

Four Corners Generating Station Project

Navajo Nation Indian Reservation, San Juan County, New Mexico

Draft Initial Study/ Negative Declaration

September 2011

Prepared for:

California Public Utilities Commission
505 Van Ness Avenue
San Francisco, California 94102

Prepared by:

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San Mateo, California 94402



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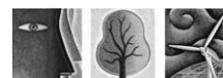
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1: Introduction

Southern California Edison Company (SCE), a regulated California utility, proposes to sell its ownership share of the Four Corners Generating Station (Four Corners) located in northwestern New Mexico, approximately 6 miles southwest of Fruitland, and 20 miles west of Farmington (see Figure 1.1-1). The Four Corners facility power plant fuel source is coal, which is burned to heat water and make steam in a thermal plant. The plant is co-owned by SCE and five other utility companies as tenants-in-common.

The California Public Utilities Commission (CPUC) must determine whether to authorize the proposed sale. This Initial Study/Negative Declaration was prepared in accordance with the California Environmental Quality Act (CEQA) Guidelines Section 15063 to evaluate the potential environmental consequences of the sale of the Four Corners facility.

1.1 Background

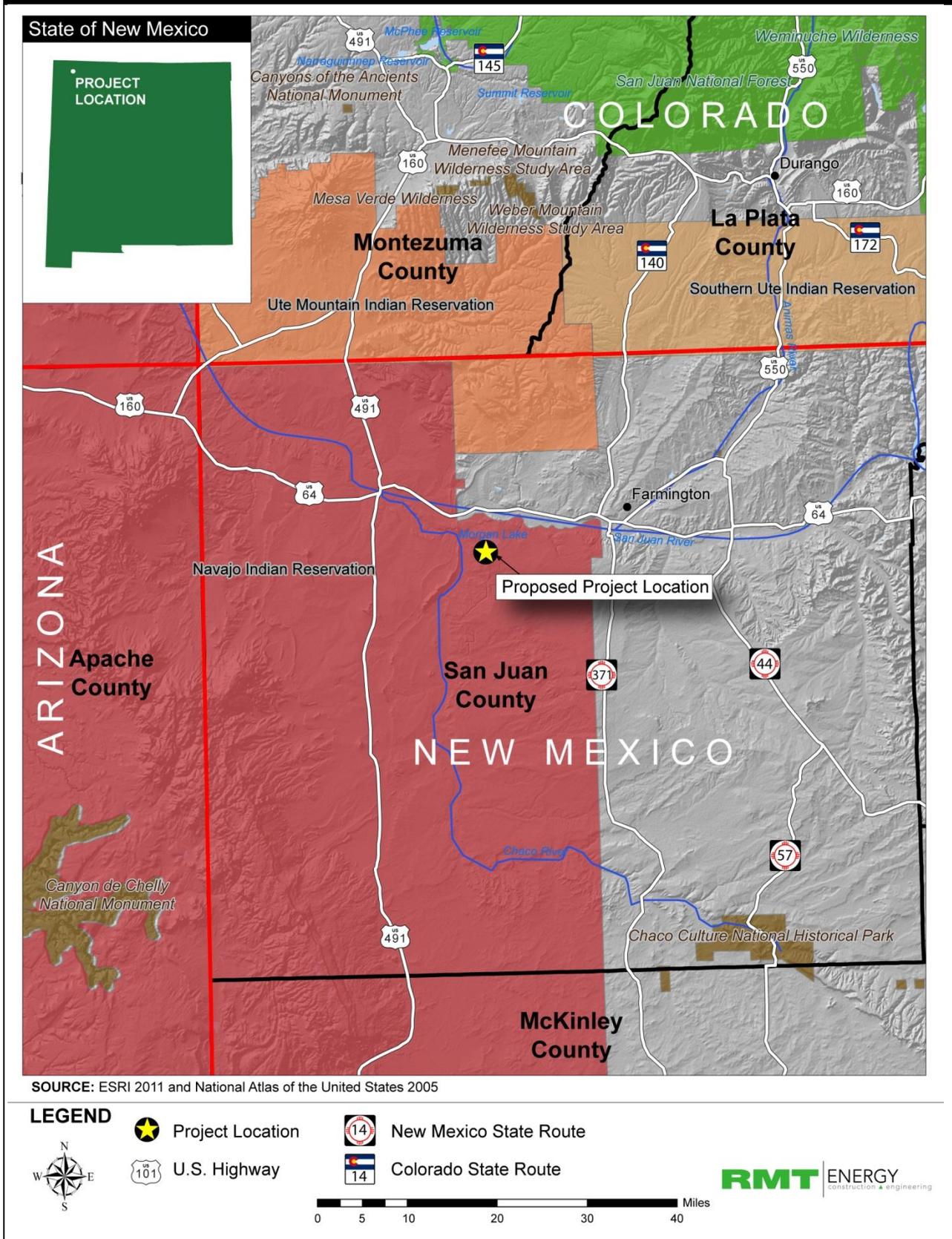
The CPUC regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. The CPUC serves the public interest by protecting consumers and ensuring the provision of safe, reliable utility service and infrastructure at reasonable rates, with a commitment to environmental enhancement and a healthy California economy. The CPUC regulates utility services, stimulates innovation, and promotes competitive markets, where possible. The CPUC regulates both the construction and sale of electric utility generation facility assets, among other things. The CPUC must determine whether to authorize the sale of the Four Corners facility pursuant to Section 851 of the Public Utilities Code.

1.2 CEQA Lead and Responsible Agencies

CEQA requires that the CPUC prepare an Initial Study for discretionary projects, such as the proposed project, to determine whether the project may have a significant adverse effect on the environment, based on substantial evidence. The sale of the Four Corners generating facility is considered a project under CEQA because the sale could result in physical effects on the environment. Specifically, the sale of SCE's interests in the Four Corners facility could result in the remaining owners operating the plant at a different capacity, which could result in changes to air quality and greenhouse gas emissions. The CPUC must therefore consider the environmental effects of the sale, prior to making a decision as to whether to approve the sale. The physical change that could affect California involves changes in the emissions of greenhouse gases.

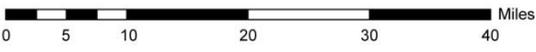
The CPUC is the lead state agency for review of the project, the sale of the SCE asset, under CEQA. The CPUC is required to prepare an Environmental Impact Report (EIR) if substantial evidence indicates that the proposed project may result in significant effects that cannot be mitigated. A Negative Declaration can be adopted by the CPUC if the Initial Study does not reveal substantial evidence of significant impacts, or if the potential effects can be reduced to a level of insignificance through project revisions (Section 21080; CEQA Public Resources Code).

Figure 1.1-1: Project Location Map



SOURCE: ESRI 2011 and National Atlas of the United States 2005

- LEGEND**
- Project Location
 - New Mexico State Route
 - U.S. Highway
 - Colorado State Route



This Initial Study/ Negative Declaration (IS/ND) includes an assessment of the potential environmental impacts of the proposed project pursuant to CEQA, the amended State CEQA Guidelines (14 CCR 15000 et seq.), and the CPUC CEQA rules (Rules 17.1, 17.2, and 17.3).

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2.1 Project Background

2.1.1 EXISTING CONDITIONS AT THE FOUR CORNERS GENERATING STATION

The Four Corners Generating Station is a five-unit, coal-fired electrical energy generating station located in northwestern New Mexico, in San Juan County on the Navajo Nation Indian Reservation. The facility has 2,100 megawatts (MW) of nominal net effective generating capacity. Four Corners is a mine-mouth power plant, meaning that it obtains all of its coal supply from the nearby Navajo Coal Mine, which is operated by a subsidiary of BHP Billiton (BHP). The mine is also located on the Navajo Nation Indian Reservation.

A railroad line from the adjacent Navajo Mine carries coal to the station. The coal is delivered to blending facilities adjacent to the plant, where it is crushed and moved to on-site storage or to conveyor belts for transport to one of the five coal-fired units. The coal is crushed into finer particles at each of the generating units in specialized pulverizing mills, mixed with preheated air, and injected into the plant's boilers for combustion. Natural gas is used for ignition and flame stabilization of the coal fuel.

The plant has five coal-fired units, rated from 170 MW to 770 MW. Construction on Units 1 and 2 began in 1959, and operation of these two units commenced in 1961. Unit 3 was constructed in 1962 and 1963, and began operation in 1963. These first three units are owned and operated entirely by the Arizona Public Service Company (APS). Southern California Edison (SCE) and four other utilities joined with APS in the late 1960s to build Units 4 and 5, which began operation in 1969 and 1970, respectively. Units 4 and 5 each had an initial generating capacity of 785 MW. Later installation of air emission reduction equipment has resulted in the present day maximum dependable rating of 770¹ MW.

