5.8 Socioeconomic Impacts

This section addresses the socioeconomic impacts of the operation of STP 3 & 4. Section 5.8.1 presents an assessment of the physical impacts of operation. Subsection 5.8.2 describes the impacts to the community in the areas of demography, economy, taxes, land use, transportation, recreational resources and aesthetics, housing, and public services. Subsection 5.8.3, Environmental Justice, assesses the operation of STP 3 & 4 with regard to disproportionate adverse impacts to minority and low income groups.

5.8.1 Physical Impacts of Station Operation

This section assesses the potential physical impacts due to operation of STP 3 & 4 on the nearby communities or residences. Potential impacts include noise, odors, exhausts, thermal emissions, and visual intrusions.

There are no residential areas located within the site boundary. The estimated population within 10 miles of the STP site is approximately 5170 people (see Section 2.5). Population distribution details are given in Subsection 2.5.1. The nearest full time residence is approximately 1.5 miles (west-southwest) from the Exclusion Area Boundary (EAB) boundary. There are 10 residences within a 5-mile radius of STP 1 & 2 (Reference 5.8-1). The Lower Colorado River Authority (LCRA) Park (FM [Farm-to Market] 521 River Park) is approximately 6 miles from the STP site. Road systems in the vicinity of the site are discussed in Subsection 2.2.1. The area is predominately rural and characterized by farmland and wooded tracts. There are three offsite industrial facilities within the 10-mile radius the STP site.

5.8.1.1 Noise

As described in Section 2.2, Matagorda and Brazoria counties are predominantly rural and characterized by farmland with occasional wooded tracts. Areas that are subject to farming are prone to seasonal noise-related events such as planting and harvesting. Wooded areas provide natural noise abatement control to reduce noise propagation.

STPNOC reviewed the noise determinations made by the NRC with regard to similar nuclear power plants (i.e., those using a cooling lake or other body of water and operating water pumps) (Subsection 2.7.7). A discussion of physical impacts associated with the operation of the mechanical draft cooling towers can be found in Subsection 5.3.4.2.

STPNOC assumes that the noise from STP 1 & 2 is not greater than the normal operations noise occurring at other nuclear power plants and could be used in evaluating impacts for STP 3 & 4. From the NRC statements summarized in Subsection 2.7.7, the noise level emitting from STP 1 & 2 appear to be less than background. Background or ambient sound levels at the STP site, considering the local environment, could compare to the ambient sound level of a farm, 44 decibels, or to that of a small town or quiet suburban area, 46 to 52 decibels (Reference 5.8-2). The exception would be when the public address system is used and warning sirens are tested, which are both relatively short-lived occurrences.

Noise level attenuates with distance. A 3-decibel decrease is perceived as roughly halving loudness; a 3-decibel increase doubles the loudness. The noise from an earthmover can be as high as 94 decibels from 10 feet away, and 82 decibels from 70 feet away. A crane lifting a load can make 96 decibels of noise; at rest, it may make less than 80 decibels. Moderate auto traffic at a distance of 100 feet (30 meters) rates about 50 decibels. To a driver with a car window open or a pedestrian on the sidewalk, the same traffic rates about 70 decibels (Reference 5.8-3); that is, it sounds four times louder. The level of normal conversation is about 50 to 60 decibels.

Major equipment components are housed within structures that provide noise attenuation. Intermittently operated equipment (i.e., emergency diesel generators, combustion turbine generator) are equipped with mufflers to reduce exhaust noise.

No public roads, public buildings or residences are located within the EAB. After the completion of construction of STP 3 & 4, areas that were used for construction support will be graded, landscaped, and planted to enhance the overall site appearance. Previously forested areas cleared for temporary construction facilities will be revegetated, and harsh topographical features created during construction will be contoured to match the surrounding areas (Subsection 3.1.2). This revegetation will provide an additional buffer for operations-related noise. The STPEGS Annual Environmental Operating Report (Reference 5.8-1) identifies 10 residences within a 5-mile radius of the currently operating units. The exclusion area boundary is greater than 4000 feet in all directions from the new STP 3 & 4 footprint. Attenuation of noise associated with STP 3 & 4 operations would be similar to that which is currently occurring for STP 1 & 2.

