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May 18, 2009

Docket Control
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

RE: Arizona Public Service Company's Climate Management Plan
Docket No. E-01345A-05-0816, E-01345A-05-0826, and E-01345A-05-0827

Pursuant to Commission Decision No. 69663, Arizona Public Service Company (APS) was ordered as follows:

> "Arizona Public Service shall prepare and file with Docket Control as a compliance item in this docket, a climate management plan, carbon emission reduction study, and commitment and action plan with public input and the opportunity for Commission review."

Attached please find APS's Climate Management Plan.[1] APS has been focused on the business, political and environmental implications of climate change for more than a decade. APS's commitment to addressing the issue of Climate Change is most recently reflected in the recently published APS's Resource Plan Report filed with the Arizona Corporation Commission on January 29, 2009.[2]

APS worked with various stakeholders to develop the Resource Plan Report which included a discussion on the impacts of climate change on APS's operations and resource decisions. A draft of this Report was also reviewed by the Ceres, a non-profit organization that engages directly with companies on environmental and social issues. APS will continue to engage stakeholders on this Report and strategies to address the issue. APS will continue to work on advanced technologies that support APS's efforts to reduce its environmental footprint. Much of this work is discussed in the Report including APS's power plant emissions to algae technology that last week was awarded a $70.6 million Department of Energy grant to construct a working model at our Cholla Power Plant.

APS believes climate change is a real world problem that must be addressed, recognizing that some aspects of climate change policy, particularly in the legislative arena, continue to have uncertainty. This

[1] This report was prepared independent from provisions in the proposed settlement agreement in APS's pending rate case (Docket No. E-01345A-08-0172)
[2] Docket No. E-01345A-09-0037.

report reflects a point in time as it relates to potential federal, State and local action on climate change. APS is closely monitoring climate change legislation and regulation, including the implications of the American Clean Energy and Security Act of 2009 (HR 2454) which is currently moving thru the federal legislative process.

If you have any questions regarding this report please call Jeff Johnson at 602-250-2661.

Leland R. Snook

LS/dt

CC: Brian Bozzo
Ernest Johnson
Terri Ford
Barbara Keene

Climate Change Management Plan

Arizona Public Service Company
400 North 5th Street
Phoenix, Arizona

May 2009

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Forward-Looking Statements

Cautionary Statements Regarding Forward-Looking Information:

This document may contain forward-looking statements within the meaning of the safe harbor of the Private Securities Litigation Reform Act of 1995. These statements are based on current expectations, and neither Pinnacle West Capital Corporation ("PNW") nor Arizona Public Service Company ("APS" or "the Company") assumes any obligation to update these statements or make any further statements on any of these issues, except as required by applicable law. These forward-looking statements are often identified by words such as "estimate," "predict," "hope," "may," "believe," "anticipate," "plan," "expect," "require," "intend," "assume" and similar words. Because actual results may differ materially from expectations, we caution readers not to place undue reliance on these statements. A number of factors could cause future results to differ materially from historical results, or from results or outcomes currently expected or sought by Pinnacle West or APS. These factors include, but are not limited to: state and federal regulatory and legislative decisions and actions, including by the FERC; the ongoing restructuring of the electric industry, including the introduction of retail electric competition in Arizona and decisions impacting wholesale competition; the outcome of regulatory, legislative and judicial proceedings relating to the restructuring; market prices for electricity and natural gas; power plant performance and outages, including transmission outages and constraints; weather variations affecting local and regional customer energy usage; customer growth and energy usage; regional economic and market conditions, including the results of litigation and other proceedings resulting from the California energy situation, volatile purchased power and fuel costs and the completion of generation and transmission construction in the region, which could affect customer growth and the cost of power supplies; the cost of debt and equity capital and access to capital markets; the uncertainty that current credit ratings will remain in effect for any given period of time; our ability to compete successfully outside traditional regulated markets (including the wholesale market); the performance of our marketing and trading activities due to volatile market liquidity and any deteriorating counterparty credit and the use of derivative contracts in our business (including the interpretation of the subjective and complex accounting rules related to these contracts); changes in accounting principles generally accepted in the United States of America and the interpretation of those principles; the performance of the stock market and the changing interest rate environment; technological developments in the electric industry; the strength of projects undertaken by our non-regulated businesses and the success of efforts to invest and develop new opportunities; and other uncertainties, all of which are difficult to predict and many of which are beyond the control of Pinnacle West and APS.

Foreword

APS has been focused on the business, political and environmental implications of climate change for more than a decade. In 1994, APS was one of the first utilities to sign the Department of Energy ("DOE") Climate Challenge, committing to reduce our greenhouse gas emissions to 1990 levels by 2000. This commitment was challenging because of the increasing energy demands from our growing customer base, but we met our goal.

Our commitment to addressing the issue of Climate Change is most recently reflected in the recently published APS Resource Plan Report ("RPR") filed with the Arizona Corporation Commission ("ACC" or "Commission") on January 29, 2009, in which we articulate a preferred plan that, if approved, will allow APS to satisfy an increase of more than 50 percent in customer energy consumption with effectively no increase in CO_2 emissions in 2025 over the baseline year of 2009. The Company's RPR will allow Arizona to increase its commitment to non-fossil fuel resources and to prevent emissions of 30 million metric tons of carbon dioxide ("CO_2") over the plan timeframe. The RPR and other APS resource plan information is available to view at www.aps.com/resources.

APS's most significant challenge is implementing a cost effective strategy of supply-side and demand-side resources that meet the energy demands of our rapidly growing customer base, at a reasonable and affordable price. This challenge directly impacts our thinking on Climate Change, and our strategies have been both innovative and practical. For example, we met our Climate Challenge goal by obtaining DOE's concurrence of an innovative CO_2 – sulphur dioxide ("SO_2") inter-pollutant trade with Niagara Mohawk. APS had excess SO_2 allowances for its operations and traded them to Niagara Mohawk for CO_2 credits they held as a result of a generation plant closure. Niagara Mohawk retired the SO_2 allowances, and APS was able to use the CO_2 credits as an offset against the emissions associated with meeting increased customer electricity usage. This first of its kind inter-pollutant trade is still a model for developing market mechanisms to meet environmental goals.

From a more practical perspective APS has worked with solar resources for more than two decades seeking cost-effective applications, and increased solar energy is an important component of the future generation resources proposed in the Company's RPR. In the past few years we have executed long-term acquisitions of solar, wind, geothermal and landfill gas resources. We are also working with potential future energy sources like hydrogen and with technologies that have a high potential to help sequester green house gases from fossil generation. Demand side management, energy efficiency and new technologies such as smart meters can have a significant impact on reducing future electric demand growth and these strategies are also significant components of our long range resource planning initiatives.

However, as detailed in our RPR, even when the impacts of our renewable resource and energy efficiency and conservation goals are accounted for, we will have a significant need for new base-load generation due to the projected customer and electricity demand growth in our service territory. While customer and demand growth have slowed in the current economic conditions, APS anticipates renewed strong customer growth after 2010. APS projects that population migration into Arizona and the aging of the population will lead to an average customer growth

rate of 2.5 percent out to 2025. By 2025, APS expects to require about 6,500 megawatts ("MW") of new capacity resources; the majority of which are due to growth in customer peak loads. Additionally, APS projects that its total system energy requirement will grow by almost 17,000 gigawatt hours ("GWh") by 2025. This represents an increase of more than 50 percent over 2009 levels.

To meet this demand, it is imperative for APS to maintain the efficient operations of our existing nuclear and fossil plants. Our ownership position in Palo Verde Nuclear Generating Station avoids emissions of over 9 million tons of CO_2 per year (compared to coal-fired generation) and provides a significant hedge against our exposure to future carbon restrictions. Improved efficiencies at our fossil plants over the past have increased our output at existing plants, with no corresponding increase in emissions. These units are essential to our providing reliable energy to our customers and, as described in this Report, we are working with various carbon capture and sequestration technologies that will be needed to reduce the greenhouse gas ("GHG") emissions from these existing units. But to meet projected growth, strengthen Arizona's fuel diversity, and achieve the GHG emission reductions being suggested in various legislative proposals, we will need to be able to bring new nuclear units or new fossil plants with Carbon Capture and Sequestration ("CCS") on line shortly after 2020 in addition to the renewable resources detailed in the RPR. Since such resource strategies involve long lead times, significant financial investments, resolution of political and regulatory issues and, especially in the case of CCS, further development of technologies, planning and preliminary work must begin now in order to ensure the availability of these resources to meet anticipated demand.

APS supports a national Climate Change program. Our corporate climate change position is detailed in Attachment 1. In addition, we concur with the Edison Electric Institute ("EEI") Global Climate Change Points of Agreement, which are listed in Attachment 2.

We believe that climate change is a real world problem that must be addressed, recognizing that some aspects of climate change policy, particularly in the legislative arena, continue to have uncertainty. Estimates of the degree of restriction, approach, timing and cost vary widely among federal legislative proposals. In the absence of national legislation, individual states, cities and regions are taking action. This is resulting in a "patch-work" of regional, state and local programs and regulations, without coordination with each other or with federal programs. The climate issues associated with greenhouse gas are not limited or defined by political boundaries and, accordingly, neither should the legislated controls and market structures. In contrast to this scattered and disparate activity there must be federal action. Climate change is a long-term problem requiring long-term vision and steadfast effort.

As pointed out in our RPR, the cost of building new infrastructure, including generation resources, increases every year. Over the long-term that will continue to be true, with or without the implementation of GHG emission reduction policies. Implementation of policies to meet the objectives set forth in this Plan will significantly increase the cost and required financial resources to fund new resources. For this reason, state and federal authorities must be cognizant of two critical factors when developing policies designed to achieve meaningful reductions in GHG emissions. First, uncertainty is the enemy of capital investment. Tremendous amounts of new capital are needed to develop and employ the technologies required to reduce carbon emissions. Adequate access to that capital requires that there be rapid determination of the

policies and rules that will govern GHG reduction. The current uncertainties concerning the level of reductions, the mechanisms to achieve the stated goals and the future costs that will be imposed make it extremely difficult to develop the financial planning and national financial infrastructure that will be necessary. Second, while the Company makes every reasonable effort to mitigate increasing costs, there should be no misunderstanding that higher costs will flow to the ultimate consumer. While APS believes those costs represent an investment in our global future, all consumers may not feel as strongly. This will require both the Company and policy makers, at the state and federal level, to educate the public on the cost/benefits of reduction policies. Policymakers will also need to take concomitant steps to put in place the cost recovery mechanisms necessary to finance and pay for the resources necessary to achieve these reductions. This is a difficult discussion to have in the current economic environment, but the reduction policies adopted in the near-term will last well beyond the current economic cycle and need to be considered long-term investments in the future.

APS will work with our various stakeholders to develop appropriate programs that incorporate incentives and market mechanisms to address GHG emissions. In this effort, we must be mindful that any new comprehensive program will likely increase the costs of operations and ultimately increase prices to our customers.

1.0 Introduction and Overview

1.1 Introduction

This Climate Change Management Plan ("CCMP" or "Plan") provides an overview of APS's strategic approach to managing climate change issues and risks. The Plan serves as a guide to our company's climate change issues and strategies for our employees, management, Board of Directors and external stakeholders. It also serves as an assurance to our shareholders and customers that APS is focused on the long-term sustainability of our company and that we will continue to manage environmental risks and economic consequences in a balanced fashion.

APS has a long history of disclosing its emissions of GHGs. In 1994, we reported carbon emissions and climate change activities to the public when we published our first Environmental, Health & Safety Annual Report. In 2004 that report evolved into the Pinnacle West Corporate Responsibility Report as we expanded our disclosure (reports are available at www.pinnaclewest.com/cr). Since 1995 APS has reported its GHG emissions under the Department of Energy's 1605(b) greenhouse reporting program, and since 2005 we have voluntarily participated in annual reporting to the Climate Disclosure Project.

As part of the 2007 APS rate case decision (Docket No. E-01345A-05-0816), the ACC directed APS to prepare a written climate change management plan with public input. This document is responsive to that ACC directive.

This Plan is developed in conjunction with the Company's RPR which communicates APS's plan for developing the electricity resources required to meet future customer needs. The reader should review the Company's RPR in addition to this Plan in order to obtain a clearer picture of APS's overall carbon management efforts. Other relative documents, including the APS Renewable Energy Standard Implementation Plan and the APS Demand Side Management ("DSM") Portfolio Plan, are referenced within this CCMP, and provide further details about those specific programs.

1.2 CCMP Overview

This CCMP strives to:

1. Increase awareness and understanding for internal and external APS stakeholders of climate change issues, particularly as they may impact APS;
2. Identify potential climate change risks to APS;
3. Identify APS GHG emissions through the greenhouse gas inventory;
4. Identify opportunities for prudent actions to reduce carbon impacts, manage risks, reduce compliance costs, and evaluate future business opportunities related to climate change response; and
5. Clarify our organizational response to climate change, including how our different internal departments interact to coordinate efforts and incorporate our response into their planning and operations.

The first four sections of this Plan aim to increase awareness and understanding of climate change issues, particularly as they apply to APS. Section 5 discusses significant legislative and

regulatory issues. Section 6 identifies the key potential risks to APS from climate change. Section 7 details our response strategy, including the various actions that APS is taking, and the integration of climate change activities into our long-term RPR. Attachment 1 contains APS's climate change position, which sets the foundation for our climate change plan.

