the nine-state region and recognizes that circumstances unique to each jurisdiction such as climate, culture, social, economic, regulatory and political conditions will dictate which policies and programs recommended by the WRAP and AP2 Forum are most

appropriate for individual states and tribes. Accordingly, the WRAP's policy statement should be viewed as guidance for the region as a whole. As individual circumstances warrant states and tribes may use these policy statements to provide a regional context in developing renewable energy and energy efficiency policies and programs that are appropriate to include in their individual implementation plans for regional haze.

Background

Grand Canyon Visibility Transport Commission

In 1977 Congress established provisions to improve visibility in 156 national parks and wilderness areas across the United States as part of the Clean Air Act Amendments of 1977 (Act). Congress further addressed visibility in western Class I areas in creating the Grand Canyon Visibility Transport Region (Transport Region) and directing EPA to establish the Grand Canyon Visibility Transport Commission (GCVTC) to address haze causing pollutants in a nine state region whose emissions affect the visibility in the Grand Canyon.⁴ The Commission was charged with making recommendations on how to protect and improve visibility in 16 national parks and wilderness areas on the Colorado Plateau.

In 1996, after 5 years of technical assessment and policy development, the Commission issued its report to EPA recommending a suite of 12 emissions control strategies that, if adopted as a single package, would improve visibility throughout the Colorado Plateau.⁵

The report concluded that although the GCVTC did not have the resources necessary to “model or completely quantify the effects” of renewable energy and energy efficiency on visibility, if implemented these measures could result in “emissions reductions, improvements in visibility and provide secondary environmental and economic benefits to the region.”⁶ With regard to renewable energy⁷, the GCVTC recommended that “[t]he goal of the states in the Transport Region should be to achieve annual additions in order that renewables will comprise 10% of the regional power needs by 2005 and 20% by 2015” (the 10/20 goals). The GCVTC also found there was an opportunity to realize visibility improvements from energy efficiency.⁸

⁴ The Commission was comprised of the governors of eight states (Arizona, California, Colorado, Nevada, New Mexico, Oregon, Utah, and Wyoming) as well as the President of the Navajo Nation, the Chairman of the Hopi Tribe, the Pueblo of Acoma Governor., Columbia River Inter-Tribal Fish Commission, the Hualapai tribe and ex-officio members from the Environmental Protection Agency, the Bureau of Land Management, the National Park Service, the U.S. Forest Service and the U.S. Fish and Wildlife Service.

⁵ *Report of the Grand Canyon Visibility Transport Commission to the U.S. Environmental Protection Agency: Recommendations for Improving Western Vistas*, June 10, 1996.

⁶ *Ibid*, pg.28

⁷ The Air Pollution Prevention Forum adopted the following definition of renewable energy. "Renewable energy" is defined as electricity generated by non-nuclear and non-fossil low or no air emission technologies using resources that are virtually inexhaustible, reduce haze, and are environmentally beneficial. The term includes electricity generated by wind energy technologies; solar photovoltaic and solar thermal technologies; geothermal technologies; technologies based on landfill gas and biomass sources, and new low-impact hydropower that meets the Low-Impact Hydropower Institute criteria. Biomass includes agricultural, food and wood wastes. The term does not include pumped storage or biomass from municipal solid waste, black liquor or treated wood.

⁸ “The Commission supports the continued development and implementation of national energy efficiency standards for motors, appliances and lighting and recommends the national adoption of the California energy efficiency standards⁸. The Commission also supports the construction of energy efficient buildings, both residential and commercial, and proposes the reinstatement of incentives for building energy efficient structures....The Commission also suggests the continuation of demand-side management programs, despite current funding restrictions. The Commission recommends that continuing attention be paid to maintaining the role of energy conservation within the changing electric power industry markets. Energy conservation programs should be preserved and expanded through such mechanisms as “system benefit charges” paid at

Regional Haze Rule and Renewable Energy and Energy Efficiency

In July 1999, the Environmental Protection Agency issued its final regional haze regulations.⁹ The final “Regional Haze Rule” requires each state to prepare a State Implementation Plan (SIP) for regional haze and includes a separate section (Section 51.309) which allows the nine Transport Region states (Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah, and Wyoming) to implement a regional approach to reducing haze and base their SIPs on the regional recommendations of the GCVTC.¹⁰ As provided by the “tribal authority rule¹¹,” (TAR) eligible tribes may implement Clean Air Act programs to protect air resources “within the exterior boundaries of the reservation or other areas within the tribe’s jurisdiction.” Tribes too, may choose to participate in the regional approach granted to the states in the Transport region and submit a Tribal Implementation Plan (TIP) containing elements described in section 51.309.

States choosing to pursue the 309 path are required to include a variety of information addressing energy efficiency programs, renewable energy production and consumption, and descriptions of programs and policies each state will rely on to contribute to meeting the GCVTC’s regional goal for renewable energy. The requirements of the regional haze rule regarding energy efficiency and renewable energy are found in 40 CFR 51.309(d)(8). This section addresses the GCVTC’s recommendations on pollution prevention, renewable energy, energy efficiency and conservation. With respect to renewable energy and energy efficiency Section 51.309(d)(8) requires each state SIP to provide:

- A description of the programs relied on to achieve the State's contribution to the Commission's goal that renewable energy will comprise 10 percent of the regional power needs by 2005 and 20 percent by 2015 (10/20 goal).
- A demonstration of the progress toward achievement of the renewable energy goals in the years 2003, 2008, 2013, and 2018.
- A summary of programs to preserve and expand energy conservation efforts.
- Projections of the short- and long-term emissions reductions, visibility improvements, cost savings, and secondary benefits associated with the renewable energy goals, energy efficiency and pollution prevention activities.

The GCVTC goal is: 10 percent of generation from renewable resources in 2005 and 20 percent in 2015. With respect to the requirements of Section 309(d)(8), achieving the 10/20 goal is not a mandatory, enforceable requirement. This section of the rule does establish an “enforceable” requirement for States “to assess progress toward a goal established by the GCVTC with respect to renewable energy”. To the extent they are not able meet the goal, States are required to provide an explanation of why the goals cannot be met.

the distribution level....” *Report of the Grand Canyon Visibility Transport Commission to the United States Environmental Protection Agency*, June 1996, pages 31-32.

⁹ *Federal Register*, Vol. 64, No. 126, pages 35714-35774 (July 1, 1999)

¹⁰ States other than those that participated in the GCVTC must utilize the rules and standards adopted by EPA under Section 308.

¹¹ 40 CFR Part 49

For tribes that choose to submit a TIP following the GCVTC regional approach, the content may contain elements similar or identical to that just described for a Section 309 SIP. However, there is considerable flexibility in how, when, and whether a tribe may develop a TIP. Under the TAR, tribes are not subject to deadlines for TIPs, nor to sanctions if TIPs are not adopted. To encourage tribes to develop air-quality management programs, however, the TAR authorizes a modular approach to tribal programs; that is, tribes can build their technical and management capacity at the same time they begin to address concerns specific to their priorities. This modular approach provides several opportunities:

- Tribes can pick and choose among Clean Air Act provisions to craft a program that addresses the tribe's specific air-quality concerns.
- The EPA can approve these modular programs provided that they do not depend on any other program element for enforceability.
- To encourage tribes to develop air quality management programs, grants are available from the EPA pursuant to Sections 103 and 105 of the Clean Air Act.

Thus, it may be possible for a tribe to obtain EPA approval to implement renewable energy or energy efficiency measures, or both, as part of a 309 TIP without implementing other parts of 309 which are not appropriate for the tribe.

Western Regional Air Partnership

Western Regional Air Partnership (WRAP) was established in 1997 as the successor organization to the GCVTC. The WRAP was created by western states and tribes to coordinate and oversee the implementation of the recommendations of the GCVTC and “identify regional or common air management issues, develop and implement strategies to address these issues, and formulate and advance western regional policy positions on air quality.”¹² WRAP policies, strategies and technical tools are developed through an inclusive stakeholder-based process that includes state air agencies, tribes, EPA, federal and state land management agencies, local government, industry, utilities, environmental groups, academia and other interested parties.

Air Pollution Prevention Forum

The Air Pollution Prevention (AP2) Forum was created September 1998 by the WRAP's Initiatives Oversight Committee (IOC) and charged to:

“Recommend legislative actions, economic incentives and regulatory policies states can adopt to meet the 10/20 renewable energy goal and increase the use of energy efficiency technologies in the Grand Canyon Visibility Transport region.”

¹² WRAP Charter,, Purpose, p. 1.