Impacts from the noise associated with the operation of STP 3 & 4 would be SMALL and would not require mitigation.

5.8.1.2 Air Quality

Section 5.4 discusses the impacts to members of the public from radioactive air emissions from STP 3 & 4. Subsection 5.8.1.2 is focused in impacts to members of the public from non-radiological air emissions.

Matagorda and Brazoria Counties are part of the Metropolitan Houston-Galveston Intrastate Air Quality Control Region (AQCR) (Reference 5.8-4). All areas within the Metropolitan Houston-Galveston Intrastate AQCR are classified as achieving attainment with the National Ambient Air Quality Standards (NAAQS), with the exception of the Houston-Galveston-Brazoria 8-Hour Ozone Non-attainment Area. (Reference 5.8-5). A discussion of current and projected regional air quality conditions is contained in Subsection 2.7.2.

The NAAQS define ambient concentration criteria for sulfur dioxide (SO_2), particulate matter with aerodynamic diameters of 10 microns or less (PM_{10}), particulate matter with aerodynamic diameters of 2.5 microns or less ($PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead (Pb). These pollutants are generally referred to as “criteria pollutants.” Areas of the United States having air quality as good as or better than the NAAQS are designated by the U.S. Environmental Protection

Agency (EPA) as attainment areas. Areas with air quality that is worse than the NAAQS are designated by EPA as non-attainment areas (Reference 5.8-5). The Houston-Galveston-Brazoria area holds non-attainment status for ground-level ozone under the 8-hour standard that became effective June 15, 2005. Counties affected under this status are: Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller. The region was classified as being in “moderate” non-attainment of the 8-hour standard and was given a maximum attainment date of June 15, 2010 (Reference 5.8-5).

STP 3 & 4 will have three standby diesel generators per unit, and one combustion turbine generator per unit. Emissions from those sources are described in Subsection 3.6.3. Section 1.2 lists all authorizations required before the start of operation, including the authorizing agency, the source of authorization, the requirement for authorization, and the permitted activity. The standby diesel generators and turbine generators would be operated periodically on a limited short-term basis. Subsection 3.6.3.1 discusses the operation of these systems. Table 3.6-3 describes annual estimated emissions from these sources, including equipment use estimates. No operational sources of gaseous emissions other than diesel generators, auxiliary boilers, or combustion turbines are planned for STP 3 & 4. Properly maintained asphalt or concrete access roads, and appropriate speed limits, would minimize the amount of fugitive dust generated by the commuting workforce. The impact of the operation of STP 3 & 4 on air quality would be SMALL, and would not warrant mitigation.

5.8.1.3 Thermal Emissions

Heat dissipation to the atmosphere from operation of the cooling towers and the Main Cooling Reservoir (MCR) is described in Subsection 5.3.3.1. The plumes from the cooling towers would occur in each direction of the compass and would be spread over a wide area. The average plume lengths would be short and would not be long enough to reach the site boundary in most directions. Fogging and icing from the operation of the cooling tower is not predicted to occur, and fogging from the operation of the MCR is expected to occur infrequently. Salt deposition due to water droplets drifting from the cooling towers is only predicted to occur for locations less than ~~a mile~~two miles from the towers~~, which is within thesite boundary~~. Shadowing in the vicinity of the cooling towers and in nearby agricultural areas was predicted to occur for less than ~~43~~105 hours per season and ~~126~~325 hours annually. This represents less than ~~2~~11% of the total hours of each season and per year. Ground-level increases in humidity would occur in the immediate vicinity of the cooling towers, on developed land within the STP site boundary.