Measures that APS is implementing to respond to climate change issues which are discussed in this Plan include:

Action	**GHG Benefit**	**Section of Report**
Monitor & influence legislative proposals	Effective public policy	5.0 (page 20): Legislative and Regulatory Overview 7.3 (page 30): Legislative Response
Renewable energy	New non-carbon emission energy sources	7.4 (page 30): Renewable Energy.
Energy efficiency & demand side management programs	Reduction of generation demands resulting in reduced overall GHG emissions.	7.5 (page 33): Energy Efficiency.
Power plant efficiency and capacity projects	Improvement in existing generating capacity that results in reduced overall GHG emissions.	7.6 (page 34): Power Plant Efficiency and Capacity Projects
Technology innovation, including:		
Emissions to Biofuels Project	Use of algae systems to capture CO_2 from power plant emissions, which reduces GHG emissions while creating a new source of energy and other useful by-products.	7.7 (page 35): Strategic Technology
West Coast Regional Carbon Sequestration Project	Underground sequestration of power plant CO_2 resulting in reduced GHG emissions to the atmosphere.	7.7 (page 35):Strategic Technology

Current GHG reductions, capture and sequestration efforts, including: EPA SF_6 Partnership	Reduction of the GHG Sulfur Hexaflouride ("SF_6") emissions. Projected reduction of 212,741 equivalent metric tons of carbon dioxide in 2006.	7.8 (page 40): GHG Source Reduction and Sequestration
Power Tree Carbon Company	Reduction of atmospheric CO_2 through sequestration in trees. Projected reduction of over 54 metric tons of carbon dioxide in 2006.	7.8 (page 40): GHG Source Reduction and Sequestration
Coal Ash Sales	Reduction of overall CO_2 emissions through replacement of materials. Projected reduction of over 150,000 tons of carbon dioxide in 2006.	7.8 (page 41): GHG Source Reduction and Sequestration
Resource Planning	Incorporation of climate change issues and strategies in planning new generation resources	See the Company's RPR

1.3 Public Input to the Company's CCMP

On February 15, 2008 APS initiated a series of six monthly resource alternatives stakeholders meetings to inform stakeholders and obtain feedback on the draft RPR. Climate change was one of the primary issues discussed in the April 11, 2008 stakeholder meeting. Further information from these meetings can be found at www.aps.com/resources.

APS also held additional informal stakeholder meetings across Arizona as part of the Resource Planning process, which are discussed in the Stakeholder Involvement section starting on page 12 of the APS Resource Plan Report.

APS is a member of Ceres, a national network of investors, environmental organizations and other public interest groups working with companies and investors to address sustainability challenges such as global climate change. APS participates with Ceres in a stakeholder benchmark review and input process each year as part of our annual Corporate Responsibility Report development. Part of that process is reviewing APS's climate change efforts and reporting, and receiving external stakeholder feedback on our program. Ceres also provided a review of this Plan.

2.0 Company Profile

2.1 Background

APS, the largest electric utility company in Arizona, serves more than one million customers in 11 of the state's 15 counties, including about one-half of the Greater Phoenix Metropolitan Area. As a public utility, APS is regulated by the ACC. APS is a wholly owned subsidiary of PNW.

2.2 APS Energy Resources

APS is owner or part-owner of three coal-fired power plants, several oil/gas-fired plants, and the nation's largest nuclear power plant (the Palo Verde Nuclear Generating Station). APS owns combined generation capacity in excess of 6,000 MW and operates plants with a combined capacity in excess of 10,000 MW. Figure 3.1 depicts APS's long-term owned and purchased capacity by fuel type.

Figure 2.1 Summer 2009 Long-Term Resources (Capacity in MWs)

Company-Owned Generation:		
Existing:	Capacity (MWs)	Avg. Age (years)
Nuclear	1,147	21
Coal	1,750	37
Gas Combined Cycles	1,900	9
Gas/Oil CTs and Steam	1,466	28
Renewable	4	6
Total Company-Owned Generation	6,267	
Purchased Power Contracts:		
Conventional:		
Purchases/Exchanges/Tolling	1,868	
Renewable:		
Wind (nameplate)	187	
Geothermal	10	
LFG/Biomass	18	
Total Purchased Power Contracts	2,083	
Total Resources	8,350	

The majority of APS's renewable energy for resale comes from purchased power under long-term contracts. In 2008, APS customers received 609,926 megawatt hours ("MWh") of energy produced from renewable sources, about double the amount from 2007 and nearly six times more electricity from renewable resources than in 2006. This total includes renewable generation APS has under contract, APS-owned solar generation, as well as the energy generated by Solar Partners Incentive Program ("SPIP") participants. APS purchases power under tolling agreements and through purchase power agreements. Under a tolling agreement, APS enters into a long-term contract with a merchant supplier to provide dedicated generation. A tolling

agreement differs from a power purchase agreement in that in the tolling agreement, APS is responsible for fuel supply and assumes fuel availability and price risk. APS does not own or operate the power plant, but does supply the fuel to the plant and takes the power generated from it. Carbon emissions from these long-term contracts have been included in the APS carbon projections in the RPR. APS's long-term power purchases are also discussed in greater detail in the Company's RPR.

2.3 APS Electric System Growth

APS's customer and electric system growth projections, and plans to develop the associated energy resources to meet that growth, are discussed in detail in the Company's RPR. Following are several key summary issues from that Report.

APS's service territory has been one of the fastest growing areas in the United States, growing at a rate three times the national average for electric utility companies for a number of years. As a result of recent economic changes, APS has observed a marked slowing of the growth in energy requirements over the last year. Because of this slowdown and based upon the latest load forecast, APS anticipates that current resources, planned additions of renewable resources (both distributed and non-distributed), demand-side customer programs (including energy efficiency and demand response), and near-term market opportunities will be sufficient to meet expected peak capacity needs through 2015, which should lead to no significant growth in natural gas usage or CO_2 emissions within this timeframe. APS expects growth to return to normal levels within the next several years and that this growth will lead to a large, long-term need for electric resources. Projected customer growth is discussed in more detail starting at page 51 of the Company's RPR.

By 2025, APS expects to require about 6,500 MWs of new capacity resources. The majority of this resource need is due to the growth in customer peak loads. However, more than 2,000 MW of this future resource need is due to the expiration of current long-term purchased power contracts prior to 2025. Additionally, APS projects that customer energy requirements will grow by almost 17,000 GWh by 2025. This represents a greater than 50 percent increase over 2009 levels.

Figure 2.2 illustrates the energy sources projected to meet this future growth as proposed in the Company's RPR. Figure 2.3 illustrates the projected APS energy mix in 2009 compared to 2025. Both of these figures illustrate the importance of our energy efficiency efforts in reducing demand and of non-carbon based generating resources in meeting new energy requirements in the Company's RPR. Resource planning must be viewed as a continuous process rather than a specific outcome, and APS expects that the RPR will evolve as time passes and uncertainties are eliminated or changed. For example, if the cost of solar resources continues to decline relative to other resource options, then APS's next resource plan is likely to place a further increased emphasis on solar resources. Similarly, if APS finds additional energy efficiency opportunities at appropriate price levels, then future resource plans could incorporate higher levels of energy efficiency savings. This type of evolution should be expected as part of the resource planning process.

Figure 2.2 - Energy Sources to Meet Growth through 2025

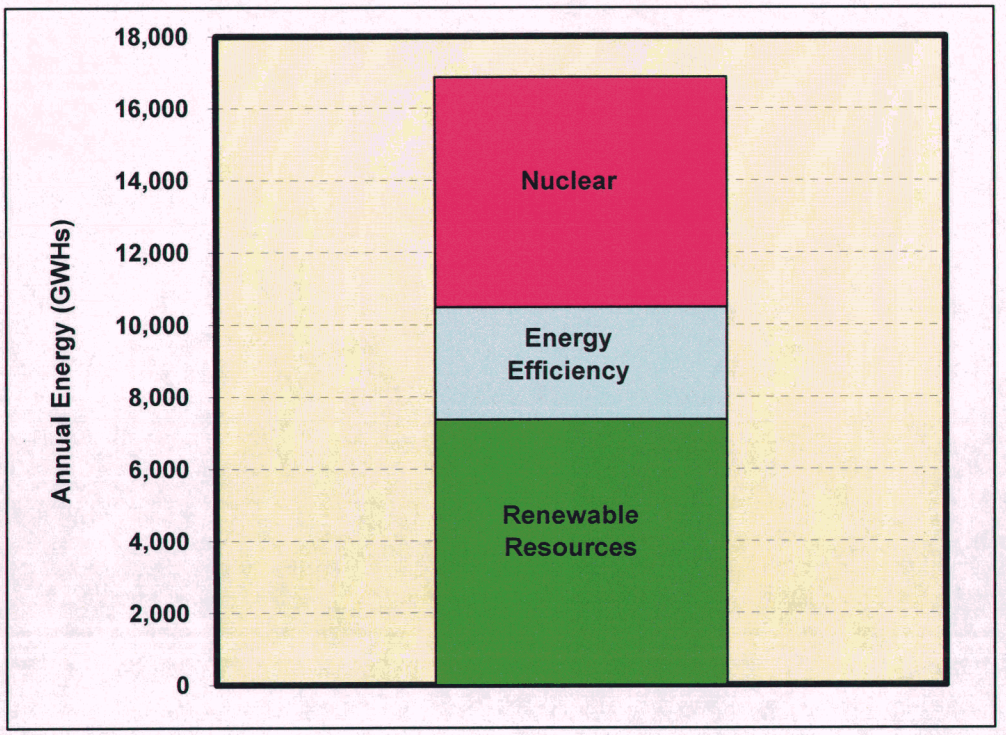
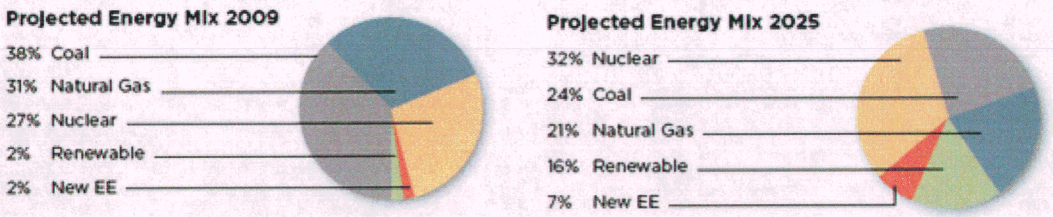


Figure 2.3: APS Projected Energy Mix in 2009 compared to 2025



3.0 Climate Change Overview

3.1 Background

While there remains some debate over the science and causes of global climate change, it is clear that the international community, and since the November 2008 elections the United States Government, has been moving toward the regulation of Green House Gases based in large measure upon the climate studies conducted by the United Nations International Panel on Climate Change ("IPCC"). In 2007, the IPCC released its Fourth Assessment Report (see www.ipcc.ch for online report) which provides a comprehensive review and analysis of potential impacts of projected GHG emissions. Some key conclusions from the IPCC Fourth Assessment Report include:

- Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level. Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations.

- Global atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values determined from ice cores spanning many thousands of years. The global increases in carbon dioxide concentration are due primarily to fossil fuel use and land use changes, while those of methane and nitrous oxide are primarily due to agriculture.

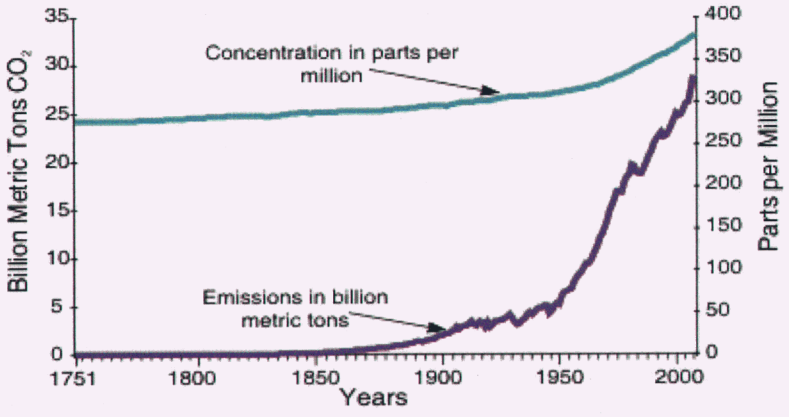
- Carbon dioxide is the most important anthropogenic greenhouse gas. The global atmospheric concentration of carbon dioxide has increased from a pre-industrial value of about 280 ppm to 379 ppm in 2005. The atmospheric concentration of carbon dioxide in 2005 exceeds by far the natural range over the last 650,000 years (180 to 300 ppm) as determined from ice cores. The annual carbon dioxide concentration growth rate was larger during the last 10 years (1995–2005 average: 1.9 ppm per year) than it has been since the beginning of continuous direct atmospheric measurements (1960–2005 average: 1.4 ppm per year) although there is year-to-year variability in growth rates.

- Continued GHG emissions at or above current rates would cause further warming and induce many changes in the global climate system during the 21st century that would *very likely* be larger than those observed during the 20th century.

- The atmospheric life times of these gases range from decades to centuries. Accordingly, anthropogenic warming and sea level rise would continue for centuries due to the time scales associated with climate processes and feedbacks, even if future emissions are significantly reduced, and GHG concentrations were to be stabilized.

The historical growth in carbon dioxide emissions and atmospheric concentrations is shown in figure 3.1:

Figure 3.1: Carbon Dioxide Emissions and Carbon Dioxide Concentrations (1751-2004)

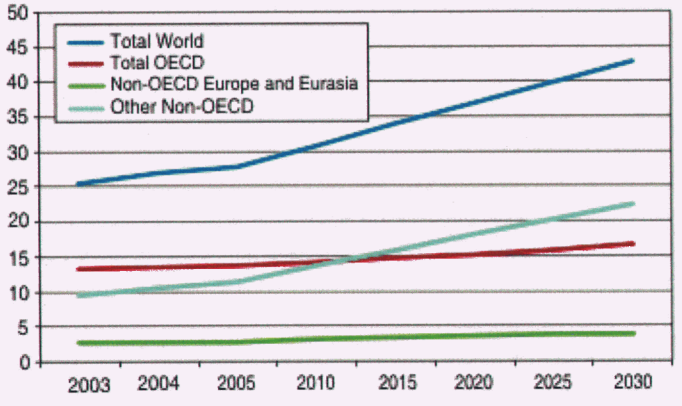


Source: Oak Ridge National Laboratory, Carbon Dioxide Information Analysis Center.

3.2 Carbon Dioxide Emissions and Electricity Generation

The Energy Information Administration ("EIA") and the U.S. Environmental Protection Agency ("EPA") maintain databases of national and global anthropogenic GHG emissions. Typically, 80 percent or more of the GHG emissions are CO_2 emissions. According to the Energy Information Administration, world carbon dioxide emissions are expected to increase by 1.8 percent annually between 2004 and 2030. Much of the increase in these emissions is expected to occur in the developing world where emerging economies, such as China and India, fuel economic development with fossil energy. Emissions from China, India and other countries outside the Organization for Economic Cooperation and Development ("OECD") are expected to grow above the world average at 2.6 percent annually between 2004 and 2030. While these emissions projections are likely to change in the short term due to the current global economic slow-down, we anticipate the general trends to re-establish in the future as economic conditions improve.