Each generating unit includes a boiler, a steam turbine generator, control systems, and auxiliary equipment necessary to generate electric power. The plant is equipped with baghouse particulate collection systems and flue gas desulfurization (FGD) scrubbers to reduce particulate and sulfur dioxide (SO₂) emissions. The plant's cooling water system uses an on-site reservoir that also provides water for various plant requirements.

The facility also contains components for the transmission of electrical energy, including a 345 kilovolt (kV) switchyard, a 500 kV switchyard, a 345-500 kV transformer, and various transmission lines and connection facilities.

¹ For many years, Units 4 and 5 had a rating of 750 MW each. Repairs conducted during 2008 and 2010 increased the output, and in 2011 the plant owners changed the maximum dependable rating to 770 MW.

2.1.2 CURRENT FACILITY OWNERSHIP

The Four Corners Generating Station is jointly owned by six entities as tenants-in-common. APS is the primary owner of the facility, with 100 percent ownership of Units 1, 2 and 3, and is the operator of the Four Corners facility. Units 4 and 5 are jointly owned by APS, SCE, Public Service Company of New Mexico (PNM), Salt River Project Agricultural Improvement and Power District (SRP), El Paso Electric Company (El Paso), and Tucson Electric Power Company (TEP). The co-owners’ undivided interests in Four Corners Units 4 and 5 are indicated in Table 2.1-1.

SCE also owns a portion of the Four Corners Generating Station facilities related to Units 4 and 5, as indicated in Table 2.1-2.

Table 2.1-1: Co-Owners’ Ownership Percentage (Unit 4 and 5)	
Owner	Percent Ownership of Units 4 and 5
APS	15
SCE	48
PNM	13
SRP	10
El Paso	7
TEP	7

Table 2.1-2: SCE Ownership Percentage	
Facility	Percent Ownership
500 kV Switchyard	32
345 kV Switchyard	12
345-500 kV Transformer and Connection to Reserve Auxiliary Power Source	48
Reserve Auxiliary Power Source	3.46
Connection to 345 kV Switchyard Facilities	43.20

2.2 Project Objectives

SCE, and other California utility companies, are subject to a number of State of California regulations and legal requirements relating to greenhouse gas (GHG) emissions standards. These requirements include:

- Senate Bill 1368 that mandates a GHG emissions performance standard (EPS) for certain utility investments in baseload power plants
- CPUC decisions D.07-01-039 (the “GHG EPS Decision”) and D.10-10-016 (the “Four Corners EPS Decision”) that establish and implement the EPS for SCE.

The EPS limits the extent to which SCE may invest in and hold an ownership interest in the Four Corners facility, because the coal-fired, baseload plant does not meet the EPS.

SCE is proposing to sell its interests in the Four Corners Generating Station in order to comply with these California regulations and legal requirements regarding GHG emissions. The Four Corners Generating Station is the last coal-fired energy generating facility in which SCE has an interest, and sale of its interest in the facility would help reduce SCE’s contribution to GHG emissions. Under Section 851 of the Public Utilities Code, the CPUC has discretionary authority to determine whether the proposed divestiture of SCE’s ownership would be in the public interest of the citizens of the State of California.

2.3 Project Description

2.3.1 SCE APPLICATION TO CPUC

SCE’s application to the CPUC includes the following three elements:

1. SCE seeks to sell its interest in the Four Corners Generating Station to APS according to the terms and conditions in the November 8, 2010 Purchase and Sale Agreement.
2. SCE seeks CPUC approval for SCE’s proposed ratemaking treatment with respect to the proposed sale transaction and proceeds.
3. SCE seeks authority to make limited, non-life-extending 2012 capital expenditures in the Four Corners facility to operate the plant safely through the closing of the Purchase and Sale Agreement (potentially October 2012, see Section 2.3.3 below).

The CPUC determined that its review of and consideration of, whether to allow the sale of SCE’s ownership of the Four Corners facility requires compliance with the provisions of CEQA because the CPUC must exercise some form of discretionary decision-making in the oversight and potential approval of the sale. The sale is considered a project under CEQA because the sale will have a physical effect on the environment in California in the form of greenhouse gas emissions.

The CPUC has determined that the second and third portions of the application are not subject to CEQA review. The portions of the project pertaining to the ratemaking treatment and the capital expenditures on the Four Corners facility are therefore not addressed further in this Initial Study.

2.3.2 PURCHASE AND SALE AGREEMENT

The November 8, 2010 Purchase and Sale Agreement outlines the conditions of the purchase of SCE's interest in the Four Corners facility by APS. The Purchase and Sale Agreement requires APS to assume all of the environmental liabilities associated with SCE's divested interest at the Four Corners facility to the extent those liabilities are attributable to activities or conditions first arising after the sale is completed, as well as the costs of certain modifications to the Four Corners facility or supplemental environmental projects related to environmental activities or conditions arising before the sale. The purchase price identified in the Purchase and Sale Agreement also reflects that APS assumes the final mine reclamation and plant decommissioning costs, which have been defined within two studies conducted by APS in 2009 and 2010. Finally, the Purchase and Sale Agreement provides that, at the closing of the agreement, APS will assume any SCE contractual obligations to make capital expenditures that SCE is prohibited from making by California law.

2.4 Connected Actions that May be Caused by the Proposed Project

The proposed sale of SCE's interest in the Four Corners power plant would have no direct physical effect; however, project descriptions under CEQA must include reasonably foreseeable impacts or future phases of proposed projects. Reasonably foreseeable connected impacts or actions must be addressed with the project if:

- (1) it is a reasonably foreseeable consequence of the initial project; and
- (2) the future expansion or action will likely change the scope or nature of the initial project or its environmental effects" (Laurel Heights Improvement Association of San Francisco, Inc. v. Regents of the University of California, 1988).

Most environmental impacts that could potentially result from actions connected to the sale would be localized to New Mexico and would not affect California². The one exception would be GHG emissions. Greenhouse gases and their effects on global climate change contribute to an issue that is not limited to the State of New Mexico. A significant increase in GHG emissions at the Four Corners facility could have an impact on climate change and its effects in California. The analysis of possible connected actions therefore focuses exclusively on actions that could result in changes to GHG emissions from the Four Corners facility.

2.4.1 POSSIBLE CONNECTED ACTIONS

The sale of SCE's interest in Units 4 and 5 would result in connected actions from both SCE and APS. The energy produced from SCE's 48 percent share of Units 4 and 5 is currently transmitted to California and used by SCE's California customers. The California EPS and the resulting sale of

² The CPUC determined, as described in Chapter 1, that the effects that would occur only in New Mexico are not under the jurisdiction of the CPUC, do not create impacts in California (except for GHGs), and are not subject to the California Environmental Quality Act. These potential actions and effects could include increases in plant operations resulting in increased water and natural gas use and increased emissions of various air pollutants.

SCE's interest in these two units would result in SCE obtaining replacement power from other sources. These other sources would be cleaner energy sources than that provided by the Four Corners facility.

There are several possible scenarios for connected actions taken by APS as a result of the sale.

Scenario 1

APS has stated in a November 24, 2010 letter to the U.S. Environmental Protection Agency (EPA) that, if the sale is approved, APS will shut down Units 1-3 at some point in the future³. This letter is included in Appendix A. Units 1-3 currently produce an average total of approximately 485 MW⁴ of energy, while Units 4 and 5 currently produce an average total of approximately 1,225 MW of energy. SCE's 48 percent share of the output of Units 4 and 5 is an average of approximately 588 MW, which exceeds the output lost from the closure of Units 1-3 by approximately 103 MW. Once APS obtains SCE's share of the output from Units 4 and 5, APS would likely shut down Units 1-3 and reduce the output of Units 4 and 5 by up to approximately 103 MW so that the facility's output meets the current demands of APS's customers.

Scenario 2

A second potential scenario exists where APS shuts down Units 1-3 as indicated in the November 24, 2010 letter to the EPA, but increases the output from Units 4 and 5 from their current combined average output of approximately 1,225 MW to their maximum combined capacity of approximately 1,500 MW. This scenario would result in a net increase of approximately 276 MW of energy production for APS's customers (103 MW net increase from the APS purchase of SCE's 48 percent share of the current 1,225 MW output, plus an additional 173 MW for APS's 63 percent share from increasing the output of Units 4 and 5 to the maximum 1,500 MW capacity). Units 4 and 5 are cleaner and more efficient than Units 1-3, producing fewer GHGs per MW of energy. This second scenario is considered unlikely, as APS would have no incentive to produce energy that exceeds customer demand. This second scenario also assumes that Units 4 and 5 could operate near full rated load without ever occurring outages for maintenance. Despite the unlikely nature of this scenario, however, scenario 2 was carried forward in the analysis to provide a reasonable "worst-case" scenario for GHG emissions.

Scenario 3

A third scenario was considered but rejected from further analysis. This third scenario would involve maintaining Units 1-3 at their current capacity, and operating Units 4 and 5 at peak capacity. This scenario would result in an increase in energy output of approximately 761 MW annually for APS customers (276 MW increase from scenario 2, plus the 485 MW currently produced by Units 1-3). The third scenario was rejected from further consideration because APS

³ In its November 24, 2010 letter, APS proposes closing Units 1-3 by 2014.