The NRC’s Environmental Standard Review Plan (NUREG-1555) notes that the plume from a cooling pond like the MCR would exist as a fog over the pond or as ground-level fog evaporating within 300 meters from the pond, or would lift to become stratus for winds less than or equal to 2.2 meters per second. Elevated plumes and the associated shadowing would not be expected from the operation of the MCR.

Because there is no residential area within the site boundary, the impacts on nearby communities from thermal emissions would be SMALL and no mitigation would be required.

5.8.1.4 Visual Intrusions

The nearest full-time residence is approximately 1.5 miles west-southwest from the EAB boundary. There are 10 residences within a 5-mile radius of STP 1 & 2. The LCRA Park (FM 521 River Park) is approximately 6 miles east of the STP site. At this distance, the STP 3 & 4 reactor containment buildings and the two mechanical draft cooling towers would be visible. Impacts from the additional structures would be SMALL compared to existing conditions and would not warrant mitigation.

The visual impacts from the operation of the cooling towers would be the towers themselves plus the plumes generated during operation. Specifics for modeling of the plume are contained in Subsection 5.3.3. Specifics for the length and frequency of elevated plumes are contained in Subsection 5.3.3.1.0. The plumes from the cooling towers would occur in each direction of the compass and would be spread over a wide area, reducing the time that the plume would be visible from a particular location. The average plume lengths would be relatively short. Plumes would be visible at the 10 residences within the 5-mile radius for periods ranging from between 16 hours/year to 183 hours/year. These plumes would only be visible during daylight hours for these periods. Because of the varying directions and short average plume lengths, impacts from elevated plumes would be SMALL and not warrant mitigation.

The current Reservoir Makeup Pumping Facility (RMPF) is visible from the Colorado River and from the east bank of the river. This facility was sized for four units and, therefore, there would be no change in its visibility over existing conditions related to STP 3 & 4. Visual impact of the RMPF would be SMALL and would not warrant mitigation.

5.8.1.5 Other Impacts

Roads within the vicinity of the STP site would experience a temporary increase in traffic at the beginning and the end of the shift. However, the current road network has sufficient capacity to accommodate the increase, as detailed in Subsection 5.8.2. Therefore, no significant traffic congestion would result from operation of STP 3 & 4. Impact to roads in the vicinity of the STP site would be SMALL and would not warrant mitigation.

5.8.1.6 Conclusion

Physical impacts to the surrounding population as a result of operation of STP 3 & 4 would be SMALL and would not warrant mitigation.

5.8.2 Social and Economic Impacts

This section evaluates the demographic, economic, infrastructure, housing, and community including education and public services impacts to the region as a result of operating STP 3 & 4. The evaluation assesses impacts of operation and of demands placed by the workforce on the region. STP 3 & 4 would require approximately 888 workers (Subsection 3.10.3). The current schedule projects a commercial operation date of 2015 for STP 3 and 2016 for STP 4. This analysis conservatively assumes that

STP 3 & 4 will apply for license renewal, which would extend their operation an additional 20 years—until 2075 and 2076, respectively.

It is likely that operation of STP 3 & 4 would overlap for a 33-year period from 2015 to 2048 with the continued operation of STP 1 & 2, which currently employs approximately 1365 onsite staff (1140 STP staff plus 225 contractors) (Table 2.5-1). This analysis conservatively estimated that STP 1 & 2 will apply for license renewal, which would extend their operation an additional 20 years—until 2047 and 2048, respectively. STP 1 & 2 refueling outages last approximately 17 to 35 days and require approximately 1500 to 2000 additional workers. For the new units, refueling outages would be similar to those of STP 1 & 2.

In performing these socioeconomic analyses, the migration and residential distribution of the operations workforce is based on the residential distribution of the current operations workforce. As stated in Section 2.5, approximately 83% of the STP 1 & 2 workers reside within two counties—Matagorda (60.7%) and Brazoria (22.4%). The remaining 17% are distributed across 18 other counties (Table 2.5-1).