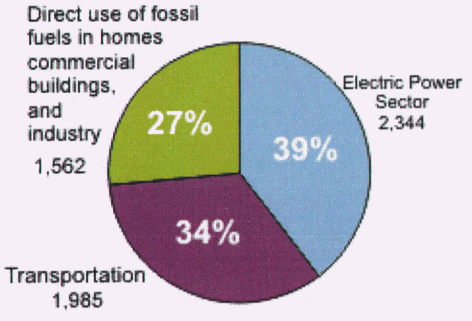
Figure 3.2: World Carbon Dioxide Emissions by Region, 2003-2030 (Billion Metric Tons CO_2)



Source: Energy Information Administration, International Energy Outlook 2007

U.S. CO_2 emissions, estimated to be around 6 billion tons in 2007, account for about 22 percent of the estimated total global emissions of CO_2. As shown in Figure 3.3, the U.S. electric power industry is the largest energy-use sector for CO_2 emissions in the United States, followed closely by the transportation sector.

Figure 3.3: U.S. Greenhouse Gas Emissions by Sector in 2007 (Million Metric Tons CO_2e)



Source: Energy Information Administration

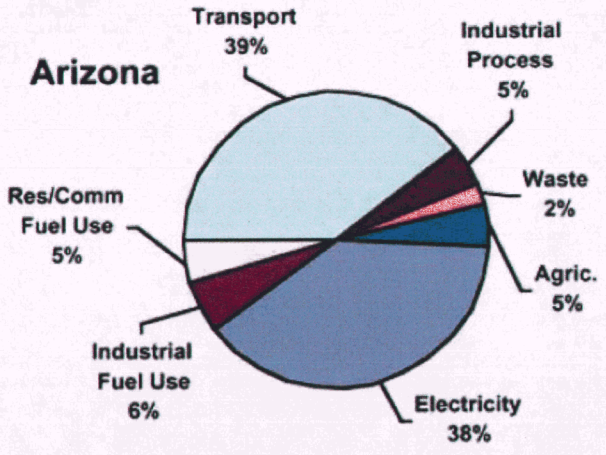
In 2007, the United States' fuel mix for electricity generation was:

- Coal: 48.6%
- Nuclear: 19.4%
- Natural Gas: 21.5%
- Hydropower: 5.8%
- Other renewable and miscellaneous: 2.5%
  (Source: Edison Electric Institute, Industry Statistics)

Roughly 85 percent of CO_2 emissions associated with electricity generation comes from coal combustion. This is for two reasons: first, coal-based units operate as base-load units and thus generate over 50 percent of the electricity in the U.S.; second, coal produces a higher proportion of CO_2 for each kWh generated. Therefore, much of the focus of CO_2 reduction from the electricity sector concerns coal-based generation, which is also one of the most economical sources of electricity generation.

Figure 3.4 provides the GHG emission inventory for Arizona for year 2000. This shows that, while transportation accounts for slightly more GHG emissions in Arizona than electricity generation, Arizona's GHG inventory closely mirrors the national GHG source mix (39 percent from electricity nationally compared with 38 percent in Arizona).

Figure 3.4 Arizona Greenhouse Gas Emissions by Sector in 2000



Source: Arizona Climate Change Advisory Group
Climate Change Action Plan, August 2006

4.0 APS Inventory of Greenhouse Gases

4.1 Introduction

APS has participated since 1995 in the U.S. DOE Climate Challenge program and has been voluntarily reporting direct GHG emissions and GHG reduction results to the DOE through its 1605(b) GHG reporting program.

In 2007, APS became a founding member of The Climate Registry, and will begin reporting GHG emissions to the Registry starting in June 2009 with our 2008 inventory. The Climate Registry includes all six Kyoto GHGs:

- Carbon Dioxide (CO_2)
- Methane (CH4)
- Nitrous Oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur Hexafluoride (SF_6)

APS will report both direct and indirect GHG emissions to The Climate Registry. A detailed accounting of all APS GHG emissions on an annual basis will be available to the public through The Climate Registry.

4.2 Direct GHG Emissions

Direct emissions of GHG are activities within the company that result in actual air emissions of GHG. Sources of direct emissions of greenhouse gases from APS operations include:

1. Stationary combustion
   - Fossil fuel power plant boilers and turbines
   - Stationary internal combustion engines (i.e. emergency, back-up and start-up generators)
2. Fugitive Emissions (i.e. leaks and other indirect releases of GHG)
   - SF_6 leaks from electrical equipment in substations
   - HFC emissions from air conditioning / refrigeration equipment
   - VOC (methane) emissions from fuel storage tanks
   - Methane emissions from coal piles
3. Mobile combustion emissions - CO_2, N_20 and CH4 emissions from mobile fleet and non-highway vehicles such as forklifts and snowcats.

APS's major source of direct GHG emissions is CO_2 produced in power plant operations, accounting for almost 99 percent of our total direct GHG emissions. In the 2007 Pinnacle West Corporate Responsibility Report, APS reported CO_2 emissions from APS owned power plant operations of 16 million metric tons. Other sources of APS direct GHG emissions are CO_2 from fleet vehicles with annual emissions of about 28,000 metric tons of CO_2 and SF_6 fugitive emissions of about 95,000 CO_{2e} metric tons. These two sources together account for just over one-half percent of APS's total direct GHG emissions.

4.3 Indirect GHG Emissions

Indirect emissions are those that result from the company's actions, but are produced from sources owned or controlled by another entity. At APS, these include electricity purchased and used by our facilities (such as office buildings), and the line losses from purchased electricity that is resold to our customers. The reason that indirect emissions are accounted for in The Climate Registry is that companies can impact the downstream activities that account for direct GHG emissions. For example, reducing electricity use in buildings reduces the amount of electricity generated and therefore the emissions from that generation.

Under The Climate Registry, double counting of emissions is prevented by reporting direct emissions under a "Scope 1" category, while reporting indirect emissions under a "Scope 2" or "Scope 3" category.

Reporting of indirect emissions has not been a required part of the DOE 1065(b) voluntary GHG reporting program. Therefore, APS has not been calculating or reporting indirect emissions in our Corporate Responsibility Reports. As part of our participation in The Climate Registry, APS will begin reporting indirect GHG emissions starting with our 2008 report.

4.4 Projected Future Emissions

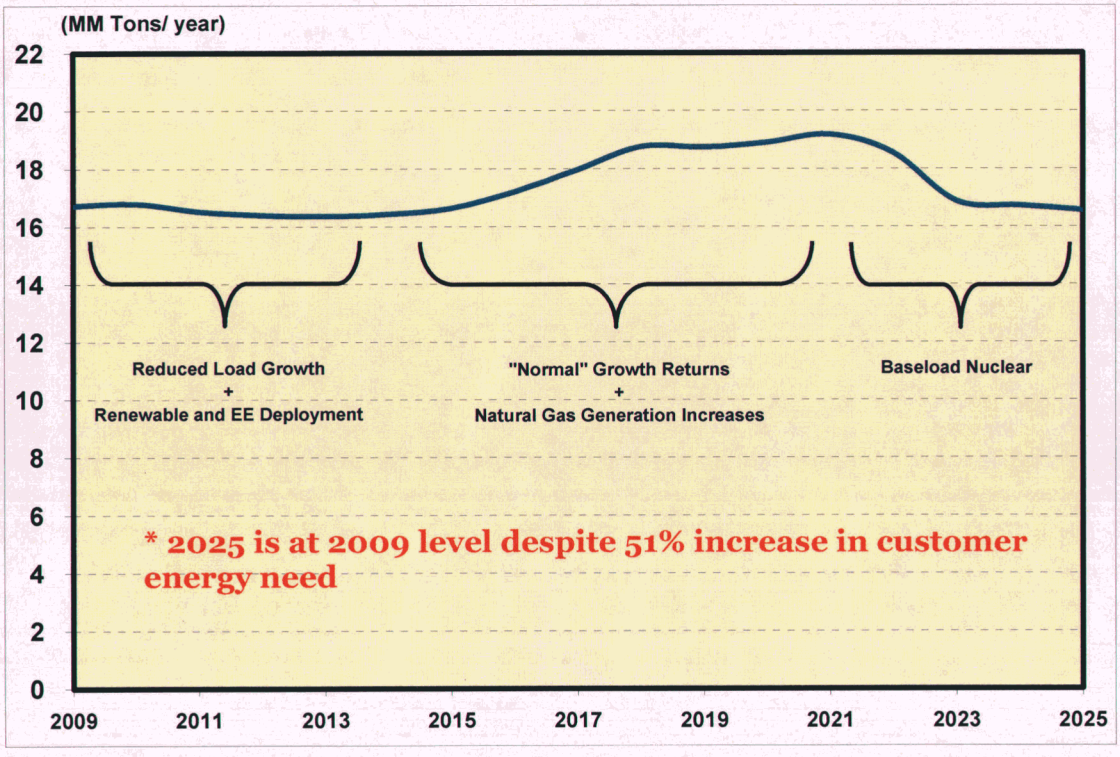
Emissions from our mobile fleet sources are anticipated to show a downward trend as the impacts of improved mileage vehicles and hybrid vehicles decreased our emissions per mile, and programs such as our Smart Meter installations result in significant reductions in the number of miles driven by our employees each year. The rate of emissions from SF_6 leaks are also projected to continue a downward trend, building on the significant success achieved to date in reducing leak rates. However, the projected growth of the APS system will result in more equipment in the system containing SF_6, resulting in an increase in the actual number of pounds of SF_6 contained in our equipment. At this time, there is not a suitable alternative to using SF_6 in our electrical equipment so we will continue to monitor research on future alternatives to SF_6-containing equipment.

APS projected CO_2 emissions from electricity generation are determined by the projected electricity demand and future generation resources identified in the Company's RPR. APS has existing fossil fuel power plants which are projected to continue to produce electricity, and CO_2 emissions, over the forecast period of the Company's RPR. New, cost-effective technologies to reduce carbon emissions from existing plants will need to be developed in order to significantly impact GHG emissions from existing fossil fuel power plants. The Technology Innovation section of this report discusses our approaches to developing, evaluating and monitoring emerging new technologies that can help reduce the carbon impact of existing fossil-fueled generation resources.

APS has other options to cost effectively impact GHG emissions from future generating sources through the development of non- or low-emitting generating resources such as solar, wind, nuclear and natural gas. Energy efficiency initiatives are also a critical component of APS's efforts to reduce future carbon emissions. APS has described a significant proposed approach in its RPR, which would result in no net increase in carbon dioxide emissions from new generating

resources in 2025 from the baseline year of 2009. Figure 4.1 shows projected CO_2 emissions through 2025 if this Resource Plan is implemented.

Figure 4.1: Projection of APS CO_2 Emissions



The expected trend in CO_2 emissions over the next six years is flat to slightly declining from current levels. This is due to relatively slow load growth in conjunction with the continued planned addition of clean energy sources, like existing energy efficiency programs and renewable energy purchases like the Solana solar plant and additional wind generation. During development and construction of the nuclear units, between 2015 and 2022, the Company's RPR forecasts an increased demand met by natural gas generation. Following addition of the nuclear units, natural gas consumption returns to levels that are near 2009 amounts. As shown in Figure 4.1, that results in an increase in overall CO_2 emissions in the middle part of the planning period from the new natural gas generation, with CO_2 emissions return to approximately current levels following completion of the new nuclear units. This is a significant positive attribute of APS's Plan. It allows APS to satisfy an increase of 51 percent in customer energy consumption with effectively no increase in CO_2 emissions by the end of the planning period.

Note that the RPR CO_2 projection in Figure 4.1 does not account for any new technology innovations that may allow for cost effective reduction of carbon emissions from the existing APS fossil generation facilities. As discussed in this Plan, future technology innovation is a critical aspect of meeting the climate change challenge.

5.0 Legislative and Regulatory Overview

5.1 Federal Legislative and Regulatory Process

On April 17, 2009, the U.S. EPA issued a "proposed finding" that GHGs endanger public health and welfare under the Clean Air Act ("CAA"). This proposed finding is in response to the April 2007 Supreme Court decision (*Massachusetts v. EPA)* which designated GHGs as air pollutants under the CAA and that they may be regulated should EPA make an endangerment finding.

After the public comment period later this year EPA is expected to make the endangerment finding "final," triggering a process to adopt specific rules to regulate GHG emissions from new automobiles under CAA Section 202(a). It is also expected that EPA will adopt GHG regulations that will apply to other sources of GHGs, such as power plants.

The proposed finding is expected to add pressure on Congress to adopt climate legislation; in the event Congress does not, then EPA will issue rules to regulate GHGs under the CAA. It is possible that such rules will be litigated in courts for some time resulting in regulatory uncertainty for affected sources.

On April 10, 2009 the EPA published in the Federal Register its proposed rule to establish the first mandatory national system for reporting emissions of carbon dioxide and other greenhouse gases produced by major emission sources in the United States. If adopted as proposed, the rule would require annual GHG emission reports from an EPA-estimated 13,000 facilities that cut across a wide variety of industry sectors, including electricity generation, petroleum refining, food processing, landfills, and wastewater treatment. Comments to the proposed rule are due on June 9, 2009. APS would be required to report direct GHG emissions to the EPA under this proposed rule.

A number of bills were proposed in the 110th Congress that would limit GHG emissions. These bills contained various approaches to regulating GHG emissions at the "Upstream" (i.e. suppliers of fossil fuels) and "Downstream" (i.e. users of fossil fuels). Most of the bills would utilize a "cap and trade" program, though the scope of those programs varies, and there are some discussions about a carbon tax.

There is increasing public pressure to pass a climate bill. The Congressional Democratic leadership had identified climate change as a high priority issue for the 111th Congress. There are currently regulatory/legislative initiatives advancing at the state, regional, and national levels. In all of these initiatives, it is clear that the electric utility industry will be a prime target in any climate change regulatory scheme. Simply stated, the contribution from the electric utility industry to emissions of GHG, such as CO_2, is large. APS believes it is likely that climate change requirements will be enacted at the federal level within the next several years.

