

2. PURPOSE AND NEED

2.1 INTRODUCTION

The Miguel–Mission 230kV #2 Project is proposed to reduce constraints on SDG&E’s existing electrical system that would occur upon interconnection of merchant generators now under construction or proposed for construction south and east of SDG&E’s Miguel Substation. Removing such constraints to the interconnection of merchant generation provides SDG&E and California Independent System Operator (CAISO) customers with additional access to a robust energy market through increased access to remote sources of generation. The additional generation would increase competition for the benefit of customers, thereby reducing energy costs. As described below, SDG&E has identified this project as having significant economic benefits to SDG&E and CAISO customers consistent with the objectives of Assembly Bill 970 (AB 970) to remove electric transmission constraints. Access to new generation is needed to meet statewide capacity requirements and to help prevent future electric energy resource deficiencies, load curtailments, and energy price spikes.

2.2 REGULATORY BACKGROUND

In September 2000, California passed a law, AB 970, to address some of the underlying problems that have contributed to California’s energy crisis. In AB 970, the California Legislature ordered the CPUC, among other things, to:

Identify and undertake those actions necessary to reduce or remove constraints on the state’s existing electrical transmission and distribution system, including, but not limited to, reconductoring of transmission lines, the addition of capacitors to increase voltage, the reinforcement of existing transmission capacity, and the installation of new transformer banks.¹

The CPUC responded by initiating an investigation into electric transmission and distribution constraints, Docket No. I. 00-11-001 (AB 970 proceeding)². In its order establishing this investigation, the CPUC acknowledged that California’s electric system “has shown increasing signs of strain and ... vulnerability to market power...” and noted various instances when the state faced actual and potential disruptions to electric supply.³

In Phase 2 of the AB 970 proceedings, SDG&E was directed to evaluate the net economic benefit (benefit minus cost) to ratepayers of two projects (one of which is the Miguel–Mission 230kV #2 Project) that would relieve two potential in-state transmission constraints on SDG&E’s system.

¹ Assembly Bill 970, Stats. 2000, Ch. 329 (codified at CPUC Code § 399.15[a][1][2000]).

² California Public Utilities Commission Order Instituting Investigation into Assembly Bill 970 Regarding the Identification of Electric Transmission and Distribution Constraints, Actions to Resolve Those Constraints, and Related Matters Affecting the Reliability of Electric Supply. November 2, 2000.

³ Id at 1.

Specifically, the ruling asked SDG&E to:

...evaluate the net economic benefits (benefits minus costs) to ratepayers of relieving two potential in-state transmission constraints in Southern California. We will look at alternatives to address potential congestion (1) west of SDG&E's Miguel Substation and (2) at SDG&E's Imperial Valley Substation. The utilities and interested parties should present testimony on the potential for generation projects coming online that would trigger constraints or congestion in these areas, the costs of alternatives to relieve the constraints as well as the allocation of benefits between ratepayers and project developers.⁴

SDG&E responded to this directive in its September 2001 testimony filed in those proceedings. The testimony included an economic study performed by an independent consultant demonstrating that the two projects identified in the CPUC ruling would reduce transmission constraints on the SDG&E system, enabling additional new generation in California and Mexico to serve load in the western United States⁵ and potentially produce significant customer benefits.⁶ Results of SDG&E's economic assessment were supported by the Border Generation Group (BGG), a group of generators with projects in the border area, and by the CPUC's Office of Ratepayer Advocates (ORA) and culminated with a set of milestones for this project and the BGG.⁷

As of this PEA filing, the CPUC's decision regarding the economic assessment and need for these projects is pending. However, the development of merchant generation is ongoing. To keep pace with the development of merchant generation and to expeditiously provide the aforementioned economic benefits to its customers, it is prudent for SDG&E to file its application seeking the commission's issuance of a CPCN for the project.

Moreover, on January 22, 2001, SDG&E filed a Petition for Declaratory Order (Docket Number EL02-54-000) with the Federal Energy Regulatory Commission (FERC) seeking rolled-in rate treatment and guaranteed rate recovery for the costs of these two projects. In its order, dated March 27, 2002, the FERC granted SDG&E's request for rolled-in rate treatment and acknowledged that the project brings system-wide benefits and supports the continued need for transmission investment in the California bulk power market. The FERC's approval of rolled-in rate treatment for SDG&E's upgrades is subject to the CAISO finding under the open access transmission tariff (OATT) that these projects are necessary and cost effective.⁸

The CAISO is performing an independent review of the project benefits. SDG&E anticipates CAISO board approval in the future.

