

## **1. Introduction**

This chapter presents an overview of the proposed STP 3 & 4 project that is the subject of this Environmental Report (ER). A brief description is given regarding the applicants, purpose and need, general plant description, status of permits and required consultations, and the underlying methodology of the report presentation. These items are presented in the following three subsections:

- The Proposed Project (Section 1.1)
- Status of Reviews, Approvals, and Consultations (Section 1.2)
- Methodology (Section 1.3S)

### **1.1 The Proposed Project**

Pursuant to the Atomic Energy Act of 1954, as amended, and Title 10 of the Code of Federal Regulations, the Nuclear Regulatory Commission (NRC) is responsible for issuing a license for construction and operation of domestic nuclear power plants. In accordance with the provisions of 10 CFR Part 52, Subpart C (Combined Licenses), and supporting guidance (e.g., NRC Regulatory Guides), STP Nuclear Operating Company (STPNOC) on behalf of itself and the owners of STP 3 & 4: NRG South Texas 3 LP, NRG South Texas 4 LP, and the City of San Antonio, Texas acting by and through the City Public Service Board (CPS Energy) is applying an application for a Combined Operating Licenses (COLs) to authorize for construction and operation of two new nuclear power facilities-STP 3 & 4-on the site of South Texas Project Electric Generating Station, Units 1 & 2 (STP 1 & 2) in Matagorda County, Texas (STP site). STPNOC is including with the COL application this ER, which has been prepared in accordance with the provisions of 10 CFR Part 51. The ER provides an analysis of the impacts to the environment from site preparation, construction, operation, and decommissioning of two additional nuclear reactors-STP 3 & 4-at the STP site. The combined impacts of all four units at the STP site are also considered. NRC will use the ER as input to meet the National Environmental Policy Act of 1969 (42 United States Code [U.S.C.] 4321-4347, January 1, 1970, as amended) requirement that federal agencies consider the impacts that their actions, such as license issuance, might have on the environment.

#### **1.1.1 Purpose and Need**

The proposed action is NRC issuance of COLs to the applicants authorizing the construction and operation of two U.S. Advanced Boiling Water Reactors (ABWRs) at the STP site. The purpose of STP 3 & 4 is to provide baseload generation for use by the owners and/or for eventual sale on the wholesale market. At this time, it is planned that STP 3 will be owned by NRG South Texas 3 LP and CPS, and that STP 4 will be owned by NRG South Texas 4 LP and CPS.

As explained in Chapter 8 of this report, there is a need for the power to be produced from STP 3 & 4. NRC approval gives the owners a generation option that the owners may or may not exercise, at their discretion.

## **1.1.2 Project Description**

This subsection provides a brief summary of project information that subsequent sections, particularly Chapter 3, Plant Description, describe in greater detail.

### **1.1.2.1 The Applicant and Owners**

NRG South Texas LP (NRG) (44% ownership), City Public Service Board of San Antonio, Texas (CPS Energy) (40% ownership), and the City of Austin, Texas (16% ownership) are the owners of the STP 1 & 2 site and facilities. STPNOC is the licensed operator of STP 1 & 2, with control of STP 1 & 2 and the authority to act as the agent applying for a COL for the STP site. At this time, it is planned that STP 3 will be owned by NRG South Texas 3 LP and CPS, and that STP 4 will be owned by NRG South Texas 4 LP and CPS. The proposed units would be baseload merchant generator plants. NRG intends to sell its share of the power from STP 3 & 4 on the wholesale market. CPS Energy may either use its share of STP 3 & 4 to supply the needs of its service area or sell the power on the wholesale market.

STPNOC will be the operator for STP 3 & 4. The STP COL application, COLA Part 1, Administrative Information, provides additional information about the co-owners of STP 3 & 4.

### **1.1.2.2 Site Location**

The STP site is located on approximately 12,200 acres in a rural area of Matagorda County, Texas, approximately 12 miles south-southwest of the city limits of Bay City, Texas, and 10 miles north of Matagorda Bay, along the west bank of the Colorado River. The plant footprint for STP 3 & 4 is approximately 2000 feet northwest of existing STP 1 & 2 and is generally the area that had been designated for two additional units when the facility was first planned. The location of STP 3 & 4 on the STP site is shown on Figure 1.1-1. Section 2.1, Site Location, provides additional information regarding the site and the location of the two new ABWR reactors.