As is the expectation of all WRAP forums, the objective of the AP2 Forum and its 25 members has been to provide the states and tribes of the WRAP region with the policy and analytical framework needed to respond to the requirements of the *Pollution Prevention* section of the Regional Haze Rule.¹³ To accomplish this purpose the AP2 Forum’s work plan called for the Forum to:

- Examine barriers restricting the penetration of renewable energy, energy efficient technologies, and adoption of energy efficient practices in the Transport Region;
- Identify and evaluate economic incentives, legislative actions, and regulatory policies that will increase investments in renewable energy and energy efficiency, including actions currently underway in the Transport Region; and
- Recommend market-based incentives and public policies that will support increased investment in renewable energy within the Transport Region and improve the efficiency of the region’s energy production and end-use sectors.

The AP2 Forum’s policy and program recommendations have been developed over a three-year period through a stakeholder-based consensus process supported, in part, by nationally recognized renewable energy and energy efficiency experts, including the National Renewable Energy Laboratory. The Forum and workgroups held more than 11 meetings and workshops to examine barriers and identify policies that would lead to increased investment in renewable energy and energy efficiency in the Transport Region. The Forum also commissioned ICF Consulting Group to analyze the potential emissions reductions, energy costs, and secondary environmental and economic benefits to the Transport Region of meeting the GCVTC 10/20 goal and implementing a suite of cost-effective energy efficiency programs and policies the AP2 Forum identified as “best practices” for the region.

As a result of its investigation the AP2 Forum prepared seven reports that provide policy, analytical and technical support for the Forum’s policy recommendations to the WRAP, states and tribes. These documents are listed in Appendix IV.

¹³ 40 CFR 51.309(d)(8).

Findings of the Air Pollution Prevention Forum

Renewable Energy

A substantial increase in power generation from renewable energy is needed for the Transport Region to attain the GCVTC 10/20 goal. In 1999 the Transport Region supported 6,190 MW of renewable generation capacity, representing six percent of the regions electricity supply. Based on forecasts of demand for electricity in the region for the period 2001-2018, the AP2 Forum estimates that in order to meet the goal of 20 percent renewable energy generation in 2015 , over 20,000 MW of new renewable energy generation capacity will need to be brought on-line in the Transport Region over the next 16 years .

The AP2 Forum finds that despite the enormous renewable energy potential of the West there are a number of *barriers* that are preventing the greater use of renewable energy in the region. The biggest barrier renewable energy currently faces is cost. With the exception of high quality wind resources, generation from renewables is, in most cases, more expensive than conventional electric technologies. Higher costs can be accounted for by market imperfections and other barriers renewables face. For example, existing tax structures penalize capital-intensive renewable energy technologies compared to competing conventional technologies. Current transmission pricing and access protocols penalize intermittent generation resources such as wind and solar. Benefits of renewable energy, such as reduced environmental impacts, are not monetized in the power market and there is a lack of information and consumer knowledge about electricity sources and their environmental impacts. Monopoly electricity providers are often not required to provide “choice” in sources of electricity supplied to end-use consumers.

The Forum finds that the most significant progress towards meeting the 10/20 renewable energy goals can best be accomplished through the adoption of state policies which provide *financial incentives* for the production and consumption of renewable energy. The Forum believes that renewable portfolio standards (RPS) and system benefits charges (SBC) are the most effective state policy options for encouraging the growth of renewables. Other financial incentives include state and federal tax incentives¹⁴, and State government agency renewable energy purchase requirements. Tribes may also find adoption of RPSs and SBCs useful policy tools in promoting renewable energy and may wish to consider these in the context of an overall tribal energy policy. Furthermore, since tribes generally don’t benefit from tax incentives, tribes may consider seeking alternative yet equitable incentives to encourage development of renewable energy on tribal lands (such as tribal block grants).

The Forum finds that electricity customers who want to purchase renewable generated electricity should be given the option of purchasing a percentage of their power from renewable energy through a viable *green market or green pricing program*. In order to improve the performance of these programs, states and tribes should also adopt complementary policies that will *improve the efficiency of the marketplace* and lower transaction costs for “green” electricity products and services.

¹⁴Including production tax incentives, personal and corporate income tax credits, property tax incentives and sales tax exemptions from purchases of renewable energy equipment or electricity.

In addition, complementary *federal and regional policies* are necessary to encourage progress towards meeting the GCVTC 10/20 goal. The Forum finds that there are a number of federal policies and programs that can help the Transport Region make progress in meeting the GCVTC 10/20 goal. There are also several necessary policies that, if implemented in conjunction with other public policies, are more effective on a regional scale. These include trading of renewable energy certificates and creation of a generation tracking system for the western interconnected system.

States are already making progress toward implementing the GCVTC's recommendations including adoption of significant Renewable Portfolio Standards (e.g., 20 percent in California and 15 percent in Nevada and New Mexico), tax incentives (e.g., Arizona, Idaho, Nevada, New Mexico, Oregon, Utah), green power purchase programs, and implementation of utility least-cost resource plans that include significant investments in renewable energy and demand side resources (e.g., PacifiCorp's five state IRP and Excel in Colorado).

Tribal lands in the WRAP region have great potential for the development and delivery of electricity generated from renewable resources. Furthermore, many tribes are interested in generating, selling, and using such electricity. Consequently, tribal energy programs can be significant contributors to the 10/20 goal. Substantial barriers exist, however, to the full implementation of tribal opportunities for development of renewable energy resources. For example, many tribes do not have an energy authority or an energy policy, and are consequently not well positioned to take advantage of opportunities related to renewable energy. Also, and of particular importance to rural residents, is the fundamental need for basic electric service or for reliable electric service. Because development of renewable resources is a capital-intensive activity, access to capital can also be a significant barrier. Thus, while the potential to develop renewable energy exists, tribes with the desire to do so will face significant challenges beyond those cited above for states.

The AP2 Forum has recognized that the special relationship of Indians Tribes and their lands within the federal framework has great bearing on strategies to enhance renewable energy development. That is, tribal-state-federal relations must be considered in their legal, economic, and cultural contexts when exploring the development and delivery of electric energy across political boundaries. Because these relationships are markedly varied, appropriate strategies will differ from tribe to tribe, and the concept of setting priorities among alternative strategies must be left to individual tribes. Tribes may select and pursue these strategies in the context of their overall goal of maintaining and strengthening their cultural, social, economic, and political integrity. The recommendations presented to tribes by the AP2 Forum represent a broad selection of opportunities from which the tribes in the WRAP region and their collaborators can choose according to their specific circumstances.

Energy Efficiency

The Forum began its work on Energy Efficiency in June of 2000 with an initial examination of demographic and economic trends likely to affect future electricity consumption in the WRAP region. Existing state and tribal policies were reviewed along with federal/state programs relating to energy efficiency, and opportunities were identified to improve energy efficiency in the region's economy. The Forum then identified market and institutional barriers that could restrict penetration of energy efficiency technologies and conservation practices and developed a list of state policies and "best practices" that, if adopted by states and tribes would enable the region to increase the level of efficiency in the production and end-use of electricity. Also developed was a set of recommendations specifically directed to tribal leaders that could foster implementation of energy efficiency on tribal lands. The impact these policies and energy efficiency programs and measures would have on regional emissions and energy costs were then evaluated.

The AP2 Forum found that a wide range of cost-effective energy efficiency measures exist that provide a substantial opportunity to improve the efficiency of electricity use in the region.¹⁵ However, there are also a number of barriers that prevent widespread penetration and use of energy efficiency technologies and adoption of energy conservation practices.¹⁶

Adoption of energy efficiency measures in the economy is a dynamic process involving interactions between technology, consumer behavior, market conditions, and public policy. Given the persistence of market barriers, the Forum finds that there are a number of important public policies and programs that can help overcome these barriers and increase market penetration of energy efficiency technologies in the Transport Region's economy. This can best be accomplished through financial incentives and mandatory energy efficiency standards. The Forum found there are other programs and policies that can help promote energy efficiency and conservation including consumer information and education, utility and environmental regulatory policies, and utility rate reforms.