As noted above, there were numerous bills introduced to deal with climate change in the 110th Congress; however, much of the action on those bills was in the Senate. In the Senate, the following bills were significant from the perspectives of the utility industry:

1. Bingaman-Specter Bill (S.1766)

   Upstream: petroleum, natural gas, and non- CO_2 GHGs. Downstream: coal facilities (>5,000 tons coal/year). U.S. economy-wide cap and trade program starting in 2012. "Safety valve" price of $12/ton in 2012, escalating at 5% above CPI every year thereafter. Reduction goals: 2006 emissions level in 2020, 1990 emissions level in 2030, President sets additional reductions after 2030. This bill is similar to the Lieberman-Warner bill, with one major difference relating to a "safety valve" provision. It sets the maximum economic penalty ($12/ton in 2012, and slowly escalating thereafter) for any emissions above the level of allowances held by an operator.

2. Carper Bill (S.1177)

   Downstream: Applies to electric utilities only. Cap and trade program starting in 2012

3. Feinstein-Carper Bill (S.317)

   Downstream: Applies to electric utilities only. Cap and trade program starting in 2011

4. Lieberman-McCain Bill (S.280)

   Upstream: refiners or importers of petroleum products used in transportation sector and GHG gas importers. Downstream: electricity, industrial and commercial sectors. Cap and trade program starting in 2012

5. Sanders-Boxer Bill (S.309)

   Provides "market-based program policies". Requires emission standards for electric generating units (EGUs), energy efficiency performance standards, and renewable portfolio standards. Provides cap and trade programs in one or more sectors

The 2010 Budget that President Barak Obama recently released includes a GHG cap and trade program, starting in 2012. It calls for reducing GHG emissions by 14% below 2005 level by 2020 and 83% below 2005 level by 2050. The proposal also calls for auctioning 100% of the allowances.

In the 111th Congress, Rep. Henry Waxman (D-CA) took over as chairman of the House Energy and Commerce Committee, and Rep. Ed Markey as the chairman of the energy and environment subcommittee; these committees will have jurisdiction over climate legislation. Waxman and Markey have been advocating for very stringent GHG reductions starting as early as 2012.

On March 31, 2009 Chairmen Waxman and Markey released a "Discussion Draft" of proposed climate legislation, "American Clean Energy and Security Act of 2009." The full Committee is expected to begin mark-up of the bill beginning in May 2009. The 646-page Discussion Draft contains separate titles covering renewable energy standards (25% RES by 2025), energy efficiency standards, as well as GHG reduction provisions. Interestingly, the discussion draft did not include any information on the most controversial topic of allowance allocations or auctions, and how the auction proceeds will be treated. The GHG emissions caps included in the

discussion draft are more stringent that than those President Obama proposed, especially during the near term (i.e., 2012 through 2020). Among other provisions, it contains specific provisions to minimize compliance costs such as allowance banking and borrowing and limited use of domestic and international offsets. It also provides for not regulating GHGs under the existing Clean Air Act.

Waxman and Markey have set a goal to have a Climate bill adopted by the Energy & Commerce Committee by Memorial Day, and Speaker Pelosi expects the House to adopt the Bill by summer 2009. Senate Majority leader Sen. Reid has set a goal to pass a cap & trade Bill during the summer, and hopes to have climate legislation on the President's desk before the end of 2009.

5.2 Potential Impact of Proposed Legislation on APS

The various legislative proposals are still in an early stage of development and are likely to change, perhaps significantly. The financial impact of legislation will depend on the type of program implemented (e.g. carbon tax versus cap and trade program, or other scheme), the scope of industries covered under the legislation, the allowances provided for current emissions, and many other factors. Financial projections of legislative proposals are therefore subject to significant change and are provided only as an illustration of potential impact.

The proposed legislation will likely create a situation where utilities, including APS, will face a short-fall (i.e., a "carbon gap") under a cap and trade program between the number of GHG allowances or credits that are available to the utility based on historical emissions, and the actual GHG emissions of the utility. This carbon gap represents a financial risk to the company because APS will need to either pay a price per ton for these emissions or take other steps to reduce or offset emissions.

Under the resource plan proposed in the Company's RPR, the company's annual GHG emissions will increase from about 16.72 million tons in 2009 to 19.19 million tons in 2021, and then will slowly decline to 16.55 million tons in 2025. Starting on page 35 of the RPR, the Company reviewed the provisions of a broad range of proposed legislation and compared the "range" of anticipated allowance allocation to APS's expected CO_2 emissions under a default resource plan expansion scenario and under the Company's RPR. For this analysis, the cap-and-trade program (similar to the Lieberman-McCain bill) would start in 2012, and by 2031, the allocation of allowances to electric utilities would be completely eliminated. This represents a "middle of the road" type scenario for carbon allowances.

Figure 5.1, on the following page, compares a reasonable estimation of anticipated allocation of allowances with the projected CO_2 emissions under both a default resource plan scenario in which natural gas generation would be used to meet future needs and under the Resource Plan proposed in the Company's RPR.

Figure 5.1– Impact of GHG Cap-and-Trade Legislation

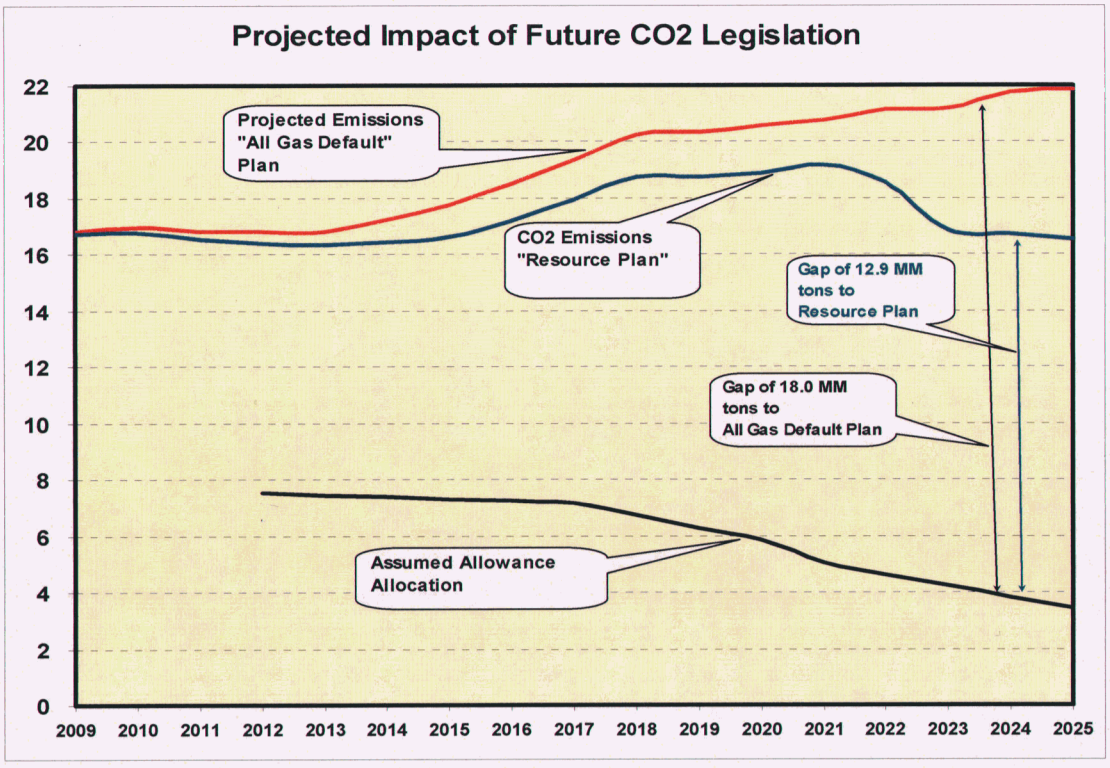


Figure 5.1 illustrates the large potential gap between APS's potential CO_2 emissions and the expected allocation of allowances under this scenario (assumed allowance allocation as under the Lieberman-McCain proposal). This gap is projected to be about 10 million metric tons in 2015 in the default resource plan and about nine million metric tons in 2015 in the Company's RPR, a gap reduction of approximately one million metric tons. In the near-term, the cost of resolving the allowance deficiency will be largely a function of the market price for allowances. Several prominent consultants and government agencies have developed estimates of the expected allowance prices in 2015. Based on a review of these estimates and based on an assessment with respect to the timeframes in this Resource Plan, APS estimated a lower end price of $25 per metric ton in 2012 and $36 per metric ton in 2024. At this allowance price, APS's costs under the default resource plan would increase by $525 million in 2024, representing an approximately 18 percent price increase for customers.[1] Under the proposed Resource Plan Report, APS's costs would increase by $460 million in 2024, a risk mitigation of $65 million.

Also, based on consultant and government cost estimates, APS estimated a higher end price of $50 per metric ton in 2015, which would result in $71 per metric ton in 2024 based on an assumed escalation rate of 3.0 percent. Using this allowance price, APS's costs would increase by $1.051 billion in 2024 under the default resource plan, representing a price increase to customers of approximately 35 percent. Under the proposed Resource Plan, the cost increase would be $920 million in 2024, a risk mitigation of $131 million over the default resource plan.

[1] This is compared to a current annual revenue requirement level of $3.0 billion.

One additional indicator of the potential for future climate change requirements comes from President Obama, who has indicated his support for climate change legislation. He is a vocal proponent of enacting a climate change regulatory regime based upon a cap-and-trade mechanism. The initial Obama position called for auctioning all allowances; i.e., there will be no free allowance allocations. In that event, 100% of APS emissions would constitute the "carbon gap," and the company would have to acquire allowances from the market place to offset all its GHG emissions. This is in essence a "worse case" type scenario since it would require obtaining allowances for all carbon emissions. The cost per ton of allowances is a critical determinant of the cost to comply. Under this scenario, a range of potential cost impacts in 2012 are shown in Figure 5.2, below.

Figure 5.2: Estimated Cost Impacts for 2012

Assumes no allocation of allowances to APS (President Obama plan)

Assumed CO2 Cost ($ per metric ton)	Annual Cost For 2012 ($Millions)	% Rate Impact
20 $/ton	$328 Million	11%
50 $/ton	$820 Million	27%
75 $/ton	$1,230 Million	41%

It is likely to take the incoming administration and Congress some months to develop adequately detailed legislation for APS to model cost impacts. However, it is clear that irrespective of what the eventual CO2 market price would be, the cost of complying with a climate bill will be substantial for APS.

5.3 Regional, Local, and Private Sector Climate Initiatives

Arizona Initiatives

In the absence of federal legislation, a number of states and cities are introducing their own programs to reduce GHG emissions. Arizona has been an active state in climate change initiatives. Former Governor Napolitano issued an Executive Order in September 2006 establishing a statewide goal of reducing Arizona's GHG emissions to the 2000 emissions level by the year 2020, and to 50 percent below the 2000 level by 2040. Arizona also set a longer-term emission goal of 50 percent below 2000 levels by 2040.

The executive order also created a Climate Change Executive Committee (comprised of the heads of various state agencies) whose task will be to develop strategies to implement the recommendations of the Climate Change Advisory Committee and to meet the emission goal set by the Governor.

Western Climate Initiative

In February 2007, the governors of Arizona, California, New Mexico, Oregon, and Washington announced the Western Climate Initiative ("WCI") and agreed to collaborate in identifying, evaluating, and implementing ways to reduce GHG emissions. WCI calls for setting a regional GHG emission reduction goal, designing a market-based multi-sector mechanism to achieve that goal, and to participate in a multi-state GHG registry. Furthermore, the governors agreed to promote development and use of clean and renewable energy, increase efficient use of energy, advocate regional and national climate policies, and identify measures to adapt to the impacts of climate change.

In August, 2007, the WCI issued a Statement of Regional Goal, which set a regional GHG emissions reduction goal at an aggregate reduction of 15 percent below 2005 levels by 2020. Arizona's medium term goal in the WCI is to have carbon emissions levels in 2020 at the same level as in year 2000. That requires an absolute reduction of 72 million metric tons CO_2 equivalent ("$MMtCO_2e$") from business as usual. If the anticipated reductions are set based on the existing emissions inventory, the utility industries' share of the Arizona goal is a 27.4 $MMtCO_2e$ reduction from business as usual by 2020, and APS's share (42 percent of industry goal) is about a 12 $MMtCO_2e$ reduction from business as usual by 2020. These are voluntary goals, and legislation would be required in order to establish any of these goals as a regulatory program.

On September 23, 2008, WCI released the final "Design Recommendations for the WCI Regional Cap-and-Trade Program." Following is a brief overview of that document.

> The goal of the program is to reduce regional GHG emissions by 15 percent below the 2005 level by 2020. Governor Janet Napolitano's commitment to the WCI was to reduce Arizona's GHG emissions by 2020 to the 2000 level (or 11 percent below 2005 level). The cap & trade ("C&T") program will begin in 2012 for major stationary sources (e.g., electricity generation) and other emissions sources such as transportation and residential/commercial will be covered starting in 2015.
>
> The C&T program will cover six GHGs: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Each Partner will have an "emission budget" based on its "commitments" to the regional goal. Each Partner would determine: a) what additional policies (e.g., carbon tax) may be implemented to reduce GHG emissions within its jurisdiction; b) how much of the emission budget will be distributed free to source operators and how much will be auctioned; and c) setting aside a portion of the budget for a wide variety of other purposes such as energy efficiency improvements, renewables, carbon capture and sequestration research, adaptation to climate change, etc. WCI recommends the portion for auction to begin at 10 percent in 2012 and ramp up to 25 percent by 2020. Partners may claim allowances from within their budgets for early emission reductions achieved between 2008 and 2011.
>
> Sources will have to surrender allowances to offset their emissions. Sources generating electricity within the region as well as entities importing electricity in to the region (e.g., from Tribal areas and non-participating states) will have to hold "allowances" to offset

emissions associated with the electricity they distribute. Allowances can be "banked," but borrowing from future allocations is not allowed. A limited fraction of emission reduction obligation (up to ~10 percent) can be met with offsets, such as carbon sequestration in forests and soil, etc.

