Appendix F

Control Option 9

Control Option: Alternative/Renewable Energy and Energy Efficiency Requirements

Description:
Power sector NOx (and other pollutant) emissions growth can be offset by utilization of renewable energy resources and energy efficiency measures. The Air Pollution Prevention Forum (AP2) of the Western Regional Air Partnership (WRAP), in which Colorado is a participating State, developed renewable energy and energy efficiency policy and program recommendations that would reduce emissions and electricity production costs in the western region of the U.S. These recommendations followed on the findings of the Grand Canyon Visibility Transport Commission’s (GCVTC), and the WRAP has adopted policy statements in support of the GCVTC’s renewable energy goal of 10% generation of electric power from renewable resources by 2005 and 20% by 2015 (known as the 10/20 goal) along with increasing the use of energy efficiency technologies in the region.

The AP2 Forum adopted a definition of renewable energy 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.”

The GCVTC’s support for increasing energy efficiency technologies included 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 standards. The GCVTC also supported the construction of energy efficient buildings, both residential and commercial, and proposed the reinstatement of incentives for building energy efficient structures. The GCVTC also suggested the continuation of demand-side management programs. The GCVTC recommended 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 the distribution level.

Recommendations and reports from the WRAP’s AP2 Forum are available to states and tribes for use in developing programs in their areas, including regional haze SIPs for reducing future impacts of NOx emissions growth related to power generation. Five states in the WRAP region that adopted section 309 regional haze SIPs already 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 towards meeting the GCVTC’s regional goal for renewable energy. Colorado’s neighboring states of Wyoming, New Mexico, Utah, and Arizona are all section 309 SIP states. Colorado could adopt similar measures as part of their regional haze SIP under section 308.

Benefits of Alternative/Renewable Energy and Efficiency Requirements:

Nitrogen Deposition Reduction Plan-Draft 1
Assessments conducted for the AP2 Forum by ICF Consulting reported that energy efficiency combined with renewable energy measures could reduce power demand in the West by 8% by 2018; lowers costs for meeting air quality regulations; offers savings in energy and costs of new fossil-fired power plants; provides for increases in affordable and reliable electricity; offers economic development opportunities for rural areas and tribal lands; and creates opportunities for emissions reductions.

The AP2 Forum found that providing financial incentives to both producers and consumers would have the best chance of increasing the West’s energy generation through renewable energy sources. Together with energy efficiency measures, increasing renewable generation by 20% by 2015, consistent with the GCVTC’s goal, could reduce electricity production costs by an average of $700 million per year as a conservative estimate.

A breakdown of the regional economic impact by state indicates that Colorado would benefit in all 3 categories using the 3 different policy scenarios considered in the assessment. These include annual average changes in employment, gross regional product, and real disposable income considering policies for the renewable energy 10/20 goal only, the energy efficiency measures only, and using the combination of renewable energy with energy efficiency. The annual levelized economic benefits for Colorado in 2001 dollars ranged from $258 million in gross regional product to $288 million in real disposable income based on the combination policy scenario above.

The assessment also indicates that by 2018 the emissions reduction in NOx from implementing the 10/20 goals and energy efficiency recommendations will be between 8,000 to 14,000 tone annually, assuming that such measures displace new gas-fired combined cycle electric generation which would have relatively low NOx emission rates.

In addition, estimated emission reductions in CO2 are projected to be between 40 million and 55 million metric tons, providing a substantial hedge against future CO2 growth.

Costs/Tradeoffs Associated with Alternative/Renewable Energy and Efficiency Requirements:

The economic assessment report prepared by ICF for WRAP’s AP2 Forum summarizes the production cost impacts of the policy scenarios above to project a net cost savings, with the 10/20 goal resulting in production cost impacts of 2 to 5% while energy efficiency measures would achieve production cost savings of 5 to 7%. Further, because the 10/20 goals and energy efficiency measures shift production expenditures away from fuel and towards capital, these policy objectives offer some security against fuel price volatility and fuel supply stocks.

Description of How to Implement:

The AP2 Forum of the Western Regional Air Partnership (WRAP) developed specific policy and program recommendations for promoting state and tribal adoption of renewable energy and energy efficiency measures, primarily for the purpose of inclusion into state regional haze implementation plans. WRAP’s policy document on these pollution prevention strategies is broadly written to allow states to tailor policies and programs to the unique circumstances existing in their jurisdiction.

Feasibility of Alternative/Renewable Energy and Energy Efficiency Requirements:

The policy, individual, and corporate options included in the AP2 Forum’s recommendations for this type of pollution prevention strategy appear to be feasible for the State of Colorado. Many of the strategy elements are already being implemented, but perhaps without a comprehensive,
coordinated State policy or program in place. A pollution prevention program function exists within the CDPHE but is still in its infancy.

Background Data and Assumptions Used:


Uncertainty Associated with Alternative/Renewable Energy and Energy Efficiency Requirements:

The uncertainty associated with the ICF assessment on renewable energy technology cost and performance, and modeling and analytical results estimating emissions reductions, cost, and secondary regional economic impacts is not quantified. Technology cost and performance assumptions were key drivers of the analysis and were based on a variety of different sources, including existing literature, data developed by the Energy Information Administration, data developed by the National Renewable Energy Laboratory, and stakeholder input from the AP2 Forum.

Given that the magnitude of predicted changes were relatively small for analysis of secondary regional economic impacts and many of the costs projected using the Integrated Policy Model were small relative to the total production costs of the sectors modeled, it is difficult to interpret the changes with precision. ICF suggests that using the analysis of broader trends rather than specific numbers would provide a more meaningful description of the impacts.