Western tribes have the potential to implement and, in some cases, to lead innovative programs that improve energy efficiency. This Forum recognizes the great diversity of tribal lands in the region and the inherent need for tribal governments to selectively pursue energy-efficiency opportunities. For example, some tribes place a high priority on the need to provide

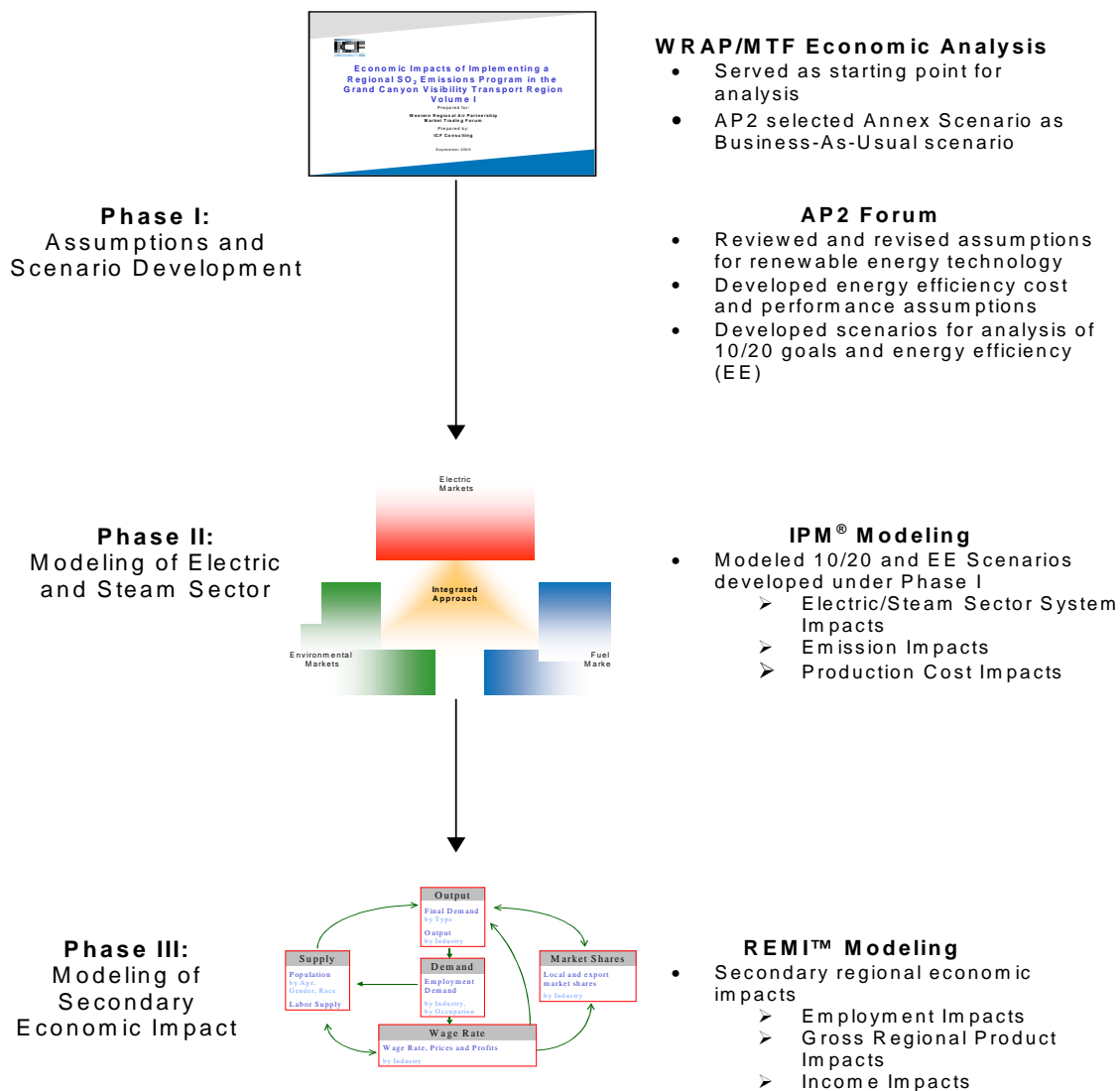
¹⁵ The AP2 Forum identified 43 programs and measures that represented "best" energy efficient practices in the region. No measure's cost of "saved energy" exceeded \$0.054/kWh and all measures taken together averaged \$0.0186/kWh of energy saved. By comparison, "avoided costs" for electricity from new gas-fired generation averages between \$0.036 and \$0.046 kWh. These measures were not meant to represent all cost-effective options or all technically feasible energy efficiency options that would have environmental benefits. Rather they represented a set of achievable, cost-effective programs that would provide significant energy savings if a state chose to pursue a moderately ambitious level of energy efficiency.

¹⁶ Barriers include lack of consumer awareness and limited access to information about energy efficient products, services and effectiveness of energy efficiency measures in reducing energy use and costs; emphasis on lowest first cost in purchasing equipment or constructing buildings; limited product availability in the marketplace; energy price distortions, e.g. "average cost" pricing of electricity prevents consumers from seeing the true costs of electricity use; and competition for limited internal investment capital results in business decisions to invest in energy efficiency being delayed or poorly executed.

basic reliable electric service to their residents and businesses; there are innovative opportunities for energy conservation measures in the design and development of these services. Other tribes fully-served with reliable electricity may want to concentrate on improving the efficiency of electricity applications. Virtually every tribe may be interested in the economic benefits offered by energy-efficiency programs as well as the related social and cultural benefits. With potential cost savings on electricity expenditures (as well as other energy sources) on the order of 15% to 50%, energy-efficiency programs and policies could have a significant positive impact that extends beyond air quality and economics to tribal sovereignty, energy independence, and increased revenues to fund other tribal priorities. The Forum recommendations offer a broad selection of options from which tribes in the WRAP region can choose according to their specific circumstances.

Regional Emissions and Economic Impact Analysis

In its 1996 report, the Grand Canyon Visibility Transport Commission (GCVTC) recommended future modeling work be conducted to analyze the potential emissions reductions, visibility improvements, costs savings, and secondary benefits associated with the use of renewable energy and energy efficiency.¹⁷ The AP2 Forum commissioned ICF Consulting to conduct modeling analysis using policy scenarios and cost assumptions developed by the Forum. This analysis was conducted to help the AP2 Forum understand the potential emissions reductions, costs and secondary regional economic impacts of implementing the 10/20 goals and the energy efficiency recommendations. The AP2 Forum developed two types of scenarios in order to examine the emissions, costs and secondary regional economic impacts of meeting the 10/20 goals and implementing the energy efficiency recommendations.



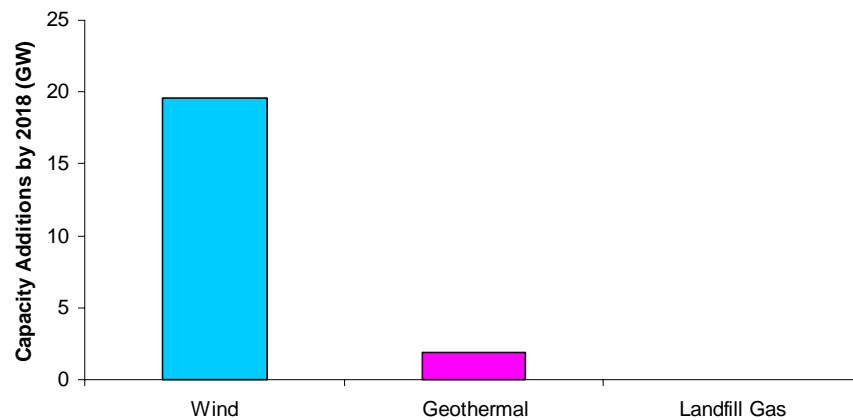
¹⁷ Report of the Grand Canyon Visibility Transport Commission to the U.S. Environmental Protection Agency: Recommendations for Improving Western Vistas, June 10, 1996, pg. 29.

The first was the Business-As-Usual (BAU) scenario that characterized how the future might unfold with the proposed regional backstop SO₂ trading program but without any policy measures designed to accomplish the 10/20 goals and energy efficiency recommendations. The second set of scenarios reflected a future with the regional backstop SO₂ trading program and policy drivers designed to meet the 10/20 goals or energy efficiency recommendations, or both. Assessments of emissions, costs and secondary regional economic impacts were estimated by analyzing the changes in the policy scenarios relative to the BAU scenario.

Changes in Regional Generation

Implementation of the energy policy recommendations to achieve the 10/20 goals will lead to significant growth in renewable energy capacity, totaling 20 GW by 2018. The growth reflects the requirements of the 10/20 goals and the assumption that the policy climate of the 10/20 goals may better align incentives to spur the improvements in renewable technology cost and performance through accelerated learning by doing and by easing some of the barriers to entry for renewable energy. Figure 1 below summarizes the growth in renewable energy capacity under the 10/20 goals. On the basis of economics, wind power dominates most of the growth in new renewable capacity and the increased use of renewable energy displaces new gas-fired generation.

Figure 1: Renewable Energy Capacity Additions Under the 10/20 Goals



Achieving the energy efficiency “best practices” recommendations developed by the AP2 Forum will lead to electricity demand reductions in the Transport Region of 8 percent by 2018 resulting in energy savings of 54,000 Gigawatt hours (GWh) and summer peak demand savings of over 16,000 MW of capacity.