Mandatory emission monitoring and reporting requirements will begin starting in 2011. Compliance will be determined over three-year periods and severe penalties (3:1) will apply for non-compliance. With respect to a future federal/national program, the WCI envisions that the partners will work to ensure that WCI allowances are "fully valued and recognized" by a federal program.

With Gov. Napolitano's confirmation as the next Secretary of Homeland Security, Arizona Secretary of State Jan Brewer became the Arizona Governor in January 2009. It is not clear at this time what position Governor Brewer will take on WCI.

The Climate Registry

The Climate Registry describes itself as "a collaboration between states, provinces and tribes aimed at developing and managing a common greenhouse gas emissions reporting system with high integrity that is capable of supporting various greenhouse gas emissions reporting and reduction policies for its member states, tribes and other reporting entities. It will provide an accurate, complete, consistent, transparent and verified set of greenhouse gas emissions data from reporting entities, supported by a robust accounting and verification infrastructure" At least 40 states have joined The Climate Registry, which is expected to issue program standards and allow individual companies to participate in 2008.

APS believes The Climate Registry will be an important emerging program for tracking and reporting GHG emissions, and in preparing for future legislative and regulatory programs. EPA is currently promulgating rules for GHG reporting which are expected to be consistent with The Climate Registry. Therefore, APS joined The Climate Registry as a voluntary corporate participant in November 2007, becoming the third company in the nation to sign on as a founding corporate member. APS will begin reporting to The Climate Registry with its 2008 GHG emissions inventory (due June 30, 2009).

APS will continue to also report GHG emissions as part of the DOE 1605 (b) voluntary reporting program, while the relationship between The Climate Registry and the 1605 (b) programs clarifies.

5.4 Arizona Corporation Commission

APS has filed its 2009 Resource Plan in Commission Docket No. E-01345A-09-0037. APS's Resource Plan was developed as part of a collaborative stakeholder process with interested parties. As part of that proceeding, APS is seeking a Commission Order that will provide APS with guidance and certainty for future investment and resource planning. This is a critical part of APS's climate change program as it addresses future energy sources, including consideration of GHG emissions and potential carbon emission costs associated with future energy sources.

6.0 Climate Change Risks to APS

6.1 Physical and Operational Risks

Changes in the global climate may result in regional changes that might impact the physical or operational environment of an electric utility such as APS. According to the Intergovernmental Panel on Climate Change ("IPCC"), North America – including the United States - is projected to warm by about 2 to 13 degrees Fahrenheit ("F") by 2100.

Other projections for the Southwest United States from climate change models include an increase in the number of extreme hot days in the summer, less precipitation in the form of snow and the earlier runoff of snowmelt, increased wildfire potential, and the potential for increased water shortages.

However, there is a great deal of uncertainty in predicting climate changes, particularly for a specific region. The EPA warns that "projections of climate change in specific areas are not forecasts but are reasonable examples of how the climate may change."

Assuming that the primary physical and operational risks to APS from climate change are increased potential for drought or water shortage, and a mild to moderate increase in ambient temperatures, we believe that we are taking the appropriate steps at this time to respond to these risks. Weather extremes such as drought and high temperature variations are common occurrences in the Southwest's desert area, and these are risk factors that we consider in the normal course of business in the engineering and construction of our electric system.

Increases in ambient temperature can affect electric transmission and distribution lines, including increasing thermal expansion (line sag). The National Electric Safety Code does not specify ambient temperatures to use in calculating potential expansion, but rather requires utilities to consider their local situation. APS would naturally have a higher ambient temperature than many other utilities and designs for those higher ambient temperatures, including a margin of safety.

APS typically assumes an ambient temperature of 120 degrees F as the starting point for determining what our materials need to be rated to. For overhead conductors, APS uses a conductor temperature of 212 degrees F for determining the maximum amperage rating for each conductor. Increased ambient temperature reduces the amount of power a conductor or other material can carry before reaching its operating temperature. If climate change were to slightly increase the ambient temperature, then our system should not be adversely impacted as we build in safety factors when considering what temperature conductors will reach during heavy electricity usage. Large increases in ambient temperature due to climate change might require evaluation of some materials and represents a greater challenge. These are important factors that we will continue to monitor in our resource planning and system maintenance processes.

Arizona is currently in an extended period of drought, with no operational impacts to our generating facilities from water supply. About 56 percent of the water used by APS owned generation comes from treated effluent from cities in the Metro Phoenix area - this is the water used by our Palo Verde Nuclear Generating Station and our Redhawk natural gas generating

station. The majority of the remaining water comes from deep underground wells or on-site lakes at our Cholla and Four Corners plants. Water use, water sources and long-term availability are criteria evaluated in our resource planning process for all new owned generation or contracts for purchased generation. Our goal is to minimize water use and insure the long-term reliability of the water source. Our PNW Corporate Responsibility Report provides additional discussion on the company's water use and conservation practices.

In addition to design and engineering factors, APS prepares high temperature load forecasts that capture the possibility of experiencing more extreme temperatures than our "normal" peak day conditions. These high temperature load forecasts are then provided to our distribution system planners for use in their planning so that they know what their capacity requirements could be under such conditions.

6.2 Financial Risks

The largest financial risks to APS from climate change involve the higher operating costs and increased capital investment that will be required as a result of climate change legislation and regulatory policy implementation at the federal level. GHG programs at the regional and state levels, such as the WCI discussed earlier, would present the same set of financial risks. Section 5 of this report discussed the potential "carbon gap" that might exist between projected future emissions and proposed legislative limits, and the potential financial and customer rate impacts associated with obtaining allowances to cover that carbon gap.

In addition to the carbon gap, additional financial risks include counterparty credit risk and financial liquidity risk that would likely be associated with a cap-and-trade program. Such programs could involve purchasing allowances in either traditional over-the-counter ("OTC") markets or through an organized exchange. In order to participate in OTC markets, APS must consider both costs and risks associated in trading with other market participants. In addition to traditional counterparty risks, collateral is typically exchanged (usually in the form of cash) between counterparties as a means of mitigating replacement cost risk in the event of a counterparty default. When trading in organized exchange markets, counterparty risk is greatly reduced, but financial liquidity risk in the form of providing cash collateral would remain.

Providing cash collateral comes with a cost. In order to have the capacity to provide cash collateral, APS may need to increase its access to short term borrowing, such as revolving lines of credit with banks, or engage in some other form of short term borrowing. The ability to establish lines of credit or other short term borrowing, as well as their associated costs, will need to be assessed prior to implementation of a cap-and-trade program.

To best manage these risks, APS will maintain an active legislative monitoring and intervention process, as discussed in Sections 5 and 7 of this plan, and will incorporate climate change issues into our RPR process, as discussed in Section 7 of this plan. Other components of this plan, including demand-side management, renewable energy and technology innovation, will also play significant roles in managing financial risks associated with climate change.

7.0 APS Climate Strategy

7.1 Strategic Approach

APS's climate change position, (Attachment 1), establishes our policy and strategy direction. We also concur with the EEI Global Climate Change Point of Agreement listed in Attachment 2, which are similar to the APS position.

This section of the CCMP discusses APS's specific actions and approaches for climate change response. Our strategic response has a number of different components, including:

- Active monitoring and involvement in the legislative/public policy process
- Fully implement the ACC Renewable Energy Standard ("RES") and implement renewable resources in excess of the Standard as prescribed by the Company's RPR
- Aggressive energy-efficiency DSM programs that reduce the use of electricity by our residential and business customers by means of energy-efficiency products, services or practices
- Technology innovation in multiple company areas
- Active participation in climate change activities and research in industry groups, including EEI, Electric Power Research Institute ("EPRI"), Western Energy Supply & Transmission ("WEST") Associates and Western Business Roundtable
- Implementation of GHG reduction and sequestration programs, where economical
- Incorporation of climate change/carbon impacts and risk in our future resource planning process
- Effective and transparent communication to all stakeholders, internal and external

APS has established a voluntary CO_2 reduction goal in our 2005-2010 business plan to reduce carbon intensity in power plant emissions by 10 percent in target year 2010 from a baseline year 2000. APS is building on these efforts, with the establishment of a new CO_2 goal in our 2009-2013 business plan for generation CO_2 intensity, as measured by metric tons of CO_2 emissions per MWh of generation. That new goal is for a 7 percent reduction in CO_2 intensity by 2013 from 2008 levels, which will be achieved primarily through the addition of renewable energy sources including the Solana solar power plant.

7.2 Senior Managers' Responsibility

APS's climate change program contains the following key corporate governance practices:

- Board of Directors engagement and oversight
- Management execution, including top management involvement, and integration into risk management and resource planning processes
- Public disclosure
- Emissions accounting
- Strategic planning, including incorporation into business operations, establishment of GHG reduction targets, and development and implementation of business strategies to reduce GHG emissions and to minimize exposure to regulatory, operational and other risks from climate change

Climate change response is an integral part of a number of departments across APS. At the executive level, the APS Chief Sustainability Officer has the primary responsibility for coordinating the overall program among the different company departments, and for presenting climate change issues to the company's officers and Board of Directors. The Director of Resource Planning and Director of Resource Acquisition and Renewables have primary responsibilities for resource planning and acquisition processes. The Vice-President and Chief Customer Officer has the primary responsibility for energy efficiency/DSM efforts and integration of those efforts into the resource plan. The Senior Vice-President for Generation has the primary responsibility for the operations of the fossil-fueled power plants.

Climate change activities are also integrated into our overall sustainability efforts. Our Sustainability Working Group, which consists of managers from across the company, help integrate climate changes efforts into department operations and goals, and reports to an officer policy group on a regular basis.

7.3 Legislative and Regulatory Response

As discussed previously, there is a great deal of climate change-related political activity at the federal, regional and state levels, with potentially significant impacts to APS. APS will manage this activity in the following ways:

- Engage industry efforts to monitor and participate in the federal legislative process, in association with:
  - Edison Electric Institute
  - WEST Associates
  - Western Business Roundtable
  - Center for Clean Air Policy
- Participate directly in appropriate national, regional and state programs and activities
- Establish credibility with Renewable and DSM programs
- Work with the Arizona governor's office and state legislative leadership on challenge of growth and cost of GHG reductions
- Work with the ACC to effectively plan for climate change response, including future energy resources
- Communicate legislative issues to internal APS departments, emphasizing the resource planning process

7.4 Renewable Energy

The use of low- or zero-emission renewable energy resources is a critical component of APS's climate change plan. These renewable sources will include solar, wind, geothermal, biomass and biogas. The Company's RPR includes approximately 17,000 GWh of renewable energy above RES compliance levels over the 2009 – 2025 timeframe. With the ACC's approval, APS will accelerate the adoption of renewable resources, doubling the RES requirement in 2015 and ultimately delivering over 50 percent more renewable energy to its customers.

APS's commitment to renewable energy is divided into four initiatives:

- **Procurement and Generation** - producing and purchasing renewable energy for our customers

- **Consumer Programs** - facilitating customers use of and support for renewable energy generation, including photovoltaic grid-tied and remote solar (off-grid) systems and small solar hot water systems

- **Technology Development** - developing new, more-efficient ways of producing renewable energy. This is discussed further in the Technology Section of this report

- **Education and Outreach** - educating teachers and consumers about the availability of renewable energy today and tomorrow

In 2006, the ACC approved the RES, which requires regulated utilities, including APS, to generate 15 percent of their energy from renewable sources – solar, wind, biomass, biogas and geothermal – by 2025. The RES replaces the previous Environmental Portfolio Standard, which went into effect in 2001. The RES sets the baseline foundation for APS's future efforts in renewable energy generation until 2025.

Under the RES, in 2007 APS was required to have 1.5 percent of retail energy sold come from renewable sources, increasing to 5 percent by 2015 and further increasing by 1 percent each year until 2025, when the standard reaches 15 percent. . The standard does require that by 2012 nearly one-third of the total renewable portfolio consist of distributed energy. Distributed energy includes customer-sited, customer-generated electricity, such as solar photovoltaic ("PV") rooftop systems.

The distributed energy requirement began at 5 percent (of the renewable generation requirement) in 2007, increasing 5 percent each year until the distributed requirement reaches 30 percent in 2012. In addition to this requirement, one-half of the distributed generation must come from residential applications, the other half from non-residential projects. The RES requires that APS file an annual plan that describes how it intends to comply with the rule requirements for the next five years.

To date, APS has entered power purchase agreements for renewable generation resources totaling approximately 500 MW of capacity. APS also owns and operates approximately 6 MW of solar capacity. In February 2008, APS announced plans for the Solana Generating Station. Anticipated to be completed in 2012, this 280-megawatt concentrating solar facility will allow APS to provide more solar electricity per customer than any other major utility nationwide. We believe we are making sustained progress toward establishing Arizona as the Solar Capital of the World. We are also adding 100 MW of wind energy in 2009 with a long term purchase agreement with the High Lonesome Wind Farm. When operating at full capacity the 100 megawatt wind farm will provide power for 25,000 APS customers. With these additions, APS's renewable portfolio is shown below:

APS Renewable Projects

Projects Online	Capacity (Megawatts)	Type	Acquired
1. Aragonne Mesa	90	Wind	Long-term Contract
2. Salton Sea	10	Geothermal	Long-term Contract
3. Prescott Airport	3.6	Solar	APS-owned
4. Star Center (and other sites around Arizona)	2.1	Solar	APS-owned
5. Saguaro	1	Solar	APS-owned
6. Snowflake White Mountain Power	14	Biomass	Long-term Contract
7. Other Contracts	25	Geothermal	Short-term Contract
8. Distributed Energy	8.6	Misc.	Customers
Future Projects			
9. Solana	280	Solar Thermal	
10. High Lonesome	100	Wind	
11. Sexton	2.8	Biogas	

APS also issued a request for proposal for small renewable energy projects in March 2009. We're targeting 45,000 MWh total and expect to contract in 2009 for 2 to 4 small scale projects in the range of 1 to 5 MWs. Project developers are encouraged, as part of their proposals, to include a partnership with municipal, governmental and educational institutions.