5.8.2.1 Demography

The 2000 population within the 50-mile radius of the region was approximately 258,960 and is projected to grow to approximately 657,940 by 2080, for an average annual growth rate over the 60-year period of 1.2% (see Table 2.5-2). STPNOC anticipates employing 888 operations workers at STP 3 & 4. In reality, a percentage of this workforce would already reside within the 50-mile region and the remainder would migrate into the region. However, to be conservative, STPNOC assumes that all of the STP 3 & 4 employees will migrate into the region, and that each operations worker will bring a family. The average household size in Texas is 2.74 (Reference 5.8-6). The average household size, 2.74, is used instead of average family size, 3.28, in order to slightly offset the estimated increase in population caused by the assumption that all of the STP 3 & 4 workforce would migrate into the 50-mile radius.

An operational workforce of 888 would increase the population in the 50-mile region by 2433 people (888 workers × 2.74). It was assumed that the residential distribution of the STP 3 & 4 workforce would resemble that of the current STP 1 & 2 workforce (Table 2.5-1). Therefore, approximately 1477 people (60.7% × 2433) would live in Matagorda County and 545 (22.4% × 2433) would live in Brazoria County. These numbers constitute 3.9% and 0.2% of the 2000 populations of Matagorda and Brazoria Counties, respectively. They would constitute even smaller percentages of the projected populations of those counties.

The employees and their families not residing in Matagorda or Brazoria County (411 people) would be scattered throughout the other counties within the 50-mile radius. Based on the distribution of the STP 1 & 2 operations workforce, the maximum number of workers in any one county other than Matagorda and Brazoria would be 40 (i.e., 4.5% of the 888 operations workers, see Table 2.5-1). Including family members, the maximum population increase would be 109 people. This increase in population would represent a small percentage of the existing populations of any one of those counties.

Additional jobs in the region would result from the multiplier effect attributable to the new operations workforce. In the multiplier effect, each dollar spent on goods and services by an operations worker becomes income to the recipient who saves some but re-spends the rest. The recipients' re-spending becomes income to someone else, who in turn saves part and re-spends the rest, and so on and so forth. The number of times the final increase in consumption exceeds the initial dollar spent is called the "multiplier." The U.S. Department of Commerce Bureau of Economic Analysis Economics and Statistics Division provides multipliers for industry jobs and earnings (Reference 5.8-7). The economic model, RIMS II, developed by the U. S. Department of Commerce, Bureau of Economic Analysis incorporates buying and selling linkages among regional industries and is used to estimate the impact of new nuclear plant-related expenditure of money in the region of interest. For every operations job at the new units, an estimated additional 1.47 jobs would be created in the 50-mile region, which means that 888 direct jobs would result in an additional 1305 indirect jobs for a total of approximately 2193 new jobs in the region (Table 5.8-1). Since most indirect jobs are service-related and not highly specialized, most, if not all, indirect jobs would likely be filled by the existing workforce within the 50-mile region. For every dollar spent by a worker, an estimated additional 0.56 dollars would be injected into the regional economy (Reference 5.8-7).

5.8.2.2 Impacts to the Community

5.8.2.2.1 Economy

The impact of the operation of STP 3 & 4 on the local and regional economy depends on the region's current and projected economy and population. The economic impacts of a potential 60-year period of operation are discussed below.

In the other socioeconomics sections in Chapter 5, all new operating personnel are conservatively assumed to come from outside of the 50-mile region. The reason that approach is considered conservative is that stresses to regional resources, such as water supplies, would be greater with a larger in-migration and would be considered negative. Conversely, with respect to the regional economy, a larger in-migration of project-related population would be considered positive. Therefore, to avoid overstating the level of impact to the economy, a range of impacts based on 50% to 100% of the operations workforce migrating into the 50-mile radius is considered.