⁴ All MW values in this discussion of the three scenarios are based on average output over an 11-year period from 2000 through 2010, as shown in Appendix B.

has already stated its intention to close Units 1-3 at some future date, and because the energy production that would result under this scenario far exceeds the demands of APS's customers.

The impacts to GHG emissions from these connected actions are described in greater detail in Section 3.1 – Greenhouse Gases.

2.4.2 PROJECT TO ANALYZE

This Initial Study presents an analysis of potential impacts associated with projected plant operations under new owners as compared to SCE's projected plant operations (if Units 4 and 5 were not sold). The Initial Study will focus only on the potential impacts of the project and its possible connected actions that could affect California; namely, any changes in GHG emissions from the Four Corners facility.

2.5 Project Schedule

The Purchase and Sale Agreement between SCE and APS identifies the parties' goal of closing the sale by October 1, 2012. The negotiated sales price will change if the sale date occurs either before or after the October 1, 2012 date. Table 2.5-1 shows SCE's proposed divestiture schedule.

Table 2.5-1: SCE's Proposed Divestiture Schedule	
Action	Date
Draft IS/ND Released for Public Review	September 27, 2011
Close of Draft IS/ND 30-day Review Period	October 27, 2011
CPUC Proposed Decision	November 3, 2011
CPUC Decision Issued	December 15, 2011
Divestiture Complete	October 1, 2012

Environmental Setting and Environmental Impacts

3.1 Greenhouse Gases

3.1.1 ENVIRONMENTAL SETTING

Greenhouse gases (GHG) are global concerns, unlike criteria air pollutants or toxic air contaminants that are of regional and/or local concern. Scientific research indicates that observed climate change is most likely a result of increased GHG emissions associated with human activity (IPCC 2007). Global climate change describes a collection of phenomena, such as increasing temperatures and rising sea levels, occurring across the globe due to increasing anthropogenic emissions of GHGs (EPA 2009). GHGs contribute to climate change by allowing ultraviolet radiation to enter the atmosphere and warm the Earth's surface, as well as by preventing some infrared radiation from the earth from escaping back into space. The largest anthropogenic source of GHGs is the combustion of fossil fuels, which results primarily in carbon dioxide (CO₂) emissions.

A "greenhouse gas" or "greenhouse gases" include, but are not limited to, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (NO_x), hydrofluorocarbon (HFC), perfluorocarbon (PFC), and sulfur hexafluoride (SF₆) as defined by California State Assembly Bill (AB) 32, The California Global Warming Solutions Act of 2006. The effects of each of these gases on global climate change are measured in terms of CO₂, and are referred to by their CO₂ equivalent (CO₂e) effects.

Federal GHG Regulations

Greenhouse gases are regulated by the federal government and, in some cases, by State Government. Federal regulations include the Mandatory Greenhouse Gas Reporting Rule (40 CFR Part 98). This annual reporting requirement provides the EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons or more of CO₂ per year. This publically available data will allow the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost effective opportunities to reduce emissions in the future. The Four Corners facility is subject to this rule and its first annual report is due September 30, 2011.

Facilities that emit GHGs are also subject to federal New Source Review (NSR) and Title V permitting. On June 3, 2010, the EPA issued a final rule (the Tailoring Rule) that "tailors" the applicability provisions of the NSR and Title V programs to enable EPA and states to phase in permitting requirements for GHGs in a common sense manner. Under the Tailoring Rule, application of NSR to GHGs will be implemented in multiple steps. The first Tailoring Rule step began on January 2, 2011, and ended on June 30, 2011. It applied to facilities that were already subject to NSR permitting for pollutants other than GHGs. The sale of SCE's portion of the Four Corners facility would take place after June 30, 2011, so the first step of the Tailoring Rule would not apply. The second step began on July 1, 2011, and would affect existing facilities that make a modification to the plant that increases GHG emissions by 75,000 tons per year (tpy) or more on a

CO_{2e} basis. If the facility's GHG emissions increase exceeds this threshold, then they are subject to NSR permitting for GHGs. The sale of SCE's portion of the Four Corners facility would not meet the NSR definition for "modification", and this project would therefore not be subject to the Tailoring Rule.

State and Regional GHG Regulations

The Four Corners facility is not located in California; however, a review of California regulations for GHG emissions is helpful to understand the GHG impacts as they pertain to a CEQA evaluation. Governor Schwarzenegger issued Executive Order (EO) S-3-05 in June 2005, in response to the increasing body of evidence that GHGs will continue to affect global climate. EO S-3-05 established several GHG emission reduction targets for California. GHG emissions are to be reduced to the year 2000 emission levels by 2010; to 1990 emission levels by 2020 (a 29 percent reduction from Business-as-Usual emissions levels projected for 2020); and to 80 percent below 1990 levels by 2050.

The California State Legislature adopted AB 32 – The California Global Warming Solutions Act of 2006 subsequent to the Governor's issuance of EO S-3-05. AB 32 establishes a cap on statewide GHG emissions and sets forth the regulatory framework to achieve the corresponding reduction in statewide emissions levels. Specifically, AB 32 recognizes a serious threat to the "economic well being, public health, natural resources, and the environment of California" that results from global climate change. Consequently, AB 32 mandates a significant reduction in GHGs in order to contribute to efforts to stabilize atmospheric concentrations of GHGs (CARB 2011).

The Four Corners facility is located on the Navajo Nation Indian Reservation in New Mexico. The Navajo Nation has not promulgated any GHG-specific regulations. The State of New Mexico is a member of the Western Climate Initiative, which is addressing GHG's on a regional level. The New Mexico Climate Change Advisory Group (NMCCAG) reviews and provides recommendations to the Governor's office regarding climate change policy. The Advisory Group includes a member of the Navajo Nation. The State of New Mexico has not promulgated any GHG-specific regulations and the NMCCAG has not made any final recommendations to the State of New Mexico.

3.1.2 ENVIRONMENTAL IMPACTS

GHG Significance Thresholds

Several Air Pollution Control Districts (APCD) within California have established significance thresholds for GHGs. The Four Corners Generating Station is not located in California; therefore, the significance thresholds established by California APCDs would not directly apply to this project. The California Air Resources Board (CARB) prepared a Preliminary Draft Staff Proposal for setting interim significance thresholds for GHGs under CEQA (CARB 2008). The thresholds were established for industrial, commercial, and residential projects and did not address electricity generation projects. The California Energy Commission (CEC) addressed the issue of determining a threshold of significance and appropriate mitigation for electricity generation projects in a March 2009 Committee Report. While this report addressed GHG impacts for new power plants, the information in this report may be considered appropriate to use for evaluation of this project.

The CEC Committee did not propose a threshold of significance for any category of power plant and recommended that applicants determine the significance of their GHG. The CEC also concluded that GHG cumulative impact mitigation is well-suited to being addressed programmatically. However, programs such as the CARB Scoping Plan are not yet fully in effect and, in the near term, the CEC recommends that mitigation be addressed on a case-by-case basis. It would therefore be reasonable to conclude that the GHG emissions related to the Four Corners facility and other out-of-state facilities may best be addressed on a case-by-case basis and on the merits of each project.

On December 30, 2009, the California Resources Agency adopted amendments to the CEQA guidelines for GHG emissions. On February 16, 2010, the Office of Administrative Law approved the amendments and filed them with the Secretary of State for inclusion in the California Code of Regulations. The amendments became effective on March 18, 2010. According to these amendments, impacts to GHGs may be considered significant if the project will:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, and/or
- Conflict with an applicable plan, policy or regulation adopted for the purposes of reducing the emissions of GHGs.

These significance thresholds were used in determining the significance of the GHG impacts for this project because the State of New Mexico has not yet developed plans or policies that would reduce GHG emissions on a regional level, and the Navajo Nation has also not implemented plans, policies, or regulations that would impact GHG emissions from the Four Corners facility. The Four Corners facility is located on federal land and no GHG significance thresholds have been established under NEPA.

Checklist

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
c) Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

a) *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

The source of GHG emissions at the Four Corners facility is combustion of coal from Units 1 through 5. The most common GHGs associated with fuel combustion are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Methane and N₂O emissions, even when taking into account their global warming potential, represent a small percentage of the combustion emissions.

The GHG emissions under two possible connected action scenarios have been analyzed below. A summary of the change in GHG emissions for both scenarios is presented in Table 3.1-1.