### **1.1.2.3 Reactor Information**

STPNOC and the owners have selected the General Electric (GE) Advanced Boiling Water Reactor (ABWR) as the technology for two new reactors at the STP site, STP 3 & 4. The NRC approved the reference ABWR DCD in March 1997. The final design certification rule was published in the Federal Register on May 12, 1997 (62 FR 25827). This allows the ABWR design to be referenced in a COL application under 10 CFR 52. The total gross thermal megawatt output is 3926 MWt and the net electrical output is approximately 1300 MWe per unit. Further details on the ABWR reactor design is provided in Section 3.2.

### **1.1.2.4 Cooling System Information**

STP 3 & 4 will use a closed-loop cooling water system that would withdraw and discharge water from and to the Main Cooling Reservoir (MCR), similar to the existing cooling system for STP 1 & 2. Makeup water for the MCR will be withdrawn from the Colorado River using the preexisting intake structure. STP 3 & 4 will use mechanical draft cooling towers to dissipate waste heat and a water storage basin for the safety-related cooling system. This differs from STP 1 & 2, which uses the essential cooling pond. The STP 3 & 4 cooling tower basin makeup

water is normally provided by the plant well water system. Blowdown will discharge from the MCR to the Colorado River. Additional details regarding the STP 3 & 4 cooling system are provided in Section 3.4.

#### **1.1.2.5 Transmission System Information**

The STP 3 & 4 connections to the regional grid will use existing rights-of-way to minimize, to the extent feasible, new disturbance and potential adverse impacts. The onsite power transmission system for STP 3 & 4 consists of the STP 3 & 4 345kV switchyard, five 345kV power transmission lines, and a 345kV tie-line from the STP 3 & 4 345kV switchyard to the existing STP 1 & 2 345kV switchyard. Two of these 345kV transmission lines will be upgraded from the STP site to their connection to the Hillje substation some 20 miles northwest of the STP site. The modifications to upgrade these two transmission lines will be on an existing right-of-way. No new rights-of-way outside the STP site are required for STP 3 & 4.

The three interconnect transmission line rights-of-way commence from the STP 3 & 4 345kV switchyard and head northward less than a quarter mile to intersect the existing transmission line corridor. From the point of intersection, the additional power provided by STP 3 & 4 would be transmitted over upgraded circuits in an existing right-of-way. Subsection 2.2.2 and Section 3.7 provide additional details regarding both the onsite and offsite transmission systems.

#### **1.1.2.6 Preapplication Public Involvement**

STPNOC has an active community affairs and public outreach program. Examples of public outreach include community board meetings, student presentations, and emergency preparedness community activities. STPNOC offers educational and emergency preparedness information to the public by providing tours of the Control Room simulator and the Emergency Operations Facility, presentations during Career Day, distributing flyers and newsletters, and by advertising on local radio stations and in local newspapers.

STPNOC also plays an active role in supporting local philanthropy efforts including the United Way Foundation, the American Cancer Society, the American Red Cross, the March of Dimes, and the Palacios Boys & Girls Club.

STPNOC plans to continue conducting public outreach and communications efforts in conjunction with preparing the COL application. Examples of STP 3 & 4 communications include: fact sheets; presentations; interaction with civic, state, and local officials; and industry updates and interfaces. Several meetings with local officials, the community, and the NRC are anticipated through the start of commercial operations. The first public outreach meeting held by the NRC in Bay City occurred on June 27, 2007. This meeting was announced via local media outlets (e.g. newspapers).

#### **1.1.2.7 Proposed Dates for Major Activities**

NRC regulations provide for COL applicants to perform both preconstruction site preparation activities and limited work authorization (LWA) activities before issuance of the COL. STPNOC plans to start preconstruction activities in January 2009 and conclude these activities in January 2010. If LWA activities are to be performed, they may begin in January 2010 and conclude in January 2011.

Construction activities for STP 3 will begin following the site preparation for both STP 3 & 4. STPNOC expects to initiate construction of STP 3 in January 2011 and STP 4 in May 2011. STPNOC estimates that construction would occur over a 63-month period for both units, beginning with NRC approval of the COL application in January 2011. Commercial operation for STP 3 is projected in March 2015 and March 2016 for STP 4.



