Appendix A
Energy Supply

A. PURPOSE

Appendix A, Energy Supply, analyzes the potential impacts to: (1) PG&E's and SMUD's existing energy supplies, (2) existing energy suppliers within the Annexation Territory, and (3) the energy marketplace as a result of SMUD replacing PG&E as the electric service provider in the Annexation Territory.

B. BACKGROUND

Both SMUD and PG&E generate electricity from power plants they own and purchase power from the energy marketplace through short-term and long-term power contracts and spot market power purchases. Both SMUD and PG&E may also sell power in the marketplace when it is economically and operationally feasible to do so.

The power purchase marketplace includes power suppliers and transmission providers. Power suppliers mainly include utilities, Qualifying Facilities, large customers, and Independent Power Producers. Transmission providers deliver power from the power plant to the power purchaser through an interconnected electric grid made up of power plants, transmission lines, and substations throughout the Western Electric Coordinating Council (WECC). The WECC service territory extends from Canada to Mexico. It includes the provinces of Alberta and British Columbia, the northern portion of Baja California, Mexico, and all or portions of the 14 western states in between.

Electric market prices are determined in California by the interaction of supply and demand, consistent with the market rules adopted by the California State Legislature, the California Public Utilities Commission, the California Independent System Operator and the Federal Energy Regulatory Commission.

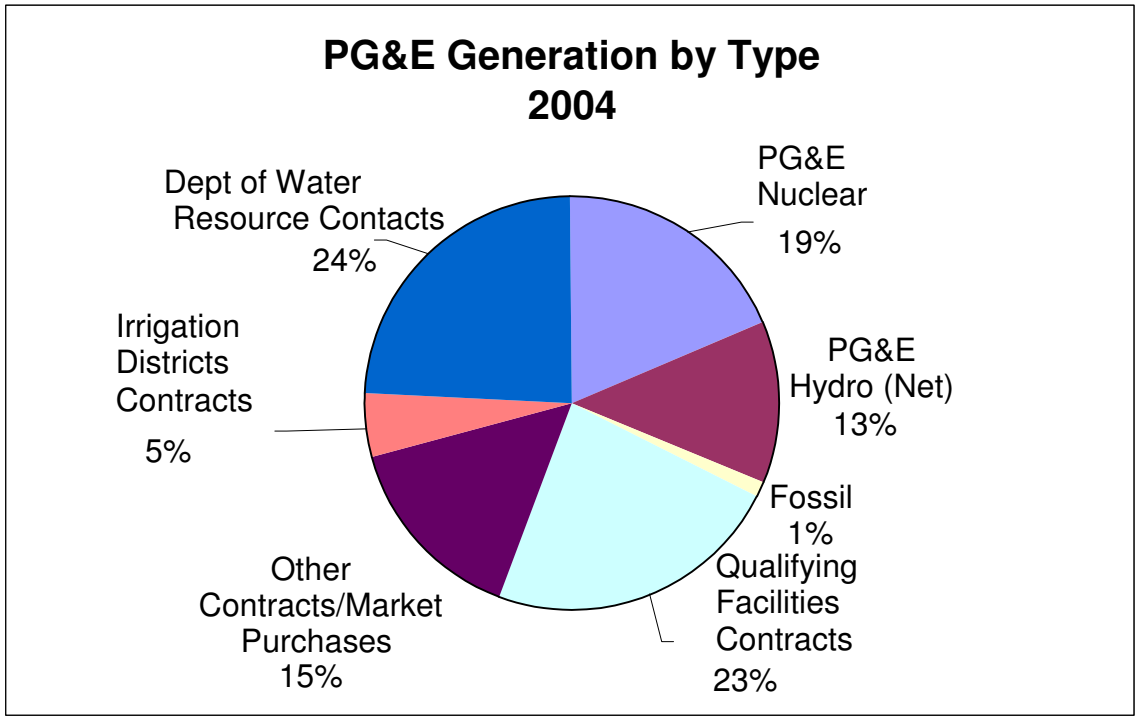
At any given time, there are many variables that contribute to the decision whether SMUD or PG&E generates power or purchases power from the marketplace to meet their customers' needs, or sells surplus power to the marketplace. Some of these variables include: changes in customer power requirements, growth, weather, hydroelectric availability, the cost of natural gas, the long-term and short-term price of power available within the marketplace, transmission system availability and operations, power plant regulatory and contract requirements and plant operating conditions.