Table 3.1-1: Greenhouse Gas Emissions under Scenarios 1 and 2		
	Scenario 1	Scenario 2
Baseline Emissions (metric ton CO ₂ -e)	14,510,980	14,510,980
Future Emissions (metric ton CO ₂ -e)	7,571,626	14,106,855
Change (metric ton CO ₂ -e)	-6,939,354	-404,125
NOTE:		
Scenario 1: Units 1-3 shut down; Units 4-5 output reduced by 103 MW to balance the capacity gained in Units 4 and 5 as a result of purchasing SCE's 48% share.		
Scenario 2: Units 1-3 shut down; Units 4-5 operated at maximum capacity.		

Scenario 1

As a connected action resulting from the sale of SCE's interest in Units 4 and 5, APS likely would shut down Units 1-3 and use SCE's share of the electricity output from Units 4 and 5 to replace the electricity output from Units 1-3. The purchase of SCE's 48 percent share of the output from Units 4 and 5 would result in a 103 MW net increase in output for APS, which exceeds customer demand. APS would therefore likely reduce output from Units 4 and 5 by 103 MW to maintain the current output produced for its customers. The net change in GHG emissions under scenario 1 would be a net annual decrease of approximately 6,939,354 metric ton CO₂-e. Detailed GHG emission calculations for scenario 1 are included in Appendix C.

Scenario 2

A second, more conservative operating scenario would also be possible. In this second scenario, Units 1-3 would be shut down and Units 4 and 5 would be operated at their maximum rated capacity. This scenario would result in a net increase of 276 MW of electricity production. Units 4 and 5 were overhauled in 2010 and 2008, respectively, and are more efficient than Units 1-3 and emit fewer GHGs per MWH than Units 1-3. Therefore, even under the unlikely scenario that Units 4 and 5 are operated at their maximum capacity, there would be a net annual reduction in GHG emissions of approximately 404,125 metric ton CO₂-e. Detailed GHG emission calculations for scenario 2 are included in Appendix C.

SF₆ Emissions

An additional potential source of GHG emissions at the power plants would be SF₆ emissions from electrical switching stations and substations. There would be no change in operation of the switching stations at the Four Corners facility as a result of the sale; therefore, there would be no change in SF₆ emissions from the facility.

SCE's Replacement Power

The energy produced from SCE's share of Units 4 and 5 is currently transmitted to California and used by SCE's California customers. The sale of SCE's interest in these two units would result in the connected action of SCE having to obtain replacement power from another source(s). The new source(s) would be required to be a cleaner energy source with respect to GHG emissions than that provided by the Four Corners facility. SCE's sale of interest in the Four Corners facility and purchase of replacement power from a cleaner source would therefore result in a reduction in GHG emissions for the production of energy supplied by SCE to its California customers.

Summary

The project would result in a net reduction in GHG emissions as there would be a decrease in GHG emissions from the Four Corners combustion units; the electricity currently being transmitted to California would be replaced by electricity generated by a source with lower GHG emissions; and there would be no change in GHG emissions from the switching stations and substations. The project would therefore have no negative impact in regard to GHG emissions.

b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases?

There are no applicable plans, mandatory GHG regulations, or finalized agency guidelines, other than the Mandatory Greenhouse Gas Reporting Rule, that are applicable to the Four Corners facility at this time.

The plans and regulations that would be mandated under AB 32 would not apply to the Four Corners facility since it is not located in California. The purpose of this project would be to comply with California's Senate Bill 1368 which requires SCE to comply with an Emissions Performance Standard.

The Western Climate Initiative has not yet developed plans or policies that would reduce GHG emissions on a regional level. The Navajo Nation has also not implemented plans, policies, or regulations that would impact GHG emissions from the Four Corners facility. The proposed sale of SCE's interest in the Four Corners facility would therefore not conflict with any plans, policies, or regulations adopted for the purpose of reducing the emission of greenhouse gases.

c) Have impacts that are individually limited, but cumulatively considerable?

The sale of SCE's interest in the Four Corners facility would result in a net reduction in GHG emissions. This reduction would be a beneficial impact, and would therefore not contribute to cumulative impacts in the local communities.

d) Have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

The sale of SCE's interest in the Four Corners facility would not adversely affect human beings, either directly or indirectly, as the project would result in a net reduction in GHG emissions. This reduction would be a beneficial impact.

4: References

- Committee Guidance on Fulfilling California Environmental Quality Act Responsibilities for Greenhouse Gas Impacts in Power Plant Siting Applications. California Energy Commission. March 2009.
- <http://navajonationepa.org/index.html>. Navajo Nation Environmental Protection Agency. Accessed August 19, 2011.
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5: List of Preparers and Agencies/Persons Contacted

5.1 List of Preparers

This section lists the individuals who either prepared or participated in the preparation of this IS/ND.

LEAD AGENCY

Andrew Barnsdale *Project Manager, California Public Utilities Commission*

CONSULTANT TEAM

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**Appendix A:
November 24, 2010 Letter from APS
to the U.S. EPA**



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November 24, 2010

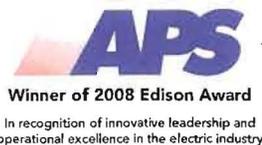
The Honorable Jared Blumenfeld,
Regional Director, Region IX
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, California 94105-3901

Re: EPA-R09-OAR-2010-0683: Source Specific Federal Implementation Plan for
Implementing Best Available Retrofit Technology for Four Corners Power Plant:
Navajo Nation

Dear Mr. Blumenfeld:

On October 19, 2010 the U.S. Environmental Protection Agency (EPA or the Agency) published a proposed *Source Specific Federal Implementation Plan for Implementing Best Available Retrofit Technology for Four Corners Power Plant: Navajo Nation* (the Proposed FIP) 75 Fed. Reg. 64221 (Oct. 19, 2010). The Proposed FIP would require the Four Corners Power Plant (Four Corners or the Plant), located on the Navajo Nation, to achieve specific emission reductions of nitrogen oxide (NOx) and particulates (PM) to comply with the Best Available Retrofit Technology (BART) requirements of the visibility protection program under the Clean Air Act. 42 U.S.C. 7491A. The Proposed FIP would also impose new opacity limits for the electric generating units at the Plant and for fugitive dust associated with material handling. The Proposed Rule solicits comments by December 20, 2010.

Arizona Public Service Company (APS or the Company) intends to submit detailed comments addressing the many issues raised in the Proposed FIP. However, since EPA issued the Proposed FIP, an important event has occurred that may have significant implications, both within and beyond the context of the Proposed FIP. This event presents a unique opportunity to satisfy the Clean Air Act BART requirements in a manner that, compared to EPA's Proposed FIP is more cost effective, achieves better visibility improvement and more significant emission reductions from the Plant, and assures that the employment and economic benefits of the Plant for the Navajo Nation and local economy are sustained.



The purpose of this letter is to outline APS's proposal to EPA. As we discussed with Ms. Jordan and Ms. McKaughan in our offices on November 9, this is a proposal to resolve all issues associated with several Clean Air Act programs. Specifically, and as described in detail below, our proposal is to close Four Corners Units 1-3 by 2014 and to install selective catalytic reduction technology (SCRs) on Units 4 & 5 by 2018, in exchange for EPA's agreement that these actions resolve Four Corners' obligations under the BART, reasonably attributable visibility impairment (RAVI) BART, New Source Review (NSR) and historical New Source Performance Standards (NSPS) programs of the Clean Air Act.

BACKGROUND

On November 8, 2010, APS announced that it has reached an agreement with Southern California Edison (SCE) to purchase SCE's ownership share of Units 4 & 5 at the Plant (the Agreement). SCE made the decision to divest from Four Corners based upon the California Public Utilities Commission's (CPUC's) rules¹ precluding California utilities from making "life extension" investments in electric generating units that do not meet a specified emissions standard. The Agreement requires regulatory approvals from several agencies, including the CPUC, Federal Energy Regulatory Commissions, and the Arizona Corporation Commission. The Agreement establishes an anticipated closing date of October 2012.² Both parties must obtain the necessary regulatory approvals before the transaction can close.

On a parallel track, APS and the other co-owners will be required to begin making significant capital expenditures to comply with final BART requirements, four to five years in advance of the effective compliance date of the new BART rule. Accordingly, if EPA issues final BART rule in early 2011, APS and the co-owners would need to begin spending significant dollars almost immediately, to assure compliance with the 2016 deadline.

The timing of the closing of the SCE transaction, when superimposed on the schedule to begin capital expenditures to meet anticipated BART requirements, presents a significant challenge. Neither APS nor any other co-owner will be willing to spend capital on required pollution control upgrades if the transaction with SCE has not closed: who would pay SCE's 48% share of those costs, with no certainty regarding future ownership of that share? In short, if capital expenditures for SCRs for NOx control are required before the deal with SCE closes, the co-owners may simply elect to close the entire Plant (all five units), rather than assume the risk of a multimillion dollar expenditure for which there may be no subsequent recovery.

Significantly, APS also announced that, if the deal closes, APS will close Units 1-3 at some point in the future.³ APS has not committed to a date certain for closing Units 1-3.