The employment of the operations workforce for such an extended period of time would have economic and social impacts on the surrounding region. Matagorda County would be the most affected county in the 50-mile region because it would have more employees residing than any other county, and it would receive property tax revenues assessed on the new units. The influx of people spending wages, paying taxes, using public services and utilities, and building houses has a more noticeable impact on Matagorda County with its lower population, than Brazoria County, which has a greater population and would also have an influx but not as large.

The wages and salaries of the operating workforce would have a multiplier effect that would result in an increase in business activity, particularly in the retail and service industries. Assuming the entire operations workforce would migrate into the 50-mile

radius, the creation of 888 jobs would inject $90,181,728 to $110,129,760 per year into the regional economy. If only half of the workers would migrate into the region (assuming the other half would already reside within the region), this dollar impact would be reduced by 50%. These conclusions are analyzed below.

The wage range of a nonmanagerial operations worker is assumed to be $65,100 to $79,500 per year. Managerial staff wages would be larger, but these employees comprise a smaller percentage of the workforce. Therefore, to be conservative, the nonmanagerial wage range was used. The range was multiplied by the number of workers—888—to calculate total dollars earned per year of $57,808,800 to $70,596,000.

An earnings multiplier for the power generation and supply industry in the two-county region, 1.56 (Reference 5.8-7), was applied to the total dollars earned per year. According to these calculations, the total impact of worker wages on the 50-mile region would be between $90,181,728 and $110,129,760 per year. If only 50% of the operations workforce would migrate into the region, the dollar impact would be $45,090,864 to $55,064,880 per year. (Note: STPNOC acknowledges that the earnings multiplier is for the two-county region, but believes that this multiplier is reasonably representative of the balance of counties within the 50-mile radius.)

As stated previously in Subsection 5.8.2.1, for every new operations job, an estimated additional 1.47 indirect jobs would be created, which means that the 888 direct jobs would result in an additional 1305 jobs for a total of 2193 jobs. If 50% of the operations workforce would migrate into the 50-mile region, then 444 direct jobs would result in an additional 653 additional jobs, for a total of 1097 new jobs.

Most indirect jobs would be service-related, not highly specialized, and filled by the existing workforce within the 50-mile region, particularly the two counties of interest. There are currently 8870 unemployed workers in the two counties. This equates to a 5.9% unemployment rate in the two counties. Some or all of the indirect jobs created by the operations workforce would be filled by unemployed workers in these counties. This would have a positive impact on the economy by providing new business and job opportunities for local residents.

Because of the estimated distribution of the workers, Matagorda County would experience 60.7% of this economic activity and Brazoria County would experience approximately 22.4%. Matagorda County would be the most affected. Beyond Matagorda County, the impacts would become more diffuse since a smaller percentage of the workforce would live in the other counties and the larger economic bases of some counties, particularly Brazoria County, would serve to dilute any impacts.

Therefore, the impacts of STP 3 & 4 operations on the economy would be beneficial and SMALL everywhere in the region except Matagorda County, where the impacts would be beneficial, MODERATE, and positive, and mitigation will not be warranted.

5.8.2.2.2 Taxes

Several types of taxes would be generated by the operation of STP 3 & 4, which would begin operation in 2015. In addition to taxes currently paid, NRG South Texas LP (STPNOC's only owner subject to taxation) would pay additional franchise, sales, and property taxes based on the value and power generated by STP 3 & 4 and on operating expenditures. New workers and their families would also contribute sales and property tax revenues to the area.

Subsection 4.2.2.2.2 provides a detailed description of the significance categories applicable to tax impacts, which are derived from the analysis in the Generic Environmental Impact Statement (GEIS) for License Renewal of Nuclear Plants (NUREG-1437). STPNOC reviewed this methodology and determined that the significance levels were appropriate to apply to an assessment of tax impacts as a result of STP 3 & 4 operations. In summary, significance levels are considered SMALL if new tax payments are under 10% of the taxing jurisdiction's revenue, MODERATE if payments are 10% to 20%, and LARGE if payments represent more than 20% of revenue.