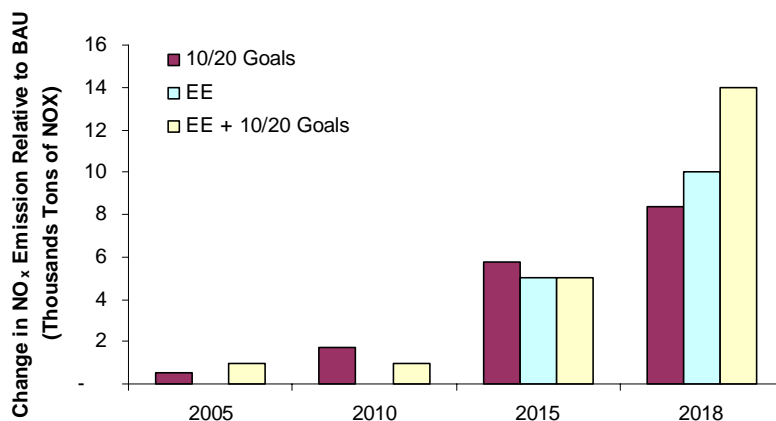
Emissions Reductions

The important results in capacity changes due to achieving the 10/20 goals and modestly improving energy efficiency in the region is that new renewable energy capacity and energy conservation compete against new conventional fossil fuel-fired capacity while leaving the

existing electricity generation stock relatively undisturbed. This has important implications for size of emissions reductions.

The modeling analysis of emissions reductions indicates that implementation of the 10/20 goals and energy efficiency “best practices” could result in savings in NO_x emissions of between 8,000 tons and 14,000 tons (or 1 percent to 2 percent relative to baseline conditions in the BAU scenario).¹⁸ The reduction potential is relatively modest because the displaced generation consists almost entirely of new cleaner burning gas-fired combined cycle units. Nonetheless, the modeling shows that the 10/20 goals and energy efficiency can provide a hedge against future emissions growth. In conjunction with other WRAP emission control strategies, the emission reductions from efficiency and renewable energy can help improve visibility in the region.

Figure 2: Potential NO_x Emissions Reductions Under the 10/20 Goals and Energy Efficiency Recommendations



Implementation of the 10/20 goals and energy efficiency scenarios in the ICF modeling demonstrated SO₂ emissions in the region were reduced because new renewable energy generation capacity displaces an estimated 2,000 MW of new coal-fired generation capacity. However, even though real SO₂ emissions are offset, because of the regional SO₂ cap and trade program proposed under a separate part of Section 309 of the regional haze rule, total SO₂ emissions in the region will not change. Under a cap and trade program any SO₂ emissions reductions from renewable energy and energy efficiency is fully offset by increases in SO₂ emissions from sources that are allowed to emit up to the emissions cap. However, the 10/20 goals and energy efficiency could decrease the compliance cost of the SO₂ trading program by as much as \$ 7 million (or 10 percent of projected compliance cost¹⁹) in 2018 and could displace the need to install 1,200 MW to 1,700 MW of new scrubber capacity by 2018.

¹⁸ In Figure 1 the bars labeled “10/20 goals” represents the policy scenario with the 10/20 goals, “EE” represents the policy scenarios with the energy efficiency recommendations and “EE + 10/20 goals” represents the policy scenario with both the 10/20 goals and the energy efficiency recommendations.

¹⁹ MTF 2000.

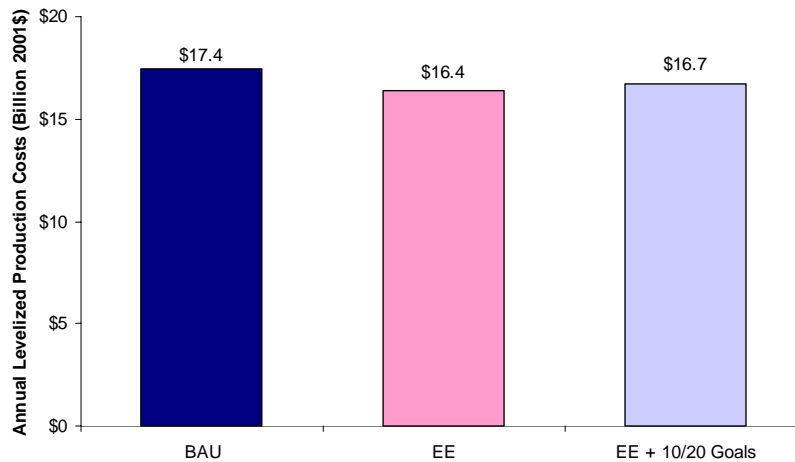
A secondary environmental benefit of implementing the 10/20 goals and energy efficiency recommendations is the reductions in CO₂ emissions. CO₂ emissions savings in 2018 are estimated to range between 40 million metric tonnes and 55 million metric tonnes (or 10 percent to 14 percent relative to the BAU scenario).

Energy Costs Impacts

Meeting the 10/20 renewable energy goals would increase annual levelized electricity production costs in the region by an estimated \$300 million, a 2 percent increase above a business-as-usual scenario.²⁰ Implementing the Forum’s efficiency measures would save the region roughly \$1 billion annually. Together, relative to business-as-usual scenario, meeting the 10/20 goal and implementing the efficiency measures would reduce annual levelized electricity production costs in the region by approximately \$700 million.

Figure 3 compares the electricity production cost between the business-as-usual and energy efficiency-only scenarios; and business-as-usual and the energy efficiency plus renewable energy policy scenario.

Figure 3: Annual Levelized Production Cost Under the BAU and Energy Efficiency Policy Scenarios



In addition, implementation of both the 10/20 goals and energy efficiency recommendations will reduce demand and expenditures for natural gas in the region by nearly \$2 billion annually. This also serves to provide some security benefits against increases in electricity costs due to natural gas price increases and supply volatility.

²⁰ The \$300 million cost increase reflects the assumption that renewable energy technology will improve over time, which the AP2 Forum believes to be the most likely scenario. To provide an an upper bound estimate of the potential cost increase resulting from achieving the 10/20 goals the Forum also asked ICF to model a scenario in which renewable energy costs remain at today’s levels and do not improve over time. Under this scenario the annual production costs of meeting the 10/20 goals increased to \$900 million.

Secondary Regional Economic Impacts

The results of the regional economic analysis indicate that the 10/20 goals and energy efficiency may, on average, lead to an increase in economic activity. Over time, the policies lead to small increases in economic activity in the early years, and a small decline in later years. The impacts in the 2005 to 2015 time period are largely the result of investment in new renewable energy facilities that increase labor demand and have secondary impacts on output and income. Following the investment and construction boom, the region will see some decline in employment, gross regional product and personal disposable income.

Table 1: Annual Average (2005 – 2020) Changes In Key Economic Indicators for the Transport Region Under the Policy Scenarios

	Employment		Gross Regional Product		Personal Disposable Income	
	(Persons)	(% Change)	(Million 2001\$)	(% Change)	(Million 2001\$)	(% Change)
10/20 Goals	627	0.00%	-312	-0.01%	73	0.00%
Energy Efficiency (EE)	8,415	0.02%	450	0.02%	776	0.04%
10/20 Goals + EE	4,097	0.01%	-58	0.00%	547	0.03%

On average, the 10/20 goals will lead to small increases in employment and personal income along with a small decline in gross regional product. Implementation of the energy efficiency recommendations results in small increases in employment, personal disposable income and gross regional product. The boom in construction sparked by the investments appears to be the key reason for growth.

Conclusions of Modeling Results

The analysis indicates that the 10/20 goals and energy efficiency recommendations could both serve as cost-effective air pollution prevention strategies. The 10/20 goals will lead to increases renewable energy capacity, while the energy efficiency recommendations will result in lower energy demand through conservation. Because both the 10/20 goals and energy efficiency displace new additions of fossil fuel capacity and generation, they are likely to provide a hedge against future emissions growth in NO_x and CO₂. The 10/20 goals can be achieved under modest cost impacts, while energy efficiency will result in some cost savings and both the objectives have little or no regional economic impacts.

Policy Recommendations of the Air Pollution Prevention Forum

Renewable Energy Policies for States and Tribes

The AP2 Forum recommends states and tribes in the Transport Region consider the following policies and programs as strategies they could adopt to promote development and use of renewable energy in their respective jurisdictions for the purposes of satisfying some of the requirements of Section 309(d)(8) of the regional haze rule

1. Adopt a Renewable Portfolio Standard Systems Benefit Charge applied to electricity sold, or both, as “core” financial incentives to promote the use of renewable energy sources.

Due to existing costs and institutional barriers State and federal financial incentives will be necessary to achieve the 10/20 goals. If adopted by states and tribes it is recommended that financial incentives be structured to ensure they are: offered on a competitive basis; of sufficient duration to provide certainty to investors in renewable energy projects; and do not discriminate against out-of-state renewable energy generation.