¹ In 2007, the CPUC promulgated the Greenhouse Gas Emissions Performance Standard, prohibiting California load serving entities from making "life extension" investments in electric generating units that do not meet a specified emission limitation for greenhouse gases.

² The closing may occur before or after that date, but the purchase price varies accordingly. If the closing has not occurred by December 31, 2012, either SCE or APS may terminate the transaction.

³ The Agreement is also contingent upon a lease extension being approved by the Navajo Nation Council and a new fuel purchase agreement being executed with BHP Billiton.

THE APS PROPOSAL

Four Corners is currently faced with uncertainty on all sides: we have not yet consummated our transaction with SCE; we are facing potential BART costs of \$1 billion for controls at a Plant at which one owner has announced its intent to divest by 2016; the National Parks Conservation Association petitioned the United States Departments of the Interior and Agriculture to certify to EPA visibility impairment reasonably attributable to Four Corners; we received a Notice of Intent to Sue from EarthJustice concerning alleged NSR and NSPS violations; and we have received and responded to an EPA Clean Air Act § 114 request for information concerning historic Plant projects, presumably in the context of an NSR investigation. In addition, we are facing myriad additional environmental regulations in the future, including mercury, coal combustion residues, ozone, carbon and others. APS' proposed approach resolves these critical uncertainties, protects and enhances the environment, assures the Navajo Nation economic stability, and provides APS the flexibility it needs to manage the risks associated with finalizing this transaction.

To synchronize the timing of the transaction with SCE and the beginning of BART expenditures, APS proposes closing Units 1-3 by 2014. This action would result in Plant-wide NOx emission reductions of 16,184 tons per year, from 45,132 today to 28,948 tons. By taking this action by 2014, the environment would benefit a full three years ahead of the NOx and PM emission reductions that would occur under the EPA proposal. In addition, the benefits would include reductions in SO2, mercury and CO2 emissions and a reduction in the use of water.

APS would begin the process of engineering new SCRs for Units 4 & 5 no later than 2014 and would have those controls installed and operational by the end of 2018. While 2018 is two years later than the timeframe that would be required under a 2011 BART rule by EPA, the APS plan would result in *greater* emission reductions in 2018 and beyond than would occur under EPA's final BART rule.

Table 1 below shows NOx emission reductions resulting from the closure of Units 1-3 for the years 2014 to 2018, for both the Proposed FIP and the APS proposal. Under the APS proposal, the Plant-wide NOx emissions during this five year period would be 9,024 tons less than under the EPA's proposal. Furthermore, starting in 2019, annual NOx emissions from the Plant will be significantly lower than the emission limit included in the Proposed FIP.

Table 1
Four Corners Power Plant NOx Emissions (tons)
Comparison of EPA BART Proposal and APS Alternate Proposal

	2014	2015	2016	2017	2018	2019	Total (2014 - 2018)
EPA Proposal	45,132	45,132	45,132	9,184	9,184	9,184	153,764
APS Proposal	28,948	28,948	28,948	28,948	28,948	6,498	144,740

- Emissions are in short tons and assumes a plant-wide capacity factor of 91%

Table 2 below shows emission reductions of other pollutants that would result from closing Units 1-3. The APS proposal results in significant reductions of all relevant pollutants, including a 30% reduction in the Plant's carbon footprint.

**Table 2
Reductions Closing Units 1, 2 and 3**

Material	Annual *	Cumulative**
NOx (tons)	16,184	104,958
SO2 (tons)	2,852	68,448
Particulate Matter (tons)	678	16,272
Mercury (lbs)	361	8,664
Water (Acre-feet)	6,000	144,000
CO2 (tons)	5.2 M	125M

* Current emissions

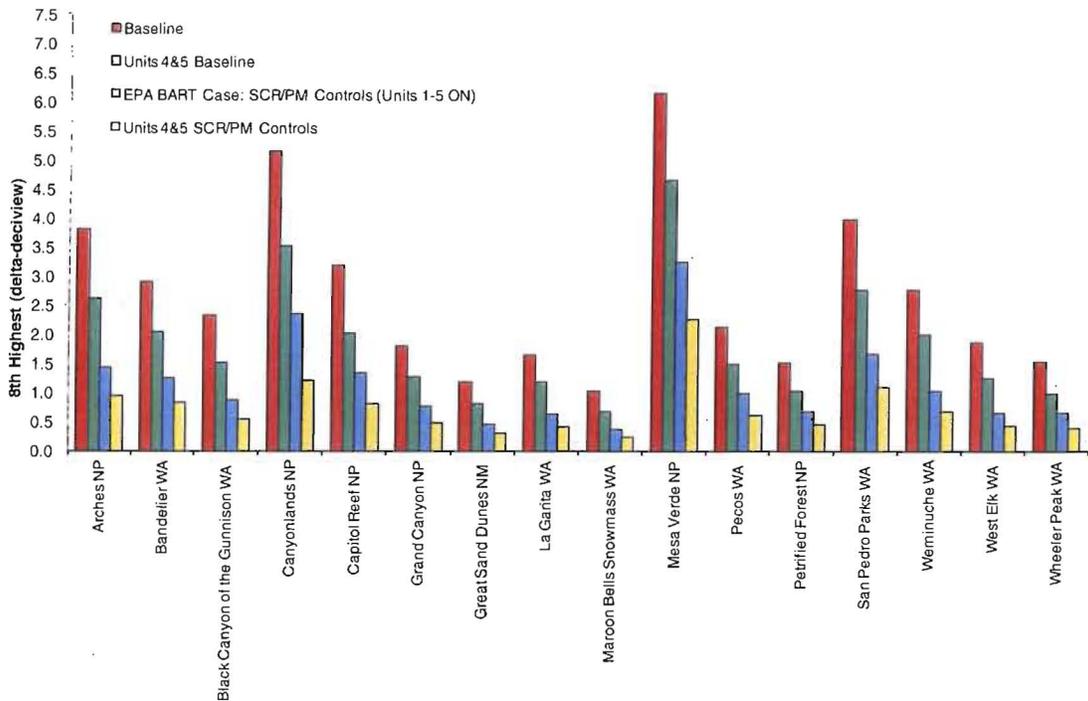
**Cumulative values assume APS proposal and continuing operations through 2037 prior to end of new lease.

After SCRs are installed on Units 4 & 5 in 2018, NOx emissions at the Plant would be 6,498 tons per year, compared to emissions under a fully implemented BART FIP of 9,184 tons per year.

The APS proposal not only results in earlier and greater emission reductions than the Proposed FIP; the APS proposal, if implemented, would result in regional visibility improvement three years earlier than under the Proposed FIP and in greater overall improvement after controls are installed on Units 4 & 5. APS' consultant (AECOM) ran the CALPUFF Model Version 5.8 with the same input parameters EPA used for its Proposed FIP (including the IWAQM background ammonia concentrations) for current emissions (baseline), Proposed FIP emissions level, and two additional emissions scenarios: a) with zero emissions from Units 1, 2, and 3; and b) with SCR emissions level specified in the Proposed FIP for Units 4 & 5. CALPUFF predicted deciview (DV) values for these four cases are shown below for the 16 Class I areas included in the analysis. Clearly, the APS proposal (yellow bar) shows better visibility improvement than under the Proposed FIP (blue bar) for all the 16 Class I areas. In fact, closing Units 1-3 alone (green bar) shows significant DV change from the baseline levels (red bar).

Clearly, closing Units 1-3 would result in significant changes in DV and, if closed in 2014, the improvement would occur three years before the Proposed FIP requirements are in place. Additionally, the emission reductions from installing SCRs on Units 4 & 5 in 2018 would result in even greater visibility improvement than would be achieved under the Proposed FIP.

**Arizona Public Service Four Corners Power Plant
CALPUFF V5.8 Regional Haze Impacts using IWAQM Ammonia Background Concentrations**



In addition to BART resolution, APS wishes to resolve any potential liability under the RAVI BART, NSR and NSPS programs as part of this settlement. It would be imprudent of APS to agree with EPA on a schedule to install SCRs, only to have an intervening lawsuit (by EPA or the environmental groups) accelerate that schedule or impose additional requirements. Accordingly, our proposal to close Units 1-3 in 2014 and install SCRs in 2018 includes a full resolution of RAVI BART and all potentially alleged historic NSR and/or NSPS violations.

CONCLUSION

We respectfully submit that this proposal, made possible by the opportunity to acquire SCE’s share of Units 4 & 5, deserves serious consideration by EPA. It is quite simply a win-win for everyone: for EPA, the environmental groups, the Navajo Nation and APS.

It is a win for EPA and the environmental groups. The proposal achieves earlier and greater emission reductions, and greater visibility improvement, than would be achieved under EPA’s Proposed FIP. The three older units would be permanently closed down, substantially reducing emission of NOx, SO2, PM, mercury and greenhouse gases. The remaining newer units will be upgraded with state-of-the art SCRs, on a timeline that assures continuing visibility improvement.