⁴ CPUC Administrative Law Judge Ruling,; Docket No. I. 00-11-001, p.7, July 19, 2001.

⁵ *Economic Analysis of Miguel–Mission Transmission Line*, p. 3–6, September 17, 2001.

⁶ *Id* at p. 1–2.

⁷ SDG&E and BGG Joint Milestone Schedule Coordinating Construction of the Miguel–Mission and Imperial Valley Upgrades with Construction of New Generation Projects, December 3, 2001.

⁸ 98 FERC ¶ 61,332, Order Granting, in Part, and Denying, in Part, Petition for Declaratory Order, at p. 6.

2.3 RELIABILITY BENEFITS ASSOCIATED WITH OPERATION OF THE REGIONAL GRID

The Miguel–Mission 230kV #2 Project not only supports a robust energy market with economic benefits to SDG&E and CAISO customers but also provides reliability benefits associated with operational flexibility. Recent analysis has shown that for the potential simultaneous outage of two 230kV transmission circuits (Miguel to Mission and Miguel to Sycamore Substations) the project has the potential to prevent overloads on various 138kV and 69kV circuits. This project would also eliminate the need for a remedial action scheme (RAS) for tripping generators offline in the event of this simultaneous transmission outage. In addition, this project eliminates the need for an existing RAS for tripping a 138kV transmission circuit. With the current RAS, imports at Miguel Substation are limited and would not allow SDG&E and CAISO customers to take advantage of the development of new generation south and east of Miguel Substation.

The elimination of the RAS would provide daily operational flexibility and allow more frequent maintenance of transmission facilities. The FERC believes that both identified projects are needed to bring new generation from the border area online.⁹ While the development of any new generation may or may not be economically driven by the identified projects, such projects are needed to reliably transfer power from any new generation south of the Miguel Substation (i.e., the transmission upgrades are reliability driven). Moreover, FERC believes that because the projects proposed by SDG&E would improve the transmission grid itself, they would, therefore, be used by and benefit all transmission users due to the integrated nature of the state's transmission grid.¹⁰

2.4 NEW TRANSMISSION INFRASTRUCTURE FOSTERS A COMPETITIVE MARKET AND IS VITAL TO INTEGRATING GENERATION ADDITIONS

There is broad consensus that additional electric generation and transmission resources are needed to achieve competitive wholesale energy prices and to meet growing electric demand in California. The California Energy Commission (CEC), CAISO, CPUC, and FERC have all acknowledged the need for more transmission and generation infrastructure in California. In its 2000 report to California Governor Gray Davis, the CPUC stated that the blackouts during summer 2000 were not isolated events and that they will not be a rare occurrence unless action is taken. The report also acknowledged that San Diego has inadequate energy infrastructure.¹¹

Events in summer 2000 showed that California suffers a lack of generation and transmission infrastructure to support competitive energy pricing. The CPUC concluded that:

⁹98 FERC ¶ 61,332, Order Granting, in Part, and Denying, in Part, Petition for Declaratory Order, at p. 6.

¹⁰ Id at p. 6.

¹¹ CPUC; *California's Electricity Options and Challenges: A Report to the Governor*; 2000.

...Transmission facilities are a key element of the structure, because they tie together the large power plants, often in remote locations, to the load centers where electricity is consumed. In a competitive system, the ability of generation sellers and generation buyers to interact is mediated by the transmission system.¹²

The FERC, in a November 2000 news release, cautioned that unless California addresses inadequate siting of both generation and transmission, consumers will continue to pay higher prices.¹³ The North American Electric Reliability Council (NERC), in a 2000 report, stated that “business is increasing on the transmission system, but very little is being done to increase the load serving and transfer capability of the bulk transmission system.”¹⁴ The CEC, in its 2002–2012 Electricity Outlook Report, dated February 2002, concluded that by 2003 (absent grid expansion) the SDG&E service area will experience a moderately high risk of electricity shortage. When the CEC increased its assumptions on forced outage rates to account for older generating facilities, the projected San Diego shortage for 2003 jumped 31 percent. Lastly, with more pessimistic assumptions regarding new generating projects, the CEC calculates a 71 percent risk of a summer 2003 electricity shortage in San Diego.¹⁵

The energy alerts and rising costs realized in 2000 may reoccur as a result of growing demand, weather, absence of a robust energy market, and supply shortfall in the absence of adequate transmission infrastructure such as that provided by the proposed Miguel–Mission 230kV #2 Project. The addition of new power plants, along with adequate transmission infrastructure to support the economic development of new generation, is needed as quickly as possible.