2. Implement tax incentives to encourage renewable energy development.

State tax policies can promote increased investment in renewable energy technologies. These policies include, but are not limited to, e production tax credits, personal and corporate income tax credits, property tax incentives and sales tax exemptions from purchases of renewable energy equipment and electricity.

3. Support regulatory and/or legislative policies that incent to utilities to offer customers the choice of purchasing electricity generated from renewables and the option to choose other “green” products and services

Market research and early experience with green power marketing and utility sponsored green pricing programs show a significant number of electricity customers are willing to pay a premium to purchase electricity generated from renewable energy. Customers of regulated, retail electric service providers should be given the option to chose a green electricity product or service.

4. Adopt information disclosure rules and power labels on utility bills that provide consumers with accurate information on the price, source of power, and environmental attributes of their electricity supply.

Consumer research and experience from states with retail competition indicate consumer choice is strongly influenced by the price, resource mix, and environmental impacts of power supplies in an electric service-providers’ portfolio. For green power markets and green pricing programs to operate efficiently and be effective in increasing demand for

renewable energy, consumers need access to accurate and consistent information about their electricity supply. Efforts to institute labeling and disclosure rules should be coupled with consumer education programs.

5. Establish a generation tracking system in concert with other states, tribes, regional electricity reliability entities and/or regional transmission organizations.

A generation tracking system for the entire western interconnected system will provide verification of information needed to ensure consumer confidence in the information on power labels, protect “green power” consumers from electricity from the resale of renewable energy, facilitate monitoring compliance with state RPS’, and verification and certification of renewable energy certificates.

6. Develop policies that eliminate transmission and distribution system barriers that hinder consumer access to renewable energy supplies, products, and services while ensuring the reliability, safety and operational integrity of the system.

State and tribal transmission and distribution system policies should: 1) support uniform interconnection standards; 2) support transmission protocols being developed by regional transmission organizations that do not penalize intermittent renewable resources; and 3) allow net metering for renewable energy technologies at the customer’s meter.

7. Opt in to the Section 309 regional SO₂ “cap-and-trade program”, as outlined in the Annex, under the Regional Haze Rule and as adopted by states and tribes..

States and tribes opting into the Section 309 regional SO₂ cap-and-trade program will limit regional SO₂ emissions and create a market in which emission credits can be bought and sold. Such a market puts a monetary value on SO₂ emissions and provides an economic incentive to engage SO₂ reducing activities such as investments in renewable energy.

8. Establish policies and processes to improve the siting of renewable energy generation facilities.

States and tribes should improve siting processes for renewable energy facilities including: 1) training for regulators on land use and environmental issues surrounding the siting of renewable energy facilities; 2) creating a process to enable government decision makers in a jurisdiction which has considered a renewable energy facility siting application to share their experience and lessons learned with other jurisdictions considering applications for similar projects; and 3) coordination between states and tribes in siting review processes, including resolution of jurisdictional issues for projects that involve both state and tribal lands.

9. Support creation of a single institution in the Western Interconnection to register, certify, and oversee trading of renewable energy certificates in the West.²¹

Environmental attributes of electricity generated from renewable sources have economic value and can be sold separately from the electricity as renewable energy certificates (RECs). Selling of RECs represents a marketbased strategy that improves the economics, overcomes transmission barriers, and provides consumers access to the most economic renewable energy resources. In combination with other policies recommended by the AP2 Forum, RECs can contribute to accelerating development of the West's most promising renewable resources.

10. Endorse cooperative actions and complementary efforts by the federal government to promote the development of renewable energy that do not undermine historical authorities of the states.

Complementary action by the federal government is needed to achieve the 10/20 goal because of the significant presence of the federal government in the WRAP region. Actions that states and tribes should consider supporting include, but are not limited to, funding for research, development and commercial demonstration of near competitive renewable technologies, a national renewable portfolio standard, extension of the existing federal production tax credit (FPT) for wind and biomass through 2015 and broadening the credit to include geothermal, development of other tax incentives, and mandatory federal agency renewable energy purchase requirements.

Additional Renewable Energy Policies Specifically for Tribes

When appropriate, tribes may wish to implement some or all of the renewable energy recommendations presented above. Due to the diversity of the tribes and their unique circumstances, the Forum recommends tribes consider the following additional recommendations. Tribes may best implement some of these recommendations individually, while others may be more appropriate as collaborative efforts with other tribes, states, or the federal government.

1. Develop a tribal energy policy

A formal energy policy statement that incorporates specific provisions for renewable electric energy is an important beginning to a larger set of strategies. A program to stimulate renewable energy generation will be most effective as part of a more comprehensive energy policy developed by and adapted to each tribe.

²¹ Western governors support the renewable energy certificates as a market based strategy to support the development of renewable energy in the Western Interconnect. See WGA Policy Resolution 02-26, section (B)(4)(c), pg. 4-5.

2. Develop renewable energy resources

Virtually every tribe in the WRAP region enjoys an abundance of renewable energy resources. Tribes with an established tribal electric utility are already well positioned to expand the role of that utility to develop viable sources of renewable energy. The AP2 Forum encourages tribal utilities to consider exploring these opportunities. Other tribal governments that lack the infrastructure of an existing utility might consider establishing such an enterprise.

3. Initiate energy training and education programs

The Forum recommends that all consumers have the opportunity to select the purchase of energy supplies from renewable sources. Tribal implementation of this recommendation may include consumer education programs addressing purchasing options and their associated environmental impacts.

4. Create an Economic Development Corporation

Tribes that choose to pursue a renewable energy enterprise may consider setting up a tribal Economic Development Corporation (EDC). Tribes with an EDC or comparable entity already in place may utilize it to advance the opportunities for entrepreneurial energy development. The somewhat autonomous role of an EDC has been shown to be useful when pursuing a long-term economic development initiative such as required for most energy projects.

5. Purchase electricity generated by renewable sources

Tribal governments could demonstrate leadership in renewable energy advocacy through the purchase of electricity from renewable energy suppliers as part of their tribal energy policy.

6. Expedite the permitting process for renewable energy projects

Tribal governments could streamline the permitting process for renewable energy projects located within their jurisdiction. Such a process will encourage rather than discourage innovative energy supply and distribution enterprises.

7. Multi-party renewable energy actions for on-reservation programs

- **Renewable energy programs at federal facilities** – *There are many federal facilities on tribal lands. Tribal governments could consider requiring that such federal facilities comply with a tribal energy policy that stipulates the purchase of electricity from a renewable energy supplier, including the tribal utility where applicable.*
- **Federal financing of authorized renewable energy assistance** – *Several federal statutes authorize funding for energy conservation and renewable energy incentives*

on tribal lands. Most notable is the Energy Policy Act of 1992 and its amendments. Tribal leaders could formally request adequate appropriations from the U.S. Congress and appropriate agencies to implement the energy conservation and renewable energy development provisions of these laws. This should include funding of training programs for tribal energy professionals related to renewable energy and energy efficiency.

- **Federal project grants and subsidies** – *One federal mechanism to encourage private sector development and use of renewable energy is tax credits. Because this mechanism is of little use to most tribes, tribes may request equivalent federal financial subsidies for tribal renewable energy projects (for example, a tribal energy block grant).*
- **Utilize tribal SO₂ and renewable energy emissions allowances** – *Referring to the “cap-and-trade” program mentioned earlier, the Forum recommends that tribes consider seeking allowances under this program to encourage renewable energy generation on tribal lands through both the tribal set-aside allocation and the renewable energy set aside allocation.*

8. Tribal leadership in renewable energy activities beyond tribal lands

- **Develop a Tribal Implementation Plan** – *Consider developing a Tribal Implementation Plan under the provisions of the Regional Haze Rule and the Tribal Authority Rule that commits the tribe to expanding its use of renewable energy in the generation and use of electricity.*
- **Develop inter-tribal energy collaborations** – *Some renewable energy development opportunities require resources beyond those available to small tribal populations and lands. The Forum recommends that small tribes consider expanding existing intertribal relationships and forging new ones where renewable energy development projects exceed the capacity of an individual tribal government.*
- **Secure tribal authority over non-Indian lands within reservation boundaries** – *For many tribes an effective energy policy, including full development of renewable energy resources, will depend on tribal authority over all lands within reservation boundaries, which can include non-Indian lands. The Forum recommends that tribes, federal agencies, and states, as appropriate, enter into agreements that recognize such tribal authority for the purpose of development and implementation of renewable energy policies and practices.*
- **Encourage creating a federal renewable portfolio standard** – *Tribal governments could support a national renewable portfolio standard.*
- **Expand federal government’s “Buy Indian” policy** – *The “Buy Indian” policy is advantageous to suppliers of selected products and services that are purchased by specific federal agencies. The Forum recommends 1) that this policy be expanded to*

include the purchase of electricity generated from renewable sources on tribal lands, and 2) that the participating agencies be expanded to include all relevant federal energy procurement.