It is a win for the Navajo Nation. APS is a significant contributor to the economic stability of the Nation, comprising approximately 35% of the Nation’s general fund. Together, Four Corners and the Navajo mine provide jobs to roughly 1,000 people, more than 75% of whom are Native American. Both APS and the mine have pledged not to lay any employees off if Units 1-3 close. The combined annual payroll is over \$100 million, and the Nation receives approximately \$65 million in tax and royalty payments annually as a result of Plant operations. Federal, state, and local economies also benefit from nearly \$40 million in tax payments that Four Corners and the Navajo mine make each year. Plant operations support local vendors as well, contributing an estimated \$20 million annually for the services and goods those vendors provide.

If the Plant shuts down entirely, these tremendous benefits evaporate, potentially crippling the already fragile economy and exacerbating the Navajo Nation's already high unemployment rate. Under APS's proposal, the Nation and surrounding community will continue to benefit from over \$100 million in yearly payroll revenue – a critical asset to the local economy. The Nation also will continue to receive more than \$60 million annually in tax, fee and royalty contributions, due to the continued operation of Units 4 & 5.

Finally, it is a win for APS. The proposal affords us the flexibility necessary to complete the transaction with SCE and to thoughtfully plan for and implement the future pollution upgrades to Units 4 & 5, and it provides much needed regulatory certainty.

We respectfully request that EPA give thoughtful consideration to our proposal.

Sincerely,

Edward Z. Fox

CC:

Deborah Jordan

Colleen McKaughan

Anita Lee

EPA Docket Center (EPA-R09-OAR-2010-0683; FRL-9213-7)

**Appendix B:
Four Corners Plantwide
Emissions Summary**

Four Corners - Plantwide Emissions

Plantwide Emissions 10-year Historic Actuals from Part 75 CEMS - Four Corners Steam Electric Station - ORISPL 2442												
Reporting Year	Generating Units	Unit Rating		Operation hours/yr	SO ₂	NO _x	CO ₂	Heat Input (HI)	Capacity Factor (HI)	PTE SO ₂	PTE NO _x	PTE CO ₂
		MW	mmBTU/hr		tons/yr	tons/yr	tons/yr	mmBTU/yr		tons/yr	tons/yr	tons/yr
2009	1	167	2,551	8,333	787	5,558	1,451,529	14,146,647	63.3%	1,243	8,780	2,292,909
	2	167	2,551	8,264	857	4,771	1,523,808	14,850,438	66.5%	1,290	7,179	2,293,008
	3	217	3,387	7,751	1,092	5,678	2,030,633	19,787,373	66.7%	1,637	8,514	3,044,827
	4	740	8,612	8,020	4,493	13,094	5,459,418	53,209,468	70.5%	6,370	18,565	7,740,438
	5	740	8,612	7,905	5,222	13,409	5,617,604	54,780,467	72.6%	7,191	18,466	7,736,304
	1+2+3	551	8,489	24,348	2,736	16,007	5,005,970	48,784,458	65.6%	4,171	24,400	7,630,753
	4+5	1,480	17,224	15,925	9,715	26,503	11,077,022	107,989,935	71.6%	13,574	37,030	15,476,682
	All	2,031	25,713	40,273	12,451	42,510	16,082,992	156,774,393	69.6%	17,889	61,076	23,107,267
SCE Share	710	8,268	7,644	4,663	12,721	5,316,971	51,835,169	71.6%	6,515	17,774	7,428,807	
2008	1	167	2,551	7,724	705	5,215	1,379,237	13,448,000	60.2%	1,172	8,666	2,291,901
	2	167	2,551	8,142	738	4,617	1,461,242	14,227,354	63.7%	1,159	7,252	2,295,158
	3	217	3,387	8,431	1,410	6,558	2,269,731	22,136,687	74.6%	1,890	8,790	3,042,153
	4	740	8,612	8,252	4,267	13,935	5,723,138	55,776,903	73.9%	5,771	18,848	7,740,837
	5	740	8,612	6,126	3,279	9,987	4,182,497	40,765,124	54.0%	6,068	18,482	7,740,250
	1+2+3	551	8,489	24,297	2,853	16,390	5,110,210	49,812,041	67.0%	4,259	24,468	7,628,955
	4+5	1,480	17,224	14,378	7,546	23,922	9,905,635	96,542,027	64.0%	11,793	37,387	15,481,179
	All	2,031	25,713	38,675	10,399	40,312	15,015,845	146,354,068	65.0%	16,005	62,042	23,110,101
SCE Share	710	8,268	6,901	3,622	11,483	4,754,705	46,340,173	64.0%	5,661	17,946	7,430,966	
2007	1	167	2,551	8,325	670	5,863	1,513,819	14,752,721	66.0%	1,015	8,881	2,293,065
	2	167	2,551	7,729	658	4,583	1,419,876	13,824,400	61.9%	1,064	7,408	2,295,190
	3	217	3,387	8,255	1,316	6,633	2,203,510	21,491,044	72.4%	1,817	9,157	3,042,123
	4	740	8,612	7,321	3,743	12,081	5,061,996	49,363,579	65.4%	5,720	18,463	7,736,122
	5	740	8,612	6,917	3,853	11,923	4,885,573	47,653,768	63.2%	6,100	18,875	7,734,396
	1+2+3	551	8,489	24,309	2,644	17,079	5,137,205	50,068,165	67.3%	3,927	25,367	7,630,023
	4+5	1,480	17,224	14,238	7,596	24,004	9,947,569	97,017,347	64.3%	11,813	37,331	15,470,548
	All	2,031	25,713	38,547	10,240	41,083	15,084,774	147,085,512	65.3%	15,681	62,914	23,100,733
SCE Share	710	8,268	6,834	3,646	11,522	4,774,833	46,568,327	64.3%	5,670	17,919	7,425,863	
2006	1	167	2,551	8,645	911	6,354	1,611,776	15,708,239	70.3%	1,296	9,039	2,292,935
	2	167	2,551	8,427	902	5,024	1,567,557	15,272,703	68.3%	1,320	7,351	2,293,623
	3	217	3,387	6,782	1,358	5,344	1,753,880	17,101,624	57.6%	2,356	9,271	3,042,859
	4	740	8,612	8,319	5,901	14,006	5,794,840	56,476,068	74.9%	7,883	18,709	7,740,787
	5	740	8,612	8,048	6,121	13,921	5,667,745	55,274,652	73.3%	8,354	19,000	7,735,572
	1+2+3	551	8,489	23,854	3,171	16,722	4,933,213	48,082,566	64.7%	4,904	25,862	7,629,619
	4+5	1,480	17,224	16,367	12,022	27,927	11,462,585	111,750,720	74.1%	16,232	37,706	15,476,415
	All	2,031	25,713	40,221	15,193	44,649	16,395,798	159,833,286	71.0%	21,411	62,922	23,105,863
SCE Share	710	8,268	7,856	5,771	13,405	5,502,041	53,640,346	74.1%	7,791	18,099	7,428,679	
2005	1	167	2,551	7,764	880	5,465	1,410,216	13,764,409	61.6%	1,429	8,873	2,289,510
	2	167	2,551	8,557	1,055	5,128	1,594,744	15,546,054	69.6%	1,517	7,371	2,292,373
	3	217	3,387	8,336	1,567	6,151	2,138,172	20,865,669	70.3%	2,228	8,746	3,040,392
	4	740	8,612	8,050	4,538	12,733	5,621,337	54,882,183	72.7%	6,238	17,503	7,727,097
	5	740	8,612	7,535	4,614	12,268	5,250,989	51,267,821	68.0%	6,790	18,052	7,726,884
	1+2+3	551	8,489	24,657	3,502	16,744	5,143,132	50,176,132	67.5%	5,190	24,815	7,622,389
	4+5	1,480	17,224	15,585	9,152	25,001	10,872,326	106,150,004	70.4%	13,009	35,537	15,453,988
	All	2,031	25,713	40,242	12,654	41,745	16,015,458	156,326,136	69.4%	18,233	60,149	23,076,218
SCE Share	710	8,268	7,481	4,393	12,000	5,218,716	50,952,002	70.4%	6,244	17,058	7,417,914	

