CALIFORNIA ENERGY COMMISSION

ELECTRICITY INFRASTRUCTURE IN SOUTHERN CALIFORNIA

2014 INTEGRATED ENERGY POLICY REPORT UPDATE

The *2014 Integrated Energy Policy Report Update* provides the results of the California Energy Commission's assessments of a variety of energy issues currently facing California.The following is a summary of information on the Energy Commission's investements to help spur transformation to a clean, low-carbon transportation energy future.

Update on Electricity Infrastructure in Southern California

Efforts to ensure the reliability of Southern California's electricity system have been challenged in recent years as a result of the impending retirement of several fossil-generating units using once-through cooling (OTC) technologies and the closure of San Onofre Nuclear Generating Station (San Onofre).

Aging Natural Gas Fleet in Southern California

Southern California relies upon a large number of old, natural gas-fired steam boiler facilities that have long outlived the original design life and purpose. They have very long start-up times, relatively low efficiency, and high emissions factors. Also, most use OTC technologies—a system which takes in ocean water to cool the steam that is used to spin turbines for electricity generation and then discharges the heated water back into the ocean—which state and federal water policies seek to eliminate.

Planning For Phaseout of Once-Through Cooling Technology

In May 2010, the State Water Resources Control Board (SWRCB) adopted its OTC policy to phase out the use of this technology and established December 31, 2020, as the compliance date for most facilities still using OTC.
In response to SWRCB's adoption of the OTC policy, the California Public Utilities Commission (CPUC) began a decision-making process to identify what share of the capacity to be replaced with conventional generation (i.e., power plants that burn fossil fuels such as coal or natural gas) versus various types of preferred resources (e.g., energy efficiency, demand response, fuel cells, renewable distributed generation, and combined heat and power).

The Agencies Collaborate to Maintain Reliability With Preferred Resources, Conventional Generation, and Transmission Upgrades

Following Southern California Edison's (SCE) announcement to close San Onofre, a preliminary plan was developed to satisfy California Independent System Operator (California ISO) estimates of resource requirements needed to assure reliability—as measured by local capacity area requirements—using a rough replacement target of 50 percent preferred resources and 50 percent conventional generation. In February 2013, CPUC issued

Authorized Transmission System Upgrades Intended to Ensure Reliability in Southern California Operational by 2020

Source: California ISO

a decision authorizing SCE to procure capacity to replace the fossil OTC units scheduled for retirement in 2015 and 2020. The California ISO conducted studies of local capacity requirements without San Onofre and submitted the results to the CPUC. In March 2014, the CPUC issued a second decision to authorize incremental preferred resource and conventional generation development to address the retirement of San Onofre for both SCE and San Diego Gas and Electric (SDG&E). In that same month, the California ISO approved transmission system upgrades for the two utilities.

Both SDG&E and SCE have submitted power purchase agreements (PPA)—a contract between an electricity generator and an electricity purchaser—to the CPUC in response to direction from the CPUC. SDG&E submitted a PPA to reconfigure a conventional resource facility in Carlsbad and also intends to submit an additional PPA to the CPUC for preferred resource projects. SCE submitted PPAs for both conventional generating facilities and preferred resources in Los Angeles Basin and Moorpark (Ventura County). The CPUC review of a SDG&E PPA with Carlsbad is well underway, while the SCE PPAs are at the beginning of the CPUC's review.

Current Interagency Collaboration to Ensure Reliability in Southern California

As part of its *2013–2014 Transmission Plan*, the California ISO performed a reliability assessment of Southern California (Los Angeles Basin and San Diego) in light of the retirement of San Onofre and the potential retirement of gas-fired generation. For proposed solutions, the California ISO identified three transmission projects: an

additional 450 MVAR of dynamic reactor support at San Luis Rey, an Imperial Valley flow controller-phase shifter, and the Mesa Loop-in Project. These mitigation projects provide material reductions in local capacity requirements without adding new transmission rights of way. These projects also provide the best use of existing transmission lines and minimize the risk of permitting to meet projected on-line dates.

Contingency Planning If Development of Preferred Resources, Conventional Generation, and Transmission Do Not Advance As Planned

If all this resource development continues as planned (preferred resources, conventional generation, and transmission), reliability in Southern California would likely be assured. The ongoing planning processes would continue to look ahead and augment the major round of resource additions that are now approved. Resource margins, however, are tight in Southern California, and reliability rests upon close coordination between large amounts of fossil OTC retirement and the development of appropriate resources in locations needed to assure local capacity requirements are satisfied. Accordingly, the Energy Commission, in consultation with the CPUC, California ISO, and the California Air Resources Board (ARB), has been working cooperatively to develop a contingency plan. The contingency plan focuses efforts on three core activities: first, tracking resource development, including preferred resources, conventional resources, transmission, and load; second, developing mitigation measures that can be implemented if resource expectations do not match resource needs, such as deferring compliance dates for the retirement of OTC facilities until replacement generation is secured or starting procurement processes for conventional power plant proposals; and, third, creating an analytic process for the early detection of any projected shortfall of resources needed to meet local capacity requirements.

The Energy Commission, CPUC, California ISO, and ARB staffs continue to refine the contingency plan that seeks to assure reliability for the Southern California region. Energy Commission staff will continue to develop an annual accounting tool for tracking data and for compiling data on substation loads. The tool will be used to develop projections of expected resources versus local capacity requirements. Mitigation measure development, still largely at the conceptual stage, needs to be fleshed out, agreed to, and made ready for implementation. In particular, the generation mitigation options will require close coordination among the energy agencies and air districts legally charged with issuing local permits.

The Energy Commission and the collaborating agencies in the Southern California Reliability Project are committed to assuring electrical reliability for the region. Implementation of this plan will require effective coordination between the state agencies, California ISO, and the utilities serving load in the area. All of the procedural opportunities to participate in the decision-making processes of the agencies continue to exist and will allow stakeholders to provide input if specific projects are proposed.