- **Expand the federal government’s program for procurement of green energy** – *Tribes may consider requesting that the Federal government encourage Power Marketing Agencies to obtain electricity generated from renewable resources on tribal lands, combined with the Federal government programs in Executive Order 13123 for the Federal Government’s procurement of green energy. A portion of the electricity generated from these renewable resources could be made available for tribal use, similar to hydropower electricity made available from the Western Area Power Administration.*
- **Encourage federal tax credits for renewable generation** – *As discussed previously, the Forum recommends that tribes consider engaging in the preferential procurement of electricity from suppliers of renewable energy. Concurrently, private sector suppliers of renewable energy, in response to these policies, should be awarded appropriate federal tax credits. This practice will stimulate short-term competitive pricing while limiting financial penalties to both purchasers and providers.*
- **Create partnerships with Independent Power Producers** – *Tribal governments seeking to develop renewable resources may find it desirable to collaborate with an Independent Power Producer to expedite resource development and to limit tribal financial exposure.*
- **Explore state-tribal agreements for renewable energy projects on tribal lands** – *Some tribes may want to explore with states the possibility of a state-tribal agreement for renewable energy projects on tribal lands as part of a state’s strategy to meet its own 10/20 goal for renewable energy.*

Energy Efficiency Policies for States and Tribes

Section 309(d)(8)(iii) of the regional haze rule requires SIPs and TIPs to provide for “Programs to preserve and expand energy conservation efforts.” The AP2 Forum recommends states and tribes in the Transport Region consider the following policies and programs as strategies they could adopt as part of their SIPs and TIPs to improve the efficiency of energy use and increase the adoption of energy efficient technologies and practices in the economies of their respective jurisdictions

1. Adopt policies that provide ratepayer funding to support cost-effective utility and/or State sponsored demand-side energy efficiency programs.

Increasing the penetration of energy efficiency and conservation in the region can best be accomplished through state policies that provide funding to utility or State sponsored demand side energy efficiency programs supported by ratepayers, and whose costs are

included in rates or appear separately on customer bills as a “tariff rider” or a systems benefits charge.

2. Develop tax incentives to promote investments in energy efficiency and conservation by residential consumers and businesses.

Tax incentives that should be considered by states and tribes, include, but should not be limited to, income tax credits, and sales tax exemptions for investments in high efficiency appliances, equipment, designs and services.

3. Support minimum efficiency standards for appliances, equipment, and buildings.

Minimum energy efficiency standards can be very effective strategies for transforming the region’s economy to be more energy efficient. While states are free to develop energy standards for buildings, they are preempted by federal law from developing state standards for equipment covered by the federal appliance standards program, unless they apply to and receive a waiver from the U.S. Department of Energy. The increasing prevalence of electronic devices and expanding digital economy, coupled with the West’s hot dry climate that causes a substantial peak in summer demand, provides an important opportunity for the region to develop “regional” efficiency standards for electronic devices, air conditioning and other appliances and equipment that impact summer peak.

4. Implement utility rate reforms that send accurate price signals to consumers.

Implementation of utility rates structures such as real-time, time of use, inclined block, and other pricing approaches more effectively communicate the cost of electricity (and gas) supply to consumers and provide market-based price incentives to reduce electricity consumption.

5. Participate in regional market transformation programs to increase access and availability of energy efficient equipment, appliances and practices in the market place.

Market transformation programs are designed to bring about lasting change in consumer behavior and increase access and availability of energy efficient equipment, appliances and practices in the market place. States and tribes in the Transport Region can effect lasting change by participating in regional market transformation programs similar in scope to the successful horizontal axis washing machine program promoted in the Pacific Northwest.

6. Governmental “Lead-By-Example” Energy Efficiency Programs.

The public sector can create “market pull” for energy efficient products and services in states and the region by adopting policies that improve energy efficiency of public buildings and support energy efficient management practices and procurement. Specifically, states should develop a comprehensive public buildings efficiency plan, including mandatory efficiency standards for state and municipal new construction;

public building retrofit programs employing performance contracting as appropriate; life-cycle cost procurement standards for energy-using equipment and systems; and train building operation and maintenance staff in retro-commissioning to ensure public buildings energy systems are operated to maximize performance and efficient use of energy.

7. Modify environmental regulatory approaches to create opportunities for energy efficiency improvements that result in measurable, verifiable and permanent emissions reductions to be counted as pollution control measures for criteria pollutant SIPs and TIPS.

State and tribal air quality officials can investigate how to modify their regulatory approach to create opportunities for energy efficiency improvements to be counted as pollution control measures that provide “measurable, verifiable, and permanent” emissions reductions within the regulatory framework provided by the CAAA for criteria pollutant SIPs.²²

Additional Energy Efficiency Policies Specifically for Tribes

Tribes may wish to implement some or all of the energy efficiency recommendations for states as presented above. The Forum recognizes the unique and special circumstances of many tribes, and submits the following additional recommendations for tribes to consider. Some of these recommendations may best be implemented by individual tribes, while others are suitable for collaborations with other tribes, states, or the federal government.

1. Development of an energy plan

For tribes that do not have one, the Forum recommends that tribes consider developing an energy plan or policy. Establishing an energy plan is the first necessary step in gaining control over the energy use and costs incurred by a tribe. The plan can enhance tribal sovereignty and energy independence.

2. Tribal energy manager

For tribes without an energy manager, the Forum recommends such a position be established. An energy manager within an energy authority can direct and manage energy programs including those related to energy efficiency. The energy manager can also recommend policies for consideration by the tribal council. For tribes without an energy authority, an energy manager position can be created elsewhere within the tribal government.

3. Tribal energy authority

²² Western Governor’s Policy Resolution 02-26, section (4)(g)(viii) page 7, calls for western states and tribes to “develop mechanisms to encourage energy efficiency measures in air quality planning documents.”

Tribes without an energy (utility) authority might consider establishing such an entity (either individually or in collaboration with other tribes). Perhaps the most important recommendation to tribes concerning energy efficiency is that of designing a tribal energy plan that is managed by an energy manager within a tribal energy authority. A tribal energy authority also has the effect of improving a tribe's sovereignty and promises improved self-determination.

4. Establish energy-conserving building codes and incorporate them into new construction and building renovations

As new buildings are constructed and older buildings are renovated, there is a great opportunity for energy savings by employing energy-efficiency methods. Tribes can adopt energy-efficient building codes such as the International Energy Conservation Code. It is also recommended that energy efficiency be integrated into housing plans, and that life cycle cost methods be used when evaluating the energy systems within buildings.

5. Electrification expansions

With new electrification comes the opportunity to implement energy efficiency. New customers in rural areas may spend a large fraction of their monthly income on energy, in some cases as much as 20 percent. In these cases it is critical that cost-effective, energy-efficient appliances and building materials be employed.

6. Education programs

Education can make the difference between an effective, successful, comprehensive energy management program and a fragmented program with little support. Educating tribal members, leaders, facility managers, staff members, and contractors about the benefits of monitoring and conserving energy will build support for an energy program and will lead to significant savings in energy costs.

7. Tribal Implementation Plan

A Tribal Implementation Plan under the provisions of the Regional Haze Rule and the Tribal Authority Rule would commit the tribe to developing an energy plan and to employing energy efficiency as a method to reduce electricity consumption. Such a plan would be a good step toward tribal energy conservation.

8. Intertribal collaborations

Many tribes may lack the resources to establish their own energy authority or even to hire their own energy manager. In these cases it may be beneficial to initiate partnerships with other tribes for that purpose. Beyond this, tribes could work collaboratively to encourage the federal government, through its trust responsibility, to fund energy-efficiency programs (including education programs and rebate programs) and to provide funding to tribes for energy management.

9. Federal facilities

There are numerous federal facilities on tribal lands, and these facilities consume an appreciable amount of electrical energy. Tribes could adopt energy conservation policies that require federal facilities on tribal lands to meet modern energy-efficiency codes such as the International Energy Conservation Code.

10. Federally sponsored programs

There are several federally sponsored programs in which tribes may participate to implement energy efficiency. These programs include the Weatherization Assistance Programs (WAP) and the DOE Rebuild America Program. The forum recommends that tribes, as part of their overall energy plan, participate in existing federally sponsored programs related to energy efficiency. Tribes may also consider requesting funding for efficiency programs from the federal government via several existing statutes. This could include funding of training programs for tribal energy professionals related to renewable energy and energy efficiency.