The composition of the current five-year portfolio, from APS's 2009 RES Implementation Plan (Docket No. E-01345A-08-0331) is shown is the following two tables:

Table 7.1: APS Existing and Planned Renewable Generation (MWh) From APS's 2009 RES Implementation Plan

Existing and Planned MWh	2009	2010	2011	2012	2013	2009-2013 Total
Existing Contracts:						
Total Solar	12,291	12,291	236,061	915,640	915,640	2,091,923
Total Wind	442,506	568,831	568,831	568,831	568,831	2,717,830
Total Geothermal	78,174	78,174	78,174	78,174	78,174	390,870
Total Biomass/Biogas	124,704	157,548	161,046	150,854	109,537	703,689
Total Energy - Contracted Projects	**657,675**	**816,844**	**1,044,112**	**1,713,499**	**1,672,182**	**5,904,312**
Total Energy - Targeted Additions	**222,500**	**45,000**	**45,000**	**45,000**	**364,205**	**721,705**
Total Generation	**880,175**	**861,844**	**1,089,112**	**1,758,499**	**2,036,387**	**6,626,017**

Table 7.2: APS Existing and Planned Renewable Generation (MW) From APS 2009 RES Implementation Plan

Existing and Planned MW	2009	2010	2011	2012	2013
Existing Contracts:					
Total Solar	6	6	289	289	289
Total Wind	190	190	190	190	190
Total Geothermal	10	10	10	10	10
Total Biomass/Biogas	21	24	24	24	19
Total Energy - Contracted Projects	**227**	**230**	**513**	**513**	**508**
Total Energy - Targeted Additions	**37**	**12**	**12**	**12**	**112**
Total Generation	**264**	**242**	**525**	**525**	**620**

The APS renewable energy program is managed by the Renewable Portfolio Management Department, which is a part of the APS Corporate Planning and Resource Acquisition Department. These groups work closely with other APS departments to coordinate and integrate the renewable energy resource and planning into other operations, include working with the Resource Analysis Department to integrate renewable energy resources and projections into the resource planning process.

7.5 Energy Efficiency and Demand-Side Management

Helping our customers improve the efficiency with which they use electricity is a key component of APS's climate management strategy. Improved efficiency reduces growth in energy consumption, resulting in lower generation requirements and therefore lower carbon emissions.

The current APS Demand-Side Management ("DSM") program was approved by the ACC (Decision No. 67744, April 7, 2005), and is detailed in the APS Demand Side Management Program Portfolio Plan 2005-2007 and the APS Demand Side Management Program Portfolio Plan Update 2008-2010. The 2008-2010 Update requested approval of overall program spending of $76.5 million for the three-year period 2008-2010, with associated goals to achieve 6,814,000 lifetime MWh savings, 109.9 MW peak demand savings and a total net benefit of $187 million in energy savings for APS customers from the DSM programs over this three-year period. For the period of 2005-2010, the DSM programs are estimated to save approximately 168 MW and 9.9 million lifetime MWh.

The ACC defines DSM as "the planning, implementation, and evaluation of programs to shift peak load to off-peak hours, to reduce peak demand, and to reduce energy consumption in a cost-effective manner." The approved programs are designed to influence energy decisions by residential and non-residential customers and other market players through a combination of rebates and incentives, technical assistance and training, and consumer education.

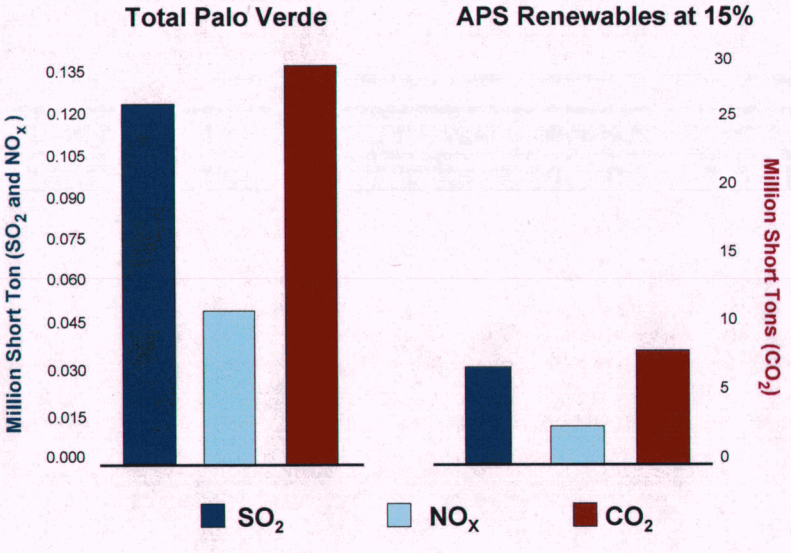
Expanded energy efficiency efforts are a key component of the Company's RPR. This includes targeting 3,100 GWh of incremental energy savings by 2025 (in addition to energy savings achieved through the end of 2008).

The Company's DSM Program is managed by the Customer Information & Programs Department. This Department works closely with the Resource Planning Department to integrate DSM into the RPR. This includes evaluating the effectiveness of future DSM programs on APS costs and energy generation, and incorporating anticipated DSM future demand reduction into the RPR.

7.6 Power Plant Efficiency and Capacity Projects

The Palo Verde Nuclear Generating Station is the largest nuclear power plant in the U.S. with a generating capacity of 3,810 MW. It is owned by a consortium of utilities, including APS, which owns the largest share (29.1 percent) and operates the plant. On average, the plant displaces about 32 million tons of CO_2 annually when compared to the equivalent amount of power produced by coal resources. About 9 million tons is APS's annual share of the offset. As seen by Figure 7.3, PVNGS will continue to provide significant annual emissions reductions of not only CO_2 but also $SO_2$and nitrous oxides ("NOx") into the future.

Figure 7.3: 2025 Annual Estimated Emissions Avoided in Arizona



APS is continuously evaluating opportunities to improve power plant efficiency in a cost-effective manner. For example, recent projects at the Cholla Power Plant have increased the capacity from 245 MW to 260 MW on Unit 2 and from 260 MW to 271 MW on Unit 3 at the same fuel burn rate, and with no increase in air emissions.

In 1997, APS initiated a program to improve heat rates at the fossil units. APS looked for obstacles to improving heat rates and came up with a list of potential changes. This included both physical and operational changes. APS reduced the number of non-productive unit starts, reduced hot standby times, increased minimum operating loads, optimized start-up curves, and

changed the way units were dispatched to avoid short run-times. APS also eliminated gas leaks, reduced auxiliary load by shutting down equipment not required, addressed cooling tower cleanliness, used thermal imaging to detect areas of heat loss, and upgraded turbine blades where appropriate. Despite the aging of the units, heat rates have been maintained, and in some cases improved over the last ten years, with no increase in air emissions.

APS will continue to explore new technologies and opportunities to improve plant efficiencies.

7.7 Strategic Technology

New, cost-effective technologies are going to be required in order for the electric utilities industry to meet future electrical demands while managing GHG emissions. Simply put, the electric utility industry cannot meet aggressive new carbon reduction goals in a cost-effective manner with existing technologies.

Technology innovation and the strategic use of new technologies in our operations is a significant component of APS's climate management plan. From our leading edge solar research, to the use of algae to reduce carbon emissions, to the use of smart meters or hydrogen vehicles, we are continually evaluating technology innovation to help create our sustainable energy future. This includes technology innovation in generation, transmission and distribution, renewable energy, carbon reduction and sequestration, and energy efficiency.

APS is actively involved with organizations such as the EPRI and EEI in research into new technologies and business methods. In addition, we have an aggressive internal research and development program.

Key climate-related technology development areas currently include:

Smart Meters and Distribution Operations Management Systems ("DOMS")

Coupling smart meter technology with DOMS completes a technological loop that APS hopes will put customers in charge of their electric usage while allowing APS to better serve its customers.

APS will have installed about 300,000 "smart meters" by the end of 2009, with the target to have all 1 million APS customers installed with smart meters by the end of 2012. Currently, these smart meters allow APS to remotely read and monitor customer's meters, reducing costs and environmental impacts associated with traveling to every customer to manually read meters. The smart meters also allow APS to quickly identify problems, such as outages at customer's meters.

In 2009, APS is developing the base infrastructure to extend the ability of the smart meters to allow our customers to use these meters in order to better understand and manage their energy use. The smart meters will allow customers to dictate in real time when electricity is used, how much is used and how it is used. The smart meters will eventually offer two-way communication between customers and APS, limiting smart metering technology only to the imagination of the electric company and its customers. APS is currently developing a roadmap to

expand these functions, which will begin in 2010. The potential benefits for APS customers include the ability to:

- View in real time the amount of energy their home has consumed and compare that usage among different service plans, enabling customers to always select the most cost-effective options.

- Control appliances from a remote location. Essentially, any appliance set up to operate through a remote could eventually be operated remotely.

- Set a budget, and have their usage conform to that budget.

Smart meters also will help identify areas more susceptible to service interruptions, allowing APS to make the appropriate system improvements.

More efficient management and quicker response to the needs of the system will result in higher reliability and lower outage durations. In addition, the new smart meters will result in a significant reduction in the number of on-site meter reads required, resulting in an estimated reduction of 1,510 metric tons per year of CO_2 from reduced meter-reading travel when all meters have been installed in 2012.

APS Emissions to Biofuels Project

APS is conducting an exciting demonstration project uses carbon dioxide from power plant emissions to feed algae, which can then be used for beneficial use, such as biofuel.

Flue gas from the company's Redhawk Power Plant is piped to biosolar reactors containing select natural algae. Since the algae consume carbon dioxide in the presence of sunlight (photosynthesis), the goal is to recycle carbon in an economical manner by periodically harvesting and processing the algae into biodiesel fuel, which can be used in place of diesel fuel in applications such as our line trucks. In addition, starches from the algae can be turned into ethanol, and the remaining protein into a high-grade food for livestock, or returned to the algae farm as nutrient. Nothing goes to waste.

If the project demonstrates economic potential, the algae also could be gasified and fed back into the combustion turbines at Redhawk, reducing fuel demand. Or, in the case of a coal plant, it could just be mixed in with the coal without any fuel preparation. This process may lead to an economical reduction of the Company's CO_2 footprint.

APS is building on our initial pilot project, and we are now constructing a 1200 square meter Engineering Scale system at Red Hawk.
There are several goals for the Project:

1) Algae cultivators must be scalable
2) Process must be an integrated system
3) Must produce lipids for biofuel

A flue gas slip stream will be taken from one of the stacks. The flue gas will be processed through an advanced membrane which separates and concentrates the CO_2. The CO_2 is then injected into several algae cultivators , where it is consumed by the algae as food. We are anticipating that the micro-algae cells will double daily. The algae culture is harvested; water and algae are separated. The water is recycled back into the Farm, and the algae undergoes a process where the lipids or fatty acids are extracted.

West Coast Regional Carbon Sequestration Partnership ("WESTCARB")

APS has joined the WESTCARB in sponsoring a pilot project to evaluate CO_2 injection and storage in the Colorado Plateau region of northeastern Arizona, at our Cholla power plant. This pilot project will help determine if CO_2 from existing and future Arizona coal-fired power plants might be captured for long-term storage in subsurface geologic reservoirs.

Solar Energy

Solar power has tremendous potential as a renewable energy source, particularly in Arizona. It's powerful; it's renewable; it's safe; and APS and its customers are key players in harnessing this incredible energy.

APS now has more than 6.55 MW of installed solar capacity statewide providing energy to APS customers. APS's distributed generation capacity currently comes from our solar energy facilities installed at customer locations. Below are some of the solar power plants that APS currently has in operation.

- Flagstaff: The Flagstaff solar power plant inaugurated the APS Solar Partner® Program. The Flagstaff plant is housed within the APS service yard and produces 82 kilowatts of solar energy. Built in 1997, the plant employs single-axis tracking technology to maximize the sun's energy.
- Glendale: The city hosts APS's first municipal application of high-concentration photovoltaic arrays at the Glendale Municipal Airport. This technology tracks the sun's movement and employs special lenses to concentrate the sun's rays 250 times onto each solar cell.
- Gilbert: The 125-kW plant is adjacent to the town's original ground water recharge site. The one-acre site consists of 10 solar arrays, which will track the sun from east to west on a single axis. Each solar array (or series of panels) is about 150-feet long and eight-feet wide and sits relatively low to the ground.
- Prescott: APS and Embry Riddle Aeronautical University joined to construct a 190-KW plant, which feeds solar power to the electric grid. The plant uses a single-axis tracking system that allows the photovoltaic arrays to track the sun through the sky. The plant was dedicated in April 2001.
- Prescott Airport Solar Plant: APS and the City of Prescott teamed to build a plant near the Prescott Airport which currently produces 3.5 MW of solar energy, our largest solar facility to date.
- Scottsdale: In 1999, the City of Scottsdale formed a unique alliance with APS in an effort to meet the need for covered parking at commercial buildings with a practical way of generating clean energy. An 8,500-square-foot parking structure covered with

photovoltaic panels began generating 34 KW of solar energy at a City of Scottsdale service yard.

- Scottsdale Water Campus: APS and Scottsdale officials joined to build a single-axis tracking, photovoltaic plant atop of the city's domestic water tanks which produces 230 KW of solar energy.
- STMicro Rooftop Solar System: This system was the first solar application in Arizona installed for commercial grid-connected customers.
- Tempe: Located on the grounds of the APS Solar Test and Research Center ("APS STAR Center®") in Tempe, this solar plant generates 480 KW of solar energy for use by all APS customers.
- Yuma: APS built a new solar power plant near Yuma, which will generate 100 KW of energy. The plant is located at the Yucca Power Plant and will generate enough energy to serve about 31 homes.
- Phoenix: The Arizona Department of Environmental Quality ("ADEQ") hosts a 127-KW flat panel solar plant built atop the facility's parking canopy. The facility is a partnership between ADEQ and APS that makes the facility one of the most energy efficient of all city facilities.

In 2006, the APS Saguaro Solar Power Plant was named Energy Project of the Year by the Association of Energy Engineers. This honor came soon after the facility was named one of the top 12 power plants in the world by *Power Magazine*. Located near Red Rock, Arizona, the one-megawatt plant is the first solar trough generator in the state and the first solar trough built in the United States in almost 20 years. Unlike a photovoltaic solar plant, which uses sunlight to produce electricity, a solar trough uses heat from the sun to create electricity. The sun heats oil, which is then used to drive a turbine/generator. This technology can easily be combined with a storage facility, allowing it to hold energy, and to provide electricity when needed, not just when the sun is shining. The APS Saguaro Solar Power Plant also is the first to combine solar trough technology with an Organic Rankine Cycle Power Block, typically used in geothermal and biomass applications. The block allows the plant to produce more power at lower temperatures.