Four Corners - Plantwide Emissions

2004	1	167	2,551	8,330	1,399	6,044	1,535,711	14,986,803	67.1%	2,086	9,012	2,289,892
	2	167	2,551	7,418	1,345	4,447	1,360,012	13,261,038	59.3%	2,267	7,494	2,291,816
	3	217	3,387	8,461	2,223	6,308	2,134,367	20,819,151	70.2%	3,168	8,990	3,041,763
	4	740	8,612	6,403	6,198	9,997	4,326,123	42,188,456	55.9%	11,083	17,877	7,735,945
	5	740	8,612	8,526	9,779	13,947	5,750,042	56,059,669	74.3%	13,160	18,769	7,737,998
	1+2+3	551	8,489	24,209	4,967	16,799	5,030,090	49,066,992	66.0%	7,528	25,460	7,623,369
	4+5	1,480	17,224	14,929	15,977	23,944	10,076,165	98,248,125	65.1%	24,536	36,771	15,474,233
	All	2,031	25,713	39,138	20,944	40,743	15,106,255	147,315,117	65.4%	32,024	62,296	23,097,573
	SCE Share	710	8,268	7,166	7,669	11,493	4,836,559	47,159,100	65.1%	11,777	17,650	7,427,632
2003	1	167	2,551	8,295	3,112	5,712	1,500,029	14,616,288	65.4%	4,758	8,733	2,293,386
	2	167	2,551	8,012	2,942	4,461	1,449,362	14,138,654	63.3%	4,650	7,051	2,290,780
	3	217	3,387	7,479	3,834	5,143	1,777,250	17,341,579	58.4%	6,560	8,799	3,040,739
	4	740	8,612	8,273	12,459	16,129	5,817,306	56,712,865	75.2%	16,573	21,455	7,738,351
	5	740	8,612	8,025	12,749	13,751	5,749,732	56,065,980	74.3%	17,155	18,503	7,736,710
	1+2+3	551	8,489	23,786	9,888	15,316	4,726,641	46,096,521	62.0%	15,951	24,708	7,625,092
	4+5	1,480	17,224	16,298	25,208	29,880	11,567,038	112,778,845	74.7%	33,725	39,975	15,475,071
	All	2,031	25,713	40,084	35,096	45,196	16,293,679	158,875,366	70.5%	49,757	64,077	23,100,397
	SCE Share	710	8,268	7,823	12,100	14,342	5,552,178	54,133,846	74.7%	16,188	19,188	7,428,034
2002	1	167	2,551	7,432	3,114	5,445	1,408,312	13,740,127	61.5%	5,065	8,856	2,290,460
	2	167	2,551	8,129	3,345	5,204	1,706,922	16,632,804	74.4%	4,494	6,992	2,293,310
	3	217	3,387	8,394	4,324	5,754	2,037,208	19,873,581	67.0%	6,455	8,590	3,041,435
	4	740	8,612	8,128	13,275	16,503	5,926,809	57,787,846	76.6%	17,330	21,544	7,737,356
	5	740	8,612	5,851	8,790	8,671	3,850,894	37,592,636	49.8%	17,640	17,401	7,727,996
	1+2+3	551	8,489	23,955	10,783	16,403	5,152,442	50,246,512	67.6%	15,959	24,276	7,625,491
	4+5	1,480	17,224	13,979	22,065	25,174	9,777,703	95,380,482	63.2%	34,905	39,823	15,467,334
	All	2,031	25,713	37,934	32,848	41,577	14,930,145	145,626,994	64.7%	50,807	64,308	23,092,928
	SCE Share	710	8,268	6,710	10,591	12,084	4,693,297	45,782,631	63.2%	16,754	19,115	7,424,320
2001	1	167	2,551	7,532	3,567	5,986	1,526,178	14,890,648	66.6%	5,353	8,983	2,290,373
	2	167	2,551	7,573	3,965	4,601	1,589,682	15,513,243	69.4%	5,712	6,628	2,289,930
	3	217	3,387	8,404	5,247	6,410	2,212,719	21,567,143	72.7%	7,218	8,818	3,044,058
	4	740	8,612	8,040	13,375	16,268	6,119,688	59,728,145	79.2%	16,894	20,548	7,729,624
	5	740	8,612	8,048	13,410	14,035	5,771,812	56,316,988	74.7%	17,964	18,801	7,731,805
	1+2+3	551	8,489	23,509	12,779	16,997	5,328,579	51,971,034	69.9%	18,285	24,320	7,624,488
	4+5	1,480	17,224	16,088	26,785	30,303	11,891,500	116,045,133	76.9%	34,826	39,400	15,461,365
	All	2,031	25,713	39,597	39,564	47,300	17,220,079	168,016,167	74.6%	53,040	63,411	23,085,587
	SCE Share	710	8,268	7,722	12,857	14,545	5,707,920	55,701,664	76.9%	16,716	18,912	7,421,455
2000	1	167	2,551	8,143	3,618	6,221	1,631,245	15,895,508	71.1%	5,086	8,746	2,293,292
	2	167	2,551	8,586	3,629	4,069	1,694,481	16,543,629	74.0%	4,902	5,496	2,288,867
	3	217	3,387	7,188	4,140	4,911	1,764,283	17,177,399	57.9%	7,151	8,483	3,047,405
	4	740	8,612	6,899	11,935	14,636	5,352,503	52,194,580	69.2%	17,251	21,155	7,736,413
	5	740	8,612	8,293	15,010	16,676	6,497,203	63,396,025	84.0%	17,862	19,844	7,731,656
	1+2+3	551	8,489	23,917	11,387	15,201	5,090,009	49,616,536	66.7%	17,066	22,783	7,628,739
	4+5	1,480	17,224	15,192	26,945	31,312	11,849,706	115,590,605	76.6%	35,172	40,872	15,467,608
	All	2,031	25,713	39,109	38,332	46,513	16,939,715	165,207,141	73.3%	52,262	63,417	23,095,860
	SCE Share	710	8,268	7,292	12,934	15,030	5,687,859	55,483,490	76.6%	16,882	19,619	7,424,452

Four Corners - Plantwide Emissions

Reporting Year	Generating Units	Unit Rating		Operation hours/yr	SO ₂	NO _x	CO ₂	Heat Input (HI)	Capacity	PTE SO ₂	PTE NO _x	PTE CO ₂
		MW	mmBTU/hr		tons/yr	tons/yr	tons/yr	mmBTU/yr	Factor (HI)	tons/yr	tons/yr	tons/yr
2-Year Averages (2008-09)	1	167	2,551	8,029	746	5,387	1,415,383	13,797,324	61.7%	1,208	8,724	2,292,417
	2	167	2,551	8,203	798	4,694	1,492,525	14,538,896	65.1%	1,226	7,215	2,294,060
	3	217	3,387	8,091	1,251	6,118	2,150,182	20,962,030	70.7%	1,771	8,660	3,043,415
	4	740	8,612	8,136	4,380	13,515	5,591,278	54,493,186	72.2%	6,064	18,710	7,740,643
	5	740	8,612	7,016	4,251	11,698	4,900,051	47,772,796	63.3%	6,712	18,473	7,737,988
	1+2+3	551	8,489	24,323	2,795	16,199	5,058,090	49,298,250	66.3%	4,215	24,435	7,629,845
	4+5	1,480	17,224	15,152	8,631	25,213	10,491,329	102,265,981	67.8%	12,733	37,198	15,478,805
	All	2,031	25,713	39,474	11,425	41,411	15,549,419	151,564,231	67.3%	16,979	61,543	23,108,635
SCE Share	710	8,268	7,273	4,143	12,102	5,035,838	49,087,671	67.8%	6,112	17,855	7,429,826	
5-Year Averages (2005-09)	1	167	2,551	8,158	791	5,691	1,473,315	14,364,003	64.3%	1,230	8,854	2,292,107
	2	167	2,551	8,224	842	4,825	1,513,445	14,744,190	66.0%	1,276	7,312	2,293,826
	3	217	3,387	7,911	1,349	6,073	2,079,185	20,276,479	68.3%	1,973	8,886	3,042,425
	4	740	8,612	7,992	4,588	13,170	5,532,146	53,941,640	71.5%	6,417	18,419	7,737,089
	5	740	8,612	7,306	4,618	12,302	5,120,882	49,948,366	66.2%	6,975	18,580	7,734,488
	1+2+3	551	8,489	24,293	2,981	16,588	5,065,946	49,384,672	66.4%	4,489	24,979	7,628,322
	4+5	1,480	17,224	15,299	9,206	25,471	10,653,027	103,890,007	68.9%	13,370	36,993	15,471,677
	All	2,031	25,713	39,592	12,187	42,060	15,718,973	153,274,679	68.0%	17,910	61,809	23,099,928
	SCE Share	710	8,268	7,343	4,419	12,226	5,113,453	49,867,203	68.9%	6,418	17,757	7,426,405
10-Year Averages (2000-09)	1	167	2,551	8,052	1,876	5,786	1,496,805	14,594,939	65.3%	2,873	8,860	2,291,804
	2	167	2,551	8,084	1,944	4,691	1,536,769	14,981,032	67.0%	2,899	6,997	2,292,352
	3	217	3,387	7,948	2,651	5,889	2,032,175	19,816,125	66.8%	3,969	8,817	3,042,718
	4	740	8,612	7,771	8,018	13,938	5,520,316	53,832,009	71.4%	11,237	19,533	7,736,267
	5	740	8,612	7,527	8,283	12,859	5,322,409	51,917,313	68.8%	12,036	18,685	7,734,000
	1+2+3	551	8,489	24,084	6,471	16,366	5,065,749	49,392,096	66.4%	9,743	24,640	7,626,879
	4+5	1,480	17,224	15,298	16,301	26,797	10,842,725	105,749,322	70.1%	23,258	38,234	15,470,308
	All	2,031	25,713	39,382	22,772	43,163	15,908,474	155,141,418	68.9%	33,062	62,667	23,097,109
	SCE Share	710	8,268	7,343	7,825	12,863	5,204,508	50,759,675	70.1%	11,164	18,352	7,425,748