11. Tribal leadership beyond tribal lands

The mitigation of haze throughout the West will depend upon all users of electricity and other energy forms that impact haze. Thus, tribes may consider supporting demand-side management programs and national energy efficiency policies and standards.

Appendix I

EPA Regional Haze Rule Section 51.309(d)(8) Pollution Prevention

The plan must provide for:

- (i) An initial summary of all pollution prevention programs currently in place, an inventory of all renewable energy generation capacity and production in use, or planned as of the year 2002 (expressed in megawatts and megawatt-hours), the total energy generation capacity and production for the State, the percent of the total that is renewable energy, and the State's anticipated contribution toward the renewable energy goals for 2005 and 2015, as provided in §51.309(d)(8)(vi).
- (ii) Programs to provide incentives that reward efforts that go beyond compliance and/or achieve early compliance with air-pollution related requirements.
- (iii) Programs to preserve and expand energy conservation efforts.
- (iv) The identification of specific areas where renewable energy has the potential to supply power where it is now lacking and where renewable energy is most cost-effective.
- (v) Projections of the short- and long-term emissions reductions, visibility improvements, cost savings, and secondary benefits associated with the renewable energy goals, energy efficiency and pollution prevention activities.
- (vi) A description of the programs relied on to achieve the State's contribution toward the Commission's goal that renewable energy will comprise 10 percent of the regional power needs by 2005 and 20 percent by 2015, and a demonstration of the progress toward achievement of the renewable energy goals in the years 2003, 2008, 2013, and 2018. This description must include documentation of the potential for renewable energy resources, the percentage of renewable energy associated with new power generation projects implemented or planned, and the renewable energy generation capacity and production in use and planned in the State. To the extent that it is not feasible for a State to meet its contribution to the regional renewable energy goals, the State must identify in the progress reports the measures implemented to achieve its contribution and explain why meeting the State's contribution was not feasible.

Appendix II

Membership of the Air Pollution Prevention Forum

Robert “Hap” Boyd, GE Wind, Co-Chair

Jeff Burks, Utah Energy Office, Co-Chair

Bill Becker, U.S. Department of Energy

Trisha Frank, Manzanita Tribe

Rich Ferguson, Center for Energy Efficiency and Renewable Technologies

Bob Green, Kennecott

Brian Hedman, Quantec, Inc.

Van Jamison, PowerAir Consulting

Ursula Kramer, Pima County DEQ

John Nielsen, Land and Water Fund of the Rockies

Terry O’Connor, Arch Mineral, Inc.

Stan Price, Northwest Energy Efficiency Coalition

John Savage, Oregon Department of Energy

Rachel Shimshak, Renewable Northwest Project

Rich Sperberg, Onsite Sycom Energy Corp

Julie Simpson, Nez Perce Tribe

Barrett Stambler, Pacific Power Marketing

Dick Watson, Northwest Power Planning Council

Chris Wentz, New Mexico Energy Office

Alan Davis, Montana Department of Environmental Quality

Cynthia Praul, California Energy Commission

Steve Ellenbecker, Wyoming PUC

Amanda Ormond, Arizona Energy Office/Ormond Group

Tom Hines, Arizona Public Service

Virinder Singh, PacifiCorp

Appendix III

Meetings of the Air Pollution Prevention Forum

- 1) August 12-13, 1999, Denver, Colorado
First meeting of the Forum
Overview of: regional haze rule, the charge to the forum, and the WRAP
- 2) November 8-9, 1999, Scottsdale, Arizona
Presentations from panel of experts on renewable energy
Adopted working definition of renewable resources
- 3) January 31 – February 1, 2000, San Diego, California
Reviewed first draft of Sections A and B of Renewables Report
Discussion on what should be covered in sections C and D
- 4) March 13-14, 2000, Portland, Oregon
Reviewed first draft of full report
Made changes and modifications, set deadline for comments
- 5) May 31 – June 1, 2000, San Francisco
Efficiency scoping
Examined changes in the demographics and economy in the WRAP region
including growing demand for electricity and internet issue
- 6) October 2, 2000, Denver, Colorado
“Brainstorming” meeting on modeling and energy efficiency
- 7) December 5-6, 2000, Portland, Oregon
Developed outline for Energy Efficiency Report
Assignments for sections of the report
Created quantification work group to oversee modeling
- 8) March 15-16, 2001, Sacramento, California
Reviewed write-ups for best energy efficiency practices
Discussed SIP guidebook
Presentation on tribal renewable and energy efficiency reports
- 9) November 5-6, 2001, Denver, Colorado
Quantitative work group meeting
SIP guidebook work group
- 10) February 19-20, 2002, Denver, Colorado
Review modeling results
Discuss report to be delivered to WRAP
- 11) June 5-6, 2002, Portland, Oregon
Discuss final modeling results
Comments on draft final report

Appendix IV

Reports of the Air Pollution Prevention Forum

Final Report on Energy Efficiency and Renewable Energy, Prepared by the Air Pollution Prevention Forum for the Western Regional Air Partnership, January 2002.

Economic Assessment of Implementing the 10/20 Goals and Energy Efficiency Recommendations, Draft Report, prepared by ICF Consulting for the Air Pollution Prevention Forum, October 2002

Reducing Energy Consumption and Improving Air Quality through Energy Efficiency in Indian Country: Recommendations to Tribal Leaders from the Western Regional Air Partnership, November 2002

Recommendations for the Western Regional Air Partnership's Air Pollution Prevention Forum to Increase the Generation of Electricity from Renewable Resources on Native American Lands, Draft Report, April 2002

Recommendations of the Air Pollution Prevention Forum to Increase Energy Efficiency and Conservation in the GCVTC States, (forthcoming)

Draft Background Report: Identification and Analysis of "Best" Energy Efficiency Measures and Practices for the West, prepared by the Air Pollution Prevention Forum, September 1, 2001.

Discussion Paper: Scoping the Energy Efficiency Work of the Air Pollution Prevention Forum, prepared for the Air Pollution Prevention Forum by WIEB staff, September 30, 2000.

Recommendations of Air Pollution Prevention Forum To Increase the Generation of Electricity from Renewable Resources, June 30, 2000

A Background White Paper: Increasing the Use of Renewable Energy in the WRAP Region, Western Interstate Energy Board, September 1998.

Appendix V

AP2 Forum’s Selected Energy Efficiency “Best Practices”²³

Interior West -- Residential Sector

Major Option	Types of Measures
Efficient cooling systems	Evaporative cooling – installation, retention and renewal of systems
Appliance recycling	Removal of older refrigerators and freezers
Efficient lighting	Mix of compact fluorescent lamp based measures
Appliance standards **	Clothes washers – mix of Energy Star vertical axis machines and horizontal axis machines
	Appliance standby loss – reduce loss to one watt per electronic device
Building thermal performance	Weatherization – existing buildings

Interior West -- Commercial Sector

Major Option	Types of Measures
Efficient lighting	Mix of better technologies
Efficient refrigeration	Mix of better technologies
Efficient cooling systems	Cooling efficiency – mix of better systems
	Indirect/direct evaporative cooling
Efficient space heating system	Ground source heat pump
	Fuel switching from electric to gas
Multi-measure strategies for existing building stock	Miscellaneous devices (LED traffic lights and signs, clothes washers, computers, monitors and other office electronics)
Retro-commissioning	Operations and maintenance of existing building stock
Water heating	Mix of efficiency and fuel switching from electric
Transformers	Efficiency improvements

Interior West -- Industrial Sector

Major Option	Types of Measures
Transformers	Efficiency improvements
Motors	Premium motors (including replace rather than rewind) and motor downsizing
Motor drive systems	System upgrades of fans, air compressors, pumps

Oregon / w. Idaho -- Residential Sector

Major Option	Types of Measures
Efficient cooling systems	Evaporative cooling – installation, retention and renewal of systems
Appliance recycling	Removal of older refrigerators or freezers
Efficient lighting	Mix of compact fluorescent lamp-based systems
Appliance standards**	Clothes washers – mix of energy star vertical axis machines and horizontal axis machines
	Appliance standby loss – reduce loss to 1 watt per electronic device

²³ Demand Side Management Type Programs Except where Indicated

Oregon / w. Idaho -- Commercial Sector

Major Option	Types of Measures
Efficient lighting	Mix of better technologies
Efficient refrigeration	Mix of better technologies
Efficient cooling systems	Cooling efficiency – 20 ton package units
Efficient space heating system	Ground source heat pump
	Fuel switching from electric to gas
Multi-measure strategies for existing building stock	Miscellaneous devices (LED traffic lights and signs, clothes washers, computers, monitors and other office electronics)
Retro-commissioning	Operations and maintenance of existing building stock
Water heating	Mix of efficiency and fuel switching from electric
Transformers	Efficiency improvements