APS is building on its experience in solar energy and has announced plans for a new 280-MW solar power plant, Solana, to be built near Gila Bend, Arizona. Anticipated to be completed in 2012, Solana will be one of the largest solar plants in the world, and will provide enough electricity for 70,000 Arizona homes.

Under the Company's RPR, solar energy is a major component of our future energy resources to meet increasing customer energy requirements.

APS Carbon to Substitute Natural Gas Project

APS is working with the U.S. DOE to develop a process to manufacture substitute natural gas via a carbon hydro-gasification process. This is a multi-phase project in which the hydro-gasification process will be modeled and ultimately demonstrated. The source of carbon for the process can be coal or a bio-source such as the algae described in the Emissions to Biofuels Project described above.

A world-class team of participants assembled to undertake this project with APS, including national laboratories and other organizations such as Nexant, Air Products, BHP, Worley Parsons, the Gas Technology Institute, and NETL and utilities such as Sempra Energy and San Diego Gas & Electric. The ultimate aim of this project is to enable the continued use of the current natural-gas fuel infrastructure using substitute natural gas made from other fossil or renewable fuel sources. This five-year effort is aimed at developing an economical process to produce pipeline-quality substitute natural gas from coal and bringing a measure of stability to natural gas prices in the West. The pilot holds the promise of utilizing America's abundant coal resources while decreasing environmental impacts. The system has the potential to produce synthetic natural gas below the projected market price for natural gas, while significantly reducing greenhouse gas emissions.

The Carbon to Substitute Natural Gas Project will "gasify" coal into natural gas and is being designed to decrease and control greenhouse gas emissions. This includes the management of carbon associated with the use of burning coal in the production of electricity. In addition, the gasification process will use significantly less water than most coal operations.

Unlike traditional gasification projects, which inject oxygen into coal under pressure, the APS project will use hydrogen to react with highly pressured coal to produce a methane-rich gas. It then will undergo a clean-up process before finally being injected into existing natural gas pipelines. This process will maximize the use of carbon in coal, while minimizing the production of carbon dioxide. The goal is a highly efficient fuel production facility with zero emissions.

Phase one of this project has been completed: samples of coals from the Arizona area have been analyzed, and the conditions required to achieve the hydro-gasification process have been modeled. We are now in phase two of the project. The first hydrogasifier test reactor, called a BSRX, has been designed, and work toward implementation will continue.

APS Pyrolysis Project

APS is sponsoring a pyrolysis demonstration project to research the potential for a biodiesel fuel source, a renewable fuel for power plant co-firing and for carbon sequestration with the char used as a fertilizer supplement. The ½-ton per day pilot-scale pyrolysis demonstration project is being conducted in partnership with the University of Arizona and Northern Arizona University.

The design basis for the small pyrolysis demonstration unit is three portable skid-mounted systems that can be taken into farm fields and remote forest areas to process biomass waste materials (e.g., forest thinning biomass, crop wastes, manure piles, municipal green wastes, etc.) into products with higher intrinsic value (e.g., bio-oils and a bio-char fertilizer supplement). The University of Arizona hopes to document some of the benefits of using the char, including a reduction in the amount of irrigation water needed per crop cycle, reduced chemical fertilizer usage, and consequently various reductions in nitric oxide air emissions and a reduced potential for nitrate pollution of the aquifers.

Other Emerging Technologies

APS is also monitoring other emerging technologies, including:

- **Energy Storage**
  - Compressed Air Energy Storage - Large scale wind and grid support. Load shaping and energy firming.
  - Flow batteries
  - Nanostorage
- **Enhanced Transmission** – Technologies for increasing current line capacity for transmission of wind energy from remote locations.
  - High Voltage Direct Current Superconductors
  - Composite Cored Cable

7.8 GHG Source Reduction and Sequestration

APS will monitor and evaluate opportunities to cost effectively reduce or sequester carbon dioxide and other GHG to offset GHG emissions. Current projects include:

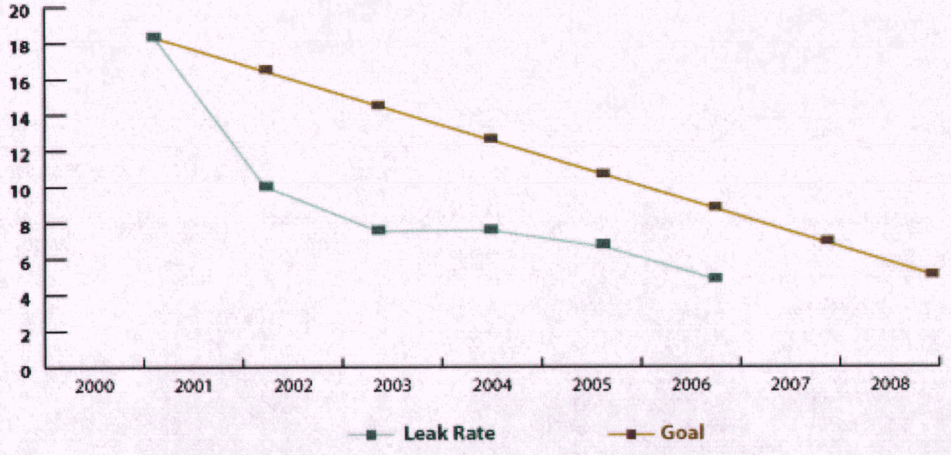
EPA SF_6 Partnership

In 2004, APS joined the Environmental Protection Agency's SF_6 Emission Reduction Partnership for Electric Power Systems. This is a voluntary, collaborative effort between EPA and the electric power industry to identify and implement cost-effective solutions to reduce SF_6 emissions. SF_6 is a highly potent greenhouse gas used for insulation and current interruption in electric transmission and distribution equipment. As part of this partnership, APS is taking voluntary efforts to significantly reduce SF_6 emissions. APS's goal in the SF_6 partnership is to reduce equipment leak rate from 18.4 percent in the base year of 2001 to 5 percent by the end of 2008. APS implemented a number of industry-leading steps to reduce the leak rate, including:

- Utilizing SF_6 recycling gas carts to minimize atmospheric releases by reclaiming and purifying the SF_6, which was placed back into the equipment after service or repair activities
- Using a laser-imaging camera to effectively identify SF_6 leaks and confirm repairs
- Developing an inventory of our top priority SF_6-containing equipment for planning the maintenance, repair and replacement activities of SF_6 breakers

As shown in Figure 7.5 below, APS has exceeded its targets in SF_6 reduction and will continue to pursue even further reductions in SF_6 leak reduction. Based on the EPA's greenhouse gas equivalencies, our SF_6 emission reductions are equivalent to a reduction of 212,741 metric tons of carbon dioxide per year.

Figure 7.5: APS SF_6 Leak Rate Base on EPA Calculations



PowerTree Carbon Company

To explore carbon sequestration potential through tree planting and growth, APS joined 24 other electric utilities in the PowerTree Carbon Company, which plants trees in ecologically sensitive areas of the lower Mississippi Valley in cooperation with local and national governmental and conservation organizations. Planting began in 2003 and over two million tons of CO_2 are expected to be sequestered over the 100-year life of the project. In 2006, APS's share of PowerTree Carbon Company sequestration results was the equivalent of a reduction of over 60 short tons of carbon dioxide.

Ash Sales to reduce GHG

U.S. power plants produce millions of tons of coal fly ash annually. APS is using its fly ash to help reduce greenhouse gases while adding to its bottom line. APS sells much of its fly ash for use in concrete production. The coal ash is used as a base product in cement production, eliminating the need to produce a similar base product and significantly reducing energy consumption in cement production. In 2008, APS recycled 617,684 tons of coal ash for cement production or other use, reducing overall greenhouse gas emissions by over 130,000 tons of carbon dioxide.

In addition, our technology innovation projects, discussed previously, are important components of our carbon reduction/sequestration strategy.

7.9 Integration of Climate Change Strategies Into Long-Term Resource Planning

The goal of the resource planning process is to select the set of resource alternatives (energy efficiency, renewable resources, conventional generating units, etc.) that does the best job of balancing the objectives of minimizing customer costs, providing highly reliable service, minimizing environmental impacts and minimizing portfolio risks. The state of Arizona and specifically the ACC plays a key role in resource planning and acquisition. The ACC determines, through prudence and rate proceedings, to what extent and by which mechanisms APS can recover its costs of providing reliable electricity service to its customers.

The APS resource planning process is discussed in greater detail at page 10 of the APS RPR.

Carbon Risk Incorporation into Resource Plans

Since APS considers the need for additional fossil-fuel based resources as a part of APS's resource planning process, it is vital that APS understand the impact of those resources on reliability, cost, risk, and the environment. Regarding the environment, APS incorporates environmental factors into the resource planning process in several different ways including seeking the most efficient technology for the application.

First, technology choices for new fossil-fueled generators include state of the art pollution control equipment such that if APS were to select that technology for acquisition, the environmental impacts would be minimized to the extent possible given current technology. This tends to increase the capital cost assumed for new fossil-fueled generation technologies.

Second, certain environmental emissions have established cap-and-trade programs. A good example of this is SO_2, for which a cap-and-trade program was established over 10 years ago. For SO_2, the cost of the estimated future SO_2 emissions from APS's system is factored into the resource planning economic evaluation process.

The third way that environmental emissions are factored into the resource planning process is via risk analyses. A good example of this is addressing potential future costs associated with greenhouse gases and climate change. There are numerous federal and state initiatives evaluating methods for mitigating the effects of GHGs and minimizing future GHG emissions. The challenge is to integrate these initiatives into the resource planning and acquisition process in a meaningful way since there is not currently are no laws that require either a control technology, cap-and-trade system or a carbon tax. Given that these initiatives have not yet produced a defined policy on GHG, the Company believes it prudent to incorporate the potential GHG legislative impacts (cost) as a risk factor associated with the resource planning process. In this way, the potential future cost of managing or minimizing GHGs is assessed as a sensitivity of those resources to the range of potential GHG legislation rather than a specific capital or O&M cost component.

APS believes that future resource planning and acquisition decisions should seek to strike a balance between cost and risk in addition to the ongoing goals of maximizing reliability while minimizing environmental footprint.

Integration of climate change issues into the Company's RPR is a critical part of APS's climate change strategy. The Company's RPR proposes that all energy growth will be met with carbon-free resources. Key components of the Company's RPR that support our climate change strategy include:

Energy Efficiency Efforts Expanded:

- Future energy efficiency initiatives are expected to meet 587 MWs of the overall capacity need by 2025.

- Targeting 3,100 GWh of incremental energy savings by 2025 (in addition to more than 500 GWh achieved through end of 2008)
- First three years are per the existing the Company's DSM Portfolio Plan , with a ramp-up in activities beginning in 2012

Renewable Resources Exceed RES Targets:

- APS expects to add more than 1,600 MW of renewable resources and those resources are expected to meet about 45 percent of the growth in energy consumption by 2025.
- APS's recommended plan includes almost 17,000 GWh of renewable energy that is in excess of the RES requirements over the time period of 2009-2025.

Baseload Nuclear Added in 2022-2023:

- APS will begin the initial development process to preserve the option to deploy these nuclear units in the specified timeframe
- Total amount is 800 MWs
- Nuclear capacity will produce about 6,400 GWh of energy per year, helping satisfy about 38 percent of the growth in energy consumption by 2025.

Additional Natural Gas for future peaking capacity:

- Capacity up to 3,500 MW of efficient gas-fired capacity by 2025.

7.10 Communications

Communication of our climate change management activities is critical to both our internal and external stakeholders. APS has an active internal communication plan which provides ongoing information to our employees about sustainability and environmental issues, including climate change.

Our primary means for external communication of our climate change strategies, activities and performance include our annual PNW Corporate Responsibility Report (www.pinnaclewest.com/cr), this Climate Change Management Plan, and voluntary participation and public reporting in the Climate Disclosure Project and The Climate Registry.

Attachment 1:

APS's Climate Change Position

Climate change is a global issue requiring a response from all developed and developing nations. To effectively address the threat presented by the emission of greenhouse gases ("GHGs") contributing to that change, all sectors of the world economy will need to participate including power generation, manufacturing, transportation, and commercial, industrial and residential construction. The vast scope of economic and consumer activity that contributes to climate change and the needed response present enormous risk and opportunity for our economy and quality of life.

Available, reliable and affordable energy is the foundation of modern society. The current energy infrastructure based upon fossil fuels took decades to build, and transitioning to a new low carbon economy will not happen simply because we desire it. The change will require enormous investment for the development and commercialization of new cleaner, energy efficient technologies and products. Realistically this transition will take decades to achieve. And, with a world population predicted to increase from 6 billion today to 9 billion by 2050 with a steadily expanding middle-class, the demand for energy will continue to rise. In the U.S. alone, the demand for electricity is predicted to increase 30 percent by 2030.

In the U.S., the simplest most efficient and effective mechanism for addressing climate change is to levy a tax or fee on GHGs. The tax/fee should be assessed upstream to provide the broadest coverage practical. For example in the energy sector the tax/fee should be levied at the fuel source, such as the mine or wellhead, or at the refinery or generator if the fuel is imported into the U.S. The tax/fee must begin modestly and increase over time, providing an incentive for all business sectors and consumers to increasingly reduce their use and consumption of GHG-emitting commodities, products and services.

We support this approach ***only if*** the revenue from the tax or fee is dedicated to supporting the expedited commercialization of renewable, low and no-GHG-emitting energy resources and new clean technologies. For example, the revenue would be used to pay for the investment and production tax credits recently enacted in The Emergency Economic Stabilization Act of 2008 (Pub. L. 110-343) , and for the needed research, development and deployment of technologies like carbon capture and storage that is needed to reduce the GHG emissions from existing fossil fuel energy resources.