The common forms of electric generation in California include hydroelectric (water), thermal generation (mainly natural gas fueled), nuclear, and renewable (wind, solar, biomass, landfill gas, etc). The amount of power delivered through the WECC region in 2004 was approximately 114,000 MW. The estimated Annexation Territory existing peak power requirement is 250 MW, which represents approximately 0.2% of the total WECC delivered power.

C. PG&E ENERGY SUPPLY

Currently PG&E supplies electricity to approximately 5 million customers, including approximately 70,000 customers in the Annexation Territory. PG&E's peak load in 2004 was approxi-

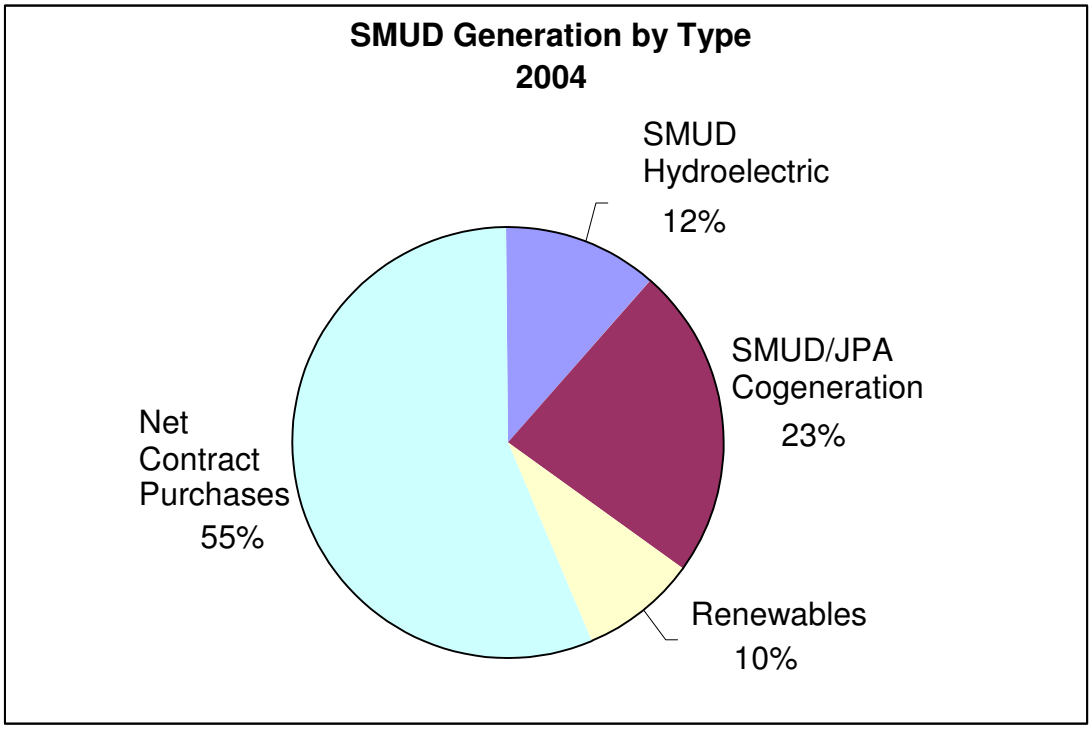
mately 18,000 MW. The following pie chart depicts the sources of the electric power that PG&E generated or purchased in 2004 by generation type for its entire service area:



According to PG&E, future growth in its power requirements (net of demand response and energy efficiency programs) will be met through new PG&E-owned generation or new purchases from the power marketplace. In addition, as PG&E's existing contracts expire (e.g., short- and long-term purchases, DWR contracts, Qualifying Facilities contracts) in the near future, PG&E will be required to replace them with new contracts and/or license and construct new PG&E-owned electric generation. New resources or contracts will most likely be fueled (or priced) using natural gas. Due to the relatively small size of the electric power needs of the Annexation Territory compared to PG&E's total electricity requirement, there will be no net impact from annexation on PG&E's future plans for meeting overall growth requirements. If SMUD replaces PG&E as the energy supplier in the Annexation Territory, PG&E will be able to reduce its energy requirements accordingly. The proposed Program will have no adverse affect on PG&E's present ability to provide for its energy supply needs.

D. SMUD ENERGY SUPPLY

SMUD currently supplies electricity to approximately 565,000 customers throughout its existing service area. SMUD's peak load for 2005 was 2959 MW. The following pie chart depicts the source of the electricity that SMUD generated or purchased in 2005 by generation type for its entire service area.