Figure 2-1 provides an overview of the proposed future power plants in the United States-Mexico border area. The proposed Miguel–Mission 230kV #2 Project would allow California and San Diego area customers access to more power from remote sources of generation that develop south and east of the Miguel Substation. Increased access to remote sources of generation is needed to meet statewide capacity and energy requirements and to help prevent electric resource deficiencies, load curtailments, and energy price spikes. Both generation and transmission additions are needed to ensure a reliable and competitive electricity market. The project would provide SDG&E and CAISO customers with significant benefits as new generation develops.

The changes in the wholesale electricity market have driven a number of regulatory changes that address price and supply issues. The need to create a robust electricity supply in the state, available from as many sources as possible, has never been greater. The project would increase the opportunity for competition in the electric marketplace by increasing the power transfer capability within the SDG&E grid north of Miguel Substation by 560 MW, thus reducing transmission constraints on the SDG&E system that limit access to new generation located south.

¹² Id at p. 12.

¹³ FERC, *Commission Proposes to Reshape California’s Seriously Flawed Electricity Markets With Sweeping Changes*; November, 2000.

¹⁴ NERC, *Reliability Assessment 2000–2009: The Reliability of Bulk Electric Systems in North America*; 2000.

¹⁵ CEC, *2002–2012 Electricity Outlook Report*; February, 2002.

Figure 2-1

United States–Mexico Border Proposed Generation Projects, 2002–2005

(see link on contents page)

and east of Miguel Substation. SDG&E needs additional transfer capability within the SDG&E grid to keep energy costs competitive.

2.5 EVALUATION PROCESS AND RESULTS

The ability to deliver power reliably from new merchant generation developing in Baja Mexico and in the southern portion of the San Diego service territory is limited by transmission constraints north of Miguel Substation. This 560 MW limit was determined from SDG&E planning studies using General Electric's Power System Load Flow (PSLF) simulation program. Without the project, the transmission limit for delivery capability north of Miguel Substation was determined to be 1,690 MW, based on the thermal limit of a single contingency of the existing Miguel–Mission 230kV circuit. With the project, the delivery capability north of Miguel Substation would increase to approximately 2,250 MW for an increase of 560 MW.

After SDG&E defined these transmission limits, it contracted with Henwood Energy Services, Inc. (Henwood) to provide an economic assessment of the second Miguel–Mission 230kV circuit. Henwood modeled five scenarios in which it varied the amount of new generation development above the base case levels with and without the Miguel–Mission 230kV upgrade. Henwood's approach to this economic analysis involved combining transmission production modeling with market simulation software that recognizes major transmission paths throughout the Western Electric Coordinating Council (WECC), formerly Western Systems Coordinating Council, and related transmission constraints. The analysis looked at operations of the power grid for all hours of a year with and without the proposed facility. The economic value of the Miguel–Mission 230kV upgrade was determined by investigating whether, and to what extent, the proposed upgrade would result in lower market prices for electricity. Using results from Henwood's analysis, SDG&E then determined the net economic benefits associated with the Miguel–Mission 230kV upgrade by subtracting the project's estimated annual cost from its estimated annual benefits.

Results from the analysis concluded that in a scenario with new generation development exceeding approximately 1,350 MW, the annual energy cost for both SDG&E ratepayers and CAISO statewide ratepayers would decrease as a result of lower market prices for the commodity, by 6 million and 13 million dollars, respectively. These savings are based on the difference in number of congestion hours among scenarios with and without the project. In a scenario with new generation development of approximately 3,800 MW, the annual energy costs to SDG&E, and to San Diego and CAISO customers, is projected to decrease by 33 million dollars and 181 million dollars, respectively.

Generally, the analysis showed that the proposed Miguel–Mission 230kV #2 Project would reduce transmission constraints on the SDG&E system, enable more new generation in southern San Diego County and Mexico to serve load in the WECC, and produce significant customer benefits.

2.6 CONCLUSION

The need for the proposed Miguel–Mission 230kV #2 Project is driven by the need for the development of adequate transmission infrastructure to support the energy market in California, reduce congestion costs, and enhance competition among energy suppliers. This competition would ultimately increase the availability of power in the WECC area and reduce costs to SDG&E and CAISO consumers in accordance with AB 970. Additional benefits include improved reliability and operational flexibility of the SDG&E transmission system. Based on the economic analysis, the benefits of the proposed Miguel–Mission 230kV #2 Project have the potential to offset the costs of the project in one to three years, when considering the statewide energy cost savings.

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