Successfully addressing climate change will require an energy vision and policy that establishes goals, realistic timetables and incentives that are commensurate with the risks posed by the needed transformation. A phased in tax/fee and dedicated investment of revenue in renewable energy resources and clean technology can address this challenge. However, the current policy debate in Congress and in the fifty states centers on the use of a cap-and-trade approach. We can support the use of a cap-and-trade program but the legislation or regulation must include:

1. Emission reduction goals that incorporate all GHG-emitting sectors of the economy and realistic timeframes for achieving those goals

2. Mechanisms for protecting the economy such as an allowance price collar, off-sets, and regulatory oversight to prevent market manipulation
3. An equitable distribution of allowances that considers the disparate growth patterns in various regions of the country and makes allowances for rapid growth states like Arizona
4. Enhanced public investment in new low- and no-carbon technologies
5. A single integrated national program
6. A requirement that all nations participate

Each of the above points is critical to a successful cap-and-trade program. Each of these requirements is discussed in detail below:

1. **A Market Based Mechanism Such as Cap and Trade that is Economy Wide and Establishes Realistic Emission Reduction Goals and Timeframes**

GHG emissions are attributable to the following sectors of the economy: Electricity Generation (34%); Transportation (28%); Industrial (19%); Commercial (6%); Residential (5%); and Agriculture (8%). To achieve the dramatic reductions being proposed in the various draft bills introduced in Congress (60-80% reduction by 2050), emissions from all sources will need to be addressed. Excluding any sector will unfairly shift the burden for emission reductions to the other sectors and create the potential for shifting emissions from covered to uncovered sources, referred to as "leakage". For example, excluding large commercial facilities from coverage may create an incentive for them to generate their own electricity rather than purchase from the utility that is covered.

The reduction goals and timetables must also be achievable considering each sectors' current level of emissions and the availability of technology to affect the reductions. This is especially true in the electricity sector where emission reduction from present levels will require technology that does not exist today. In the power generation sector, more than 50 percent of the electricity and over 80 percent of the CO_2 emissions come from coal-fired power plants. In Arizona, more than 40 percent of the state's energy comes from coal-fired power plants. Because cost-effective CO_2 controls are not expected to be commercially available until after 2020, any short-term GHG emission reduction goals would have to be met by fuel switching to natural gas. Such a shift would dramatically increase demand and costs for a fuel that is already extremely price sensitive and volatile. And the large capital expenditures for such fuel switching would be unnecessary with the advent of new clean coal and carbon capture and storage technologies that are anticipated to be commercially available by 2025.

The transformation of our economy to a low-carbon electricity foundation will not be achieved in the short term by setting "feel good" but unrealistic short-term goals. The focus must be on achievable short-term goals as new technology is developed to make the deep emission reduction needed over the longer term.

Accordingly, APS believes that during the early years of any program the goals must be based upon what is possible with the robust deployment of energy-efficient products and services and deployment of cost-effective renewable resources. During this period (before 2025), there must be a long-term sustained public investment in developing and commercializing low- and no-

carbon technologies. This investment must be substantial and be commensurate with the high risks posed by the goals and timetables.

APS supported the continuation of the investment and production tax credits, and we support an increase in incentive support for energy efficiency programs, renewable technologies and the construction of needed transmission infrastructure to bring large-scale renewable resources to customers.

We do not support a national Renewable Portfolio Standard ("RPS"). Such standards should be within the sole purview of the individual states as they see fit to promote available renewable energy resources in their jurisdictions. If, however, a federal RPS is to be adopted it must recognize those states that have already acted to promote renewable energy resources and avoid any duplication with those state programs. The federal program must do no harm to the state RPSs, provide flexibility that recognizes different renewable assets in different regions of the country, and set a timeframe that allows the needed infrastructure to be built to move renewables from the source to the consumer demand. This is especially critical for the robust development of wind, utility scale solar and geothermal resources.

2. Mechanisms for Protecting The Economy

Any cap-and-trade program must contain effective mechanisms to protect the economy. There have been numerous studies completed on the costs of GHG emission reduction programs and the vast majority shows a significant increase in energy costs for the average American consumer. For example, analysis of the proposed Lieberman-Warner Climate Bill performed by the U.S. Environmental Protection Agency ("EPA") projected an allowance price of $61-$83 by the year 2030. An analysis of the same bill by MIT projected an allowance cost of $86. In either case the impact would be similar, an increase in consumer electricity prices of more than 50 percent.

To protect against a major dislocation of the economy, especially as we transition to a new energy infrastructure, the program must protect against allowance price spikes and establish a price collar or safety valve for allowance prices. Effective regulatory oversight is also necessary to prevent market manipulation and fraud.

The use of a price collar is our preferred mechanism because it sets a ceiling price or safety valve which protects the economy should the allocation prices rise too high or fast, and the floor price ensures long-term stability to the allocation price, thereby creating predictability for business planning. For jurisdictional/regulated utilities like APS, the collar also establishes the bounds of "prudence" for rate-case cost recovery. Others have proposed a new government agency charged with monitoring the market and increasing the supply of allocations should the market price be too high. This approach is neither more effective nor efficient than the price collar. First, the ceiling-price safety valve would respond to the needs of the economy faster because it would not be dependent upon appointed bureaucrats to make a decision. Second, the safety valve would not be subject to the politics that inevitably surround such agencies and appointees. This predictability, especially in the early years, is needed for the private sector to make the investments needed to achieve the goals. A clearly stated price collar will provide the needed certainty.

Another mechanism to help contain the costs of the program is the unlimited use of offsets for compliance purposes, at least in the early years, through 2025, of the proposed cap-and-trade program. All the economic models show that offsets can have a significant moderating impact on the cost of achieving emission reduction goals.

Climate change is truly a global issue and emission reductions in other parts of the world have the same impact as those here in the U.S. We must structure the program to allow the biggest bang for the buck. We must not let this program be sidetracked by advocates who are seeking to achieve results other then GHG emission reductions. In any context, a cap-and-trade program will be complex, and we must work to avoid the additional complexity that would be caused by adding unnecessary requirements designed to achieve other goals. Keeping this legislation focused on GHG emission reductions allows a least-cost approach that includes the unlimited use of offsets. Any legitimate concerns about offsets can be addressed by monitoring, measurement, appropriate third-party verification and regulatory oversight.

Consistent with the goal of creating a program that can realistically achieve the goals without significant economic disruption, the program must allow the use of banking and borrowing for companies under the program. The use of these well understood mechanisms will help companies manage the potential volatility of the market and allow companies to manage their allowance portfolio strategically to take advantage of present and future market conditions and the availability of technology and processes that make actual emissions reductions possible.

Clear rules and regulations are needed to prevent market manipulation that could increase the costs of controlling GHG emissions. From clear protocols for calculating GHG emissions to policies that account for emissions not covered by the cap-and-trade program, the market structure, rules and accounting must be spelled out for the program to be effective and efficient. Without these details there exists significant potential to "game" the system resulting in emissions that are unaccounted for and that increase the costs to the regulated industries, and increases the potential that the emission reduction goals will not be reached.

3. Equitable Distribution of Allowances

Certainly, some business sectors, consumers, regions and states will be more severely affected by the cost of compliance than others. The allocation structure of cap and trade must be designed to provide equity across industrial sectors, regions and states. It must be transparent and easily understood. As mentioned above, it must be structured with sufficient safeguards to avoid market manipulation, such as allowance hoarding and windfall profits.

A "hybrid" system of allocations can capture the largest portion of GHG emissions across the broadest cross section of the economy. A down-stream allocation should apply to large stationary sources such as electricity generation units and chemical refineries, combined with an up-stream cap applied to the carbon content of fossil fuels used by remaining sources.

In the electricity sector, allocations should be free for those utilities that have a legal obligation to serve. Provisions can be included to ensure that such allocations do not result in windfall profits and that the end customers receive the benefit. These allocations must recognize

population shifts in the country and the fact that some states, like Arizona, have population growth greater than the national average. These changes can be accommodated by requiring periodic re-allocations of allowances.

Any free allocation in the electricity sector must recognize the contribution being made to the economy by clean, renewable resources. Nuclear generation accounts for 20 percent of our nation's electricity, and renewable resources are a rapidly growing source of new generation. Both nuclear and renewable generation are vital in the transition to a no-carbon energy infrastructure, and any allocation scheme should make provision for these technologies to provide additional incentives to expand the current fleet of these resources.

4. Enhanced Public Investment in Clean Power Generation

Over 70 percent of our nation's electricity comes from nuclear and coal resources, and our nation is blessed with an abundance of coal reserves. Realistically, in the near- and mid-term our economy is dependent on the continued operation of the existing fleets. In the longer term, deployment of new nuclear power plants and advanced technologies such as coal generation with carbon capture and storage will be vital to our economy. Without support for these new resources there will be significant fuel switching to natural gas. Not only will this put significant pressure on natural gas supplies and prices, but it will also divert resources away from the development and deployment of the advanced no- and low-carbon technologies.

Support for new nuclear generation must be commensurate with the risk. Loan guarantees and incentives such as a nuclear investment tax credit must be part of our energy policy and incorporated as a component of the strategy to achieve GHG emission reductions.

Clean coal technology with carbon capture and storage will be needed to achieve a realistic chance of reducing GHG emissions. With 27 percent of the nation's total GHG emissions coming from existing coal plants and with a growing demand for electricity, it will not be possible to retire the existing fleet of coal units in the near or mid term. New technology for capturing and sequestering CO_2 is projected to be available by 2025 (EPRI PRISM analysis) but making this happen will require significant dollars for research, development and deployment.

5. The Need for One National Program

While several states and regions have moved forward with cap-and-trade programs, there must be an effort to avoid pancaking programs which will do little but raise the cost of achieving the goal of reducing GHG emissions. Existing state and regional programs should be integrated into the federal cap-and-trade program where policies and provisions do not conflict. States should retain the right to impose more stringent emission reduction requirements via energy efficiency programs, renewable portfolio standards, and building codes. Where a conflict exists however, the federal program should prevail over state and regional cap-and-trade programs.

There must be clarity in the law regarding regulatory requirements and there should be no confusion regarding the preemptive nature of a new cap-and-trade program over existing statutes that potentially regulate GHGs. The Supreme Court Case *Massachusetts vs. EPA* designated GHGs as a pollutant under the Clean Air Act ("CAA") and mandated the EPA to determine if

such emissions were creating a danger to public health and the environment and therefore should be regulated. There is also the potential for GHG emissions to be controlled indirectly through the application of the Endangered Species Act ("ESA"). New climate legislation must supersede any GHG regulatory authority in the CAA, the ESA and other federal legislation that might allow for regulation of GHG emissions. This clarity is needed to avoid confusion, wasted effort and a multiplicity of court cases that will inevitably arise over the issue if it is not addressed in the new legislation.

6. Climate Change is a Global Challenge

Stabilizing global GHG emissions will require an effort by all developed and developing nations. The U.S. cannot do this on its own. It is vital that any U.S. program recognize this reality and provide mechanisms to obtain participation by developing nations of the world.

Attachment 2

EEI Global Climate Change Points of Agreement

January 14, 2009

- EEI remains committed to working with Congress on enactment of legislation that will produce substantial emissions cuts and mitigate impacts to customers.

- EEI will focus its efforts on a cap-and-trade program, but also remain open to a tax-based or hybrid approach in the event the political environment shifts.

- Consistent with EEI's support for economy-wide programs, there should be no exemptions for any industry or specific fuel.

- EEI will aggressively pursue legislative and regulatory policies in support of climate-friendly technologies.
    - Efficiency and renewables are key to near-term reductions.
    - Maximizing new nuclear is key to mid-to-longer term reductions.
    - The aggressive development and deployment of carbon capture and storage coupled with advanced coal technologies are necessary to preserving the coal option.
    - Plug-in hybrid electric vehicles ("PHEVs") and electric vehicles ("EVs") can make a major contribution to reducing net GHG emissions, as well as to reducing foreign oil dependence and consumer prices at the pump.
    - Other no and low-emitting carbon technologies should be pursued (*e.g.*, smart grid).
    - Support key concepts underlying the Boucher CCS bill.

- Long-term targets (*e.g.*, 2050) should be set at an 80% reduction below current levels.

- Interim targets should be aligned with technology availability.
    - Near-term targets should be set and driven by efforts on energy efficiency, renewable energy, and, to some extent, new nuclear.
    - Medium-term targets should be set in the 10 – 20 year timeframe after enactment to match up with and enable technology development (*e.g.*, new nuclear, CCS, *etc.*).

- Cost-containment provisions should include a price collar, which would include a firm price floor and firm price ceiling. The collar should be based on the following principles:
    - Start narrow and gradually expand over time as technologies become available.

- Simplicity of administration and transparency on use of revenue (which should include funding technology development and limiting economic impacts).

- Formulaic (*i.e.*, easy to determine price for any point in time).

- Offsets also are an important cost containment mechanism that should be allowed to the maximum extent practical, subject to monitoring, measurement, appropriate third-party verification and regulatory oversight.

- State climate policies should be harmonized with federal climate policy, and states can pursue related programs (*e.g.*, energy efficiency programs, renewable portfolio standards, *etc.*). There should not be multiple cap-and-trade programs for GHG reductions.

- There also should be harmonization at the federal level. A single comprehensive federal climate law, rather than a regulatory regime consisting of multiple, overlapping or conflicting statutes, is called for.

- Under a federal GHG cap-and-trade program, allowances should be transferred to the power sector from the oil and gas sector as the market share of PHEVs and EVs increases.

- The best way to mitigate impacts on customers is to flow-through the benefits of allowances to customers. This can best be achieved by having allowances for regulated utilities allocated at the LDC level—a process that would be overseen by the state utility regulators—with appropriate adjustment to address impacts on unregulated generators.

    - Allowances should be allocated in the early years of a climate program, with a gradual transition to a full auction.

    - The initial allocation to the electric power sector should be consistent with its level of CO_2 emissions (*i.e.*, 40%).

    - Sector allowances should be allocated as follows: merchant coal generation would receive allowances equal to 50% of base-year emissions (because it is assumed both that the other 50% is recovered by gas being on the margin in competitive markets and that gas has, on average, 50% of the carbon content of coal), with the balance of allowances allocated to LDCs based on an even split between base-year emissions (including emissions associated with purchased power) and retail sales. This approach is referred to as the —50-50-50□ proposal.