Four Corners - Plantwide Emissions

Reporting Year	Generating Units	Unit Rating		Operation hours/yr	SO ₂	NO _x	CO ₂	Heat Input (HI)	Capacity Factor (HI)	PTE SO ₂	PTE NO _x	PTE CO ₂
		MW	mmBTU/hr		lb/mmBTU	lb/mmBTU	lb/mmBTU	mmBTU/yr		tons/yr	tons/yr	tons/yr
EPA Title V (2008-13) Permitted PTE	1	170	2,551	8,760	0.696	0.850	205	22,346,760	100.0%	7,777	9,497	2,290,543
	2	170	2,551	8,760	0.696	0.850	205	22,346,760	100.0%	7,777	9,497	2,290,543
	3	220	3,387	8,760	0.696	0.650	205	29,670,120	100.0%	10,325	9,643	3,041,187
	4	750	8,612	8,760	0.696	0.650	205	75,441,120	100.0%	26,254	24,518	7,732,715
	5	750	8,612	8,760	0.696	0.650	205	75,441,120	100.0%	26,254	24,518	7,732,715
	1+2+3	560	8,489	26,280	--	--	--	74,363,640	100.0%	25,879	28,638	7,622,273
	4+5	1,500	17,224	17,520	--	--	--	150,882,240	100.0%	52,507	49,037	15,465,430
	All	2,060	25,713	43,800	--	--	--	225,245,880	100.0%	78,386	77,674	23,087,703
SCE Share	720	8,268	8,410	--	--	--	72,423,475	100.0%	25,203	23,538	7,423,406	

Source: USEPA Acid Rain Program Clean Air Markets Quick Reports, 2011

Notes:

All data shown above is Part 75 Acid Rain Program (Title IV) certified
 Title IV facilities exempt from Title V CAM since Part 75 applies in lieu of CAM
 2-year averages typical for shutdown ERCs under NSR rules; discounts typically apply
 5-year averages consistent with Title V recordkeeping requirements
 10-year averages pursuant to CPUC request for 10-year historical emissions data
 2010 data still flagged preliminary by EPA (as of 3-25-2011); therefore not shown
 Potential Annual Heat Input = Unit Rating, mmBTU/hr x 8,760 hrs/yr
 "Permitted PTE" = (Permitted Emission Rates, lb/mmBTU x Potential Annual Heat Input, mmBTU/yr) / (2,000 lb/ton)
 Title V Permit emission rates (lb/mmBTU) shown above rounded to 3 significant figures
 Title V Permit Condition 2a - 17,900 lb/hr SO₂ on a plantwide basis (for 25,713 mmBTU/hr, 3-hour average)
 Title V Permit Condition 2d - 0.85 lb/mmBTU NO_x for Units 1 & 2 (30-day average)
 Title V Permit Condition 2d - 0.65 lb/mmBTU NO_x for Units 3, 4, & 5 (30-day average)
 No Title V Permit conditions define or limit PTE for CO₂
 Title IV Acid Rain Program (Part 75) CO₂ reporting requirement - 205 lb/mmBTU CO₂ for western bituminous coal (AP-42, Chapter 1.1)
 USEPA Compilation of Air Pollution Emission Factors (AP-42, Chapter 1.1), Fifth Edition Supplement E, September 1998
 SCE ownership and emissions share of Units 4 and 5 is 48 percent

Appendix C: Four Corners Greenhouse Gas Emissions Tables

Four Corners Generating Station - Estimated GHG Emissions Under Scenario 1

Assumptions:

- use 10-year average CO2 from entire plant for baseline emissions
- use 10-year average CO2 from Units 4 & 5, less 48% SCE ownership, adding in emissions compensating for units 1, 2 & 3 on a MW basis for future emissions

Emission Factors

CO2:	94.38	kg CO2/mmBtu	Table C-1, GHG MRR
CH4:	1	g CH4/mmBtu	Table C-2, GHG MRR
N2O:	1.6	g N2O/mmBtu	Table C-2, GHG MRR

CH4:	1.06E-05	Tonne CH4/Tonne CO2
N2O:	1.70E-05	Tonne N2O/Tonne CO2

Global Warming Potential (GWP)

CH4:	21
N2O:	310

CO2:	1,252.61	lb CO2/MWh	From e-GRID, 2007 AZNM WECC Southwest Subregion
CH4:	18.80	lb CH4/GWh	From e-GRID, 2007 AZNM WECC Southwest Subregion
N2O:	16.57	lb N2O/GWh	From e-GRID, 2007 AZNM WECC Southwest Subregion
CO2-e:	1,258.14	lb CO2-e/MWh	From e-GRID, 2007 AZNM WECC Southwest Subregion

CO2-e Ratio (heat input basis)

CH4:	2.23E-04	Tonne CO2-e from CH4/Tonne CO2 emitted
N2O:	5.26E-03	Tonne CO2-e from N2O/Tonne CO2 emitted

Baseline

CO2:	15,908,474	Ton CO2-e/yr	10-yr avg actual emissions
CH4:	3,540	Ton CO2-e/yr	using ratio
N2O:	83,605	Ton CO2-e/yr	using ratio
Total:	15,995,618	Ton CO2-e/yr	
	14,510,980	Metric Ton CO2-e/yr	

Future

CO2:	10,842,725	Ton CO2-e/yr	10-yr avg actual emissions for Units 4 & 5 only
CH4:	2,413	Ton CO2-e/yr	using ratio
N2O:	56,982	Ton CO2-e/yr	using ratio
Subtotal 1:	10,902,120	Ton CO2-e/yr	
SCE share:	5,233,017	Ton CO2-e/yr	Subtracting 48% share SCE ownership of Units 4 & 5
Subtotal 2:	5,669,102	Ton CO2-e/yr	

Emissions based on output

Output:	4,255,786	MWh/yr	From 11-yr average MW output for Units 1, 2 & 3
Units 4 & 5:	2,677,187	Ton CO2-e/yr	based on e-GRID ratio and estimated output
Subtotal 2:	5,669,102	Ton CO2-e/yr	
Total:	8,346,290	Ton CO2-e/yr	
	7,571,626	Metric Ton CO2-e/yr	

Change

Future	7,571,626	Metric Ton CO2-e/yr
Baseline	14,510,980	Metric Ton CO2-e/yr
	-6,939,354	Metric Ton CO2-e/yr

Four Corners Generating Station - Estimated GHG Emissions Under Scenario 2

Assumptions:			
- use 10-year average CO2 from entire plant for baseline emissions			
- use Units 4 and 5 only at capacity for future emissions			
Emission Factors			
CO2:	94.38	kg CO2/mmBtu	Table C-1, GHG MRR
CH4:	1	g CH4/mmBtu	Table C-2, GHG MRR
N2O:	1.6	g N2O/mmBtu	Table C-2, GHG MRR
CH4:	1.06E-05	Tonne CH4/Tonne CO2	
N2O:	1.70E-05	Tonne N2O/Tonne CO2	
Global Warming Potential (GWP)			
CH4:	21		
N2O:	310		
CO2-e Ratio (heat input basis)			
CH4:	2.23E-04	Tonne CO2-e from CH4/Tonne CO2 emitted	
N2O:	5.26E-03	Tonne CO2-e from N2O/Tonne CO2 emitted	
Baseline			
CO2:	15,908,474	Ton CO2-e/yr	10-yr avg actual emissions
CH4:	3,540	Ton CO2-e/yr	using ratio
N2O:	83,605	Ton CO2-e/yr	using ratio
Total:	15,995,618	Ton CO2-e/yr	
	14,510,980	Metric Ton CO2-e/yr	
Future			
CO2:	15,465,430	Ton CO2-e/yr	PTE for Units 4 & 5
CH4:	3,441	Ton CO2-e/yr	using ratio
N2O:	81,276	Ton CO2-e/yr	using ratio
Total:	15,550,147	Ton CO2-e/yr	
	14,106,855	Metric Ton CO2-e/yr	
Change			
Future	14,106,855	Metric Ton CO2-e/yr	
Baseline	14,510,980	Metric Ton CO2-e/yr	
	-404,125	Metric Ton CO2-e/yr	

Four Corners Generating Station - Summary Table for Scenarios 1 and 2

	Scenario 2	Scenario 1
Baseline Emissions (metric	14,510,980	14,510,980
Future Emissions (metric ton CO2-e)	14,106,855	7,571,626
Change (metric ton CO2-	-404,125	-6,939,354