Oregon / w. Idaho -- Industrial Sector

Major Option	Types of measures
Transformers	Efficiency improvements
Motors	Premium motors (including replace rather than rewind) and motor downsizing
Motor drive systems	System upgrades of fans, air compressors, pumps
Aluminum process improvements	Retrofit options to improve efficiency of cells (reduce anode-cathode spacing) and reduce heat loss

California/Las Vegas -- All Sectors

Major Option	Types of measures
System benefit fund	Demand-side management for lighting, appliances, air conditioning, motor systems, other
Equipment efficiency standards**	Distribution transformers, commercial refrigeration, exit signs and traffic lights, torchieres, commercial unit heaters, air conditioners, ice makers, residential refrigerators, dishwashers, standby loss reduction
Tax incentives for efficiency**	Clothes washers, refrigerators, air conditioning, gas heat pumps, heat pump water heating, furnaces, efficient new construction (residential and commercial)

Appendix VI

Cost Of Saved Energy Results Sorted By Cost Per kWh:

Measure	Discounted TRC Cost (\$1000)	MWh Savings Through 2026	Real Levelized Cost of Saved Energy (\$/kWh)	Percent of Total Cummul. Package Savings	Cummulative MWh Savings through 2026	Percent of Total Cummul. Package Costs	Cummulative Discounted TRC Cost
Residential Evaporative Cooling	\$ (111,017)	5,007,946	\$ (0.0489)	1.7%	5,007,946	-4.4%	\$ (111,017)
Residential IDDEC Cooling	\$ (15,554)	2,305,001	\$ (0.0151)	2.5%	7,312,947	-5.0%	\$ (126,571)
Comm/Instit. Space Heat Std. Gas Boiler	\$ (458)	465,659	\$ (0.0022)	2.6%	7,778,606	-5.0%	\$ (127,029)
Comm/Instit. Space Heat High Eff. Gas Boiler	\$ (565)	962,327	\$ (0.0013)	3.0%	8,740,933	-5.1%	\$ (127,594)
Comm/Instit. Water Heat Gas Boiler Fuel Switch	\$ (1,145)	3,325,686	\$ (0.0008)	4.1%	12,066,619	-5.1%	\$ (128,739)
Comm/Instit. Water Heater Fuel Switching	\$ (505)	3,484,222	\$ (0.0003)	5.3%	15,550,841	-5.1%	\$ (129,244)
Comm/Instit. Space Heat Gas Unit Heater	\$ 422	803,719	\$ 0.0011	5.6%	16,354,560	-5.1%	\$ (128,821)
Industrial Fan System Measures	\$ 7,041	2,473,382	\$ 0.0062	6.4%	18,827,942	-4.8%	\$ (121,780)
Industrial Air Compressor System Measures	\$ 23,789	8,347,664	\$ 0.0062	9.2%	27,175,606	-3.9%	\$ (97,991)
Residential CFL Torchiere	\$ 62,045	21,232,172	\$ 0.0067	16.5%	48,407,778	-1.4%	\$ (35,946)
Industrial Motor Downsizing	\$ 3,416	865,684	\$ 0.0086	16.8%	49,273,462	-1.3%	\$ (32,531)
Comm/Instit. Refrigeration, Low-cost Measures	\$ 29,224	6,446,877	\$ 0.0098	19.0%	55,720,339	-0.1%	\$ (3,307)
Residential CFL Bulbs	\$ 49,797	8,999,064	\$ 0.0099	22.0%	64,719,403	1.8%	\$ 46,490
Comm/Instit. Water Heating, Heat Pump Unit	\$ 4,169	833,390	\$ 0.0106	22.3%	65,552,793	2.0%	\$ 50,659
Comm/Instit. LED Exit Signs	\$ 10,551	2,212,350	\$ 0.0109	23.1%	67,765,143	2.4%	\$ 61,210
Comm/Instit. Lighting, Efficient Fluorescent	\$ 120,842	22,406,144	\$ 0.0117	30.7%	90,171,287	7.2%	\$ 182,052
Residential CFL Fixtures--Indoor	\$ 24,370	4,477,776	\$ 0.0124	32.2%	94,649,063	8.2%	\$ 206,422
Industrial Premium Motors	\$ 32,469	4,640,110	\$ 0.0137	33.8%	99,289,173	9.5%	\$ 238,891
Residential Appl. Standby Loss Red.--Mandatory	\$ 186,808	31,092,432	\$ 0.0138	44.4%	130,381,605	16.9%	\$ 425,699
Residential Appl. Standby Loss Red.--Incentive	\$ 19,091	2,018,494	\$ 0.0148	45.1%	132,400,099	17.7%	\$ 444,789
Comm/Instit/Industrial Transformers (C/I)	\$ 14,260	1,903,312	\$ 0.0172	45.7%	134,303,411	18.2%	\$ 459,050
Industrial Pump System Measures	\$ 130,051	15,459,078	\$ 0.0183	51.0%	149,762,489	23.4%	\$ 589,101
Comm/Instit. Retrocommissioning	\$ 35,765	4,203,554	\$ 0.0186	52.4%	153,966,043	24.8%	\$ 624,866
Comm/Instit. Refrigeration, High-cost Measures	\$ 30,151	3,487,028	\$ 0.0188	53.6%	157,453,071	26.0%	\$ 655,018
Residential Appliance Recycling	\$ 40,598	2,593,122	\$ 0.0204	54.5%	160,046,193	27.6%	\$ 695,616
Comm/Instit/Industrial Transformers (Industrial)	\$ 2,150	223,428	\$ 0.0220	54.6%	160,269,621	27.7%	\$ 697,766
Residential CFL Fixtures--Outdoor	\$ 5,562	515,112	\$ 0.0228	54.7%	160,784,733	27.9%	\$ 703,328
Comm/Instit. AC Impr., 20-ton Package Units	\$ 296,085	28,046,667	\$ 0.0236	64.3%	188,831,400	39.7%	\$ 999,414
Comm/Instit. Ground-source HP, 3000 hrs/yr	\$ 30,955	2,745,355	\$ 0.0249	65.2%	191,576,755	40.9%	\$ 1,030,369
Comm/Instit. Lighting, Advanced Measures	\$ 795,012	64,744,193	\$ 0.0266	87.2%	256,320,948	72.4%	\$ 1,825,380
Comm/Instit. AC Impr., Residential-type CAC	\$ 57,876	4,042,410	\$ 0.0307	88.6%	260,363,358	74.7%	\$ 1,883,257
Comm/Instit. LED Traffic Signals	\$ 13,697	931,600	\$ 0.0322	88.9%	261,294,958	75.3%	\$ 1,896,954
Comm/Instit. Efficient Clothes Washers	\$ 15,511	914,946	\$ 0.0335	89.2%	262,209,904	75.9%	\$ 1,912,465
Comm/Instit. AC Impr., Small Heat Pump	\$ 93,753	5,867,466	\$ 0.0343	91.2%	268,077,370	79.6%	\$ 2,006,218
Comm/Instit. Ground-source HP, 2000 hrs/yr	\$ 30,955	1,830,237	\$ 0.0373	91.9%	269,907,607	80.9%	\$ 2,037,173
Comm/Instit. AC Impr., Res. Room-type AC	\$ 66,814	3,738,494	\$ 0.0383	93.1%	273,646,101	83.5%	\$ 2,103,987
Residential Weatherization	\$ 109,264	5,824,614	\$ 0.0402	95.1%	279,470,715	87.8%	\$ 2,213,251
Comm/Instit. Gas AC, w/ heat recov. (EWH)	\$ 53,763	2,896,170	\$ 0.0420	96.1%	282,366,885	90.0%	\$ 2,267,014
Comm/Instit. Cooling Tower VSD--Desert Climate	\$ 6,408	336,718	\$ 0.0431	96.2%	282,703,603	90.2%	\$ 2,273,422
Industrial Prem. Motor vs. Rewind	\$ 10,383	436,716	\$ 0.0464	96.4%	283,140,319	90.6%	\$ 2,283,805
Residential SEHA Clothes Washer	\$ 66,392	3,052,546	\$ 0.0476	97.4%	286,192,865	93.3%	\$ 2,350,197
Residential Energy Star Clothes Washer	\$ 57,518	2,527,540	\$ 0.0498	98.3%	288,720,405	95.6%	\$ 2,407,715
Comm/Instit. AC, IDDEC, 150-ton Equiv. Units	\$ 111,958	5,072,414	\$ 0.0501	100.0%	293,792,819	100.0%	\$ 2,519,673
ALL MEASURES/ALL PROGRAMS	\$ 2,519,673	293,792,819	\$ 0.0186				