Regardless of the proposed annexation, future growth of SMUD's energy supply needs will be met through construction of SMUD's new 500 MW Cosumnes Power Plant (CPP) (scheduled for commercial operation in March 2006), construction of new renewable energy facilities, new long and short-term power contracts, and spot market purchases.

It is expected SMUD will use the CPP plant as a base load plant. Base load plants are operated as often as possible considering the variables described above for choosing to generate power or purchase power. CPP employs state of the art emission control technologies. When compared to all natural gas-fired power plants in California, CPP burns approximately 25% less natural gas to generate a megawatt of power during peak periods. Therefore, SMUD will likely operate CPP as often as possible within its current permit requirements, regardless of the proposed annexation. When CPP generates more power than is required for SMUD's use, the surplus will be sold to the energy marketplace.

E. OTHER EXISTING ENERGY SUPPLIERS WITHIN THE ANNEXATION TERRITORY

There are three existing generation plants in the Annexation Territory that are not owned or operated by PG&E. They are:

- Woodland Biomass, a 25-MW electric generator that burns wood waste;
- PVUSA, a 1-MW plant that generates electricity from the sun; and

- Minnesota Methane Landfill, a methane gas generator at the Yolo County Landfill.

All three plants are in current operation and have contracts for sale of the electric power that they produce. The Program will not change the interconnection of these plants to the transmission system in the Annexation Territory. In addition, SMUD plans to honor all existing contracts between these generation plants and other parties, including PG&E.

F. PROPOSED PROGRAM ENERGY SUPPLY FOR THE ANNEXATION TERRITORY

By resolution, the SMUD Board has reserved its existing low cost energy supply resources for existing SMUD customers. Upon LAFCO and voter approval of the Program, SMUD will complete an energy supply plan for the Annexation Territory. In addition to extending its energy efficiency and demand response programs to the Annexation Territory, SMUD expects to serve the territory through a combination of new short- and long-term power contracts, spot market purchases, customer-owned generation and new renewable power supply. SMUD may also use power produced from CPP when it is technically and economically feasible. As discussed above, there are many variables that SMUD must consider when determining whether it will generate or purchase power for its customers' needs or sell surplus power to the energy marketplace. Until SMUD concludes the energy plan for the Annexation Territory, it is premature to finalize the details of an energy supply plan for the Annexation Territory. Given the relatively small amount of power required by the Annexation Territory compared to the size of the energy marketplace, and the fact that SMUD is an active participant in WECC energy markets with a history of success developing new energy resources, SMUD anticipates being able to secure appropriate power resources for the Annexation Territory. Development of a power supply for the Annexation Territory by SMUD will be likely offset by corresponding reductions in the provision of power by PG&E.

G. POTENTIAL IMPACTS

1. PG&E Existing Energy Supply

If SMUD replaces PG&E as the energy supplier in the Annexation Territory, PG&E will be able to reduce its energy requirements by approximately 250 MW during its peak load periods. The California Public Utilities Commission (CPUC) found in Resolution E-3952 that it is appropriate to consider the benefits of annexation in evaluating the impacts of annexation on PG&E's remaining ratepayers. (Resolution E-3952, Finding 9.) One benefit SMUD identified is that PG&E will be able to allocate low-cost hydroelectric and nuclear power currently used to serve the Annexation Territory customers to PG&E's remaining customers. Ultimately, the CPUC determined that the proposed annexation would not substantially impair PG&E's ability to provide adequate service at reasonable rates to its remaining customers.

2. SMUD Existing Energy Supply

Since SMUD has reserved its low cost energy supply resources for existing SMUD customers, the proposed Annexation will have no impact on the energy supply for existing SMUD customers. SMUD has no plans to change the operating conditions of any

of its existing power plants if the annexation is approved. Any change in operation of these power plants would require lengthy regulatory approval and environmental review processes.

3. Other Existing Energy Suppliers Within the Annexation Territory

Since SMUD plans to continue the interconnections with existing energy suppliers in the Annexation Territory and honor all existing contracts, the proposed Program will not impact the operation of existing power production facilities.

4. Impacts on the Energy Marketplace

Existing load in the Annexation Territory is approximately 250 MW, which is quite small in comparison to the amount of energy currently delivered in the regional marketplace. After annexation, the reduction in PG&E power purchases will likely be offset by SMUD purchases for Annexation Territory customers. Therefore, the proposed Program would have no impact on the energy marketplace.