Personal Income and Corporate Franchise Taxes

As noted in Subsection 2.5.2.3, Texas has no personal income tax, but recently amended the law to extend coverage of the franchise tax on businesses; the changes take effect January 1, 2008. To date, NRG South Texas LP (STPNOC's only taxable ownership entity) has not been required to pay franchise tax on STP 1 & 2. As of July 2007, the state of Texas has not yet completed the implementing regulations for the new law, and the applicability of the franchise tax to various types of ownership structures is not yet fully defined.

The franchise tax is a gross margin tax (i.e., it is calculated on revenues less allowable operating costs). Under the energy industry's current unregulated environment, neither revenues nor operating costs are fully predictable for several years in the future. Therefore, NRG has estimated a range for annual franchise tax payments on STP 3 & 4. For STP 3, payments are based on gross margin estimates of $468 to $543 million per year, yielding franchise tax payments of $4.7 to $5.4 million, while payments for STP 4 would be based on gross margin estimates of $390 to $470 million per year, yielding franchise tax payments of $3.9 to $4.7 million. These estimates assume that STP 3 & 4 would be 100% privately owned and fully subject to the franchise tax. If part of the ownership were to include publicly-owned organizations (as is currently the case for STP 1 & 2), and if these organizations were not fully subject to the franchise tax, the tax payments would be lower.

Based on these estimates (and assuming 100% private ownership), the owners of STP 3 & 4 would pay an estimated $4.7 to $5.4 million in franchise taxes in 2015, the first year of operation for STP 3, and an estimated $8.6 to $10.0 million in 2016, when STP 4 comes on line, and in subsequent years. The state of Texas has projected franchise tax revenues for the 2008-2009 biennium at over $5.8 billion (or $2.9 billion per year) (Reference 5.8-8). Since the tax applicability will change substantially beginning in 2008, it is not possible at this time to project the revenue to years 2015–2016.

However, the projected payments for STP 3 & 4 represent well under 1.0% of the state's projected franchise tax revenues for 2009. It is likely that franchise tax payments for STP 3 & 4, beginning in 2015 would represent a SMALL positive impact to the state of Texas for franchise tax collections.

In addition to direct taxes paid for STP 3 & 4, local operating expenditures as well as purchases by the operating workforce would have a multiplier effect on the local economy, where money would be spent and re-spent within the region. Because of this multiplier effect, businesses in Matagorda County and adjacent areas, particularly retail and service sector firms, could experience revenue increases, and there may be prospects for new startup firms and additional job opportunities for local workers. Existing and new firms could generate additional profits, which would further contribute to increased franchise taxes, although the exact amount is unknown. Impacts would be positive and SMALL.

STP's expansion could also stimulate the formation of new businesses and the expansion of existing firms; these businesses would increase Texas franchise tax collections. Thus, the business tax base in the region would expand, especially in Matagorda County, but also in adjacent counties where STP's expansion could stimulate the economy. Impacts to Texas franchise tax collections would be positive and SMALL.

Sales and Use Taxes

The state of Texas, Matagorda County, and cities and counties surrounding the STP site would experience an increase in the amount of sales and use taxes collected. Additional sales and use taxes would be generated by retail purchases by the operating workforce, and from increased expenditures by STPNOC for the operation of STP 3 & 4.

Currently, it is difficult to assess the extent of impact on sales and use tax collections from the new workforce. Matagorda County has a small population and is predominantly rural, with limited shopping or entertainment options. The Houston metropolitan area is the retail center of the region, so it is likely that suburbs and towns along the southern part of greater Houston, such as Lake Jackson in Brazoria County, would realize the greatest increase in, and derive the greatest benefit from, sales taxes, although this would be a SMALL positive impact relative to their overall sales tax revenues. However, it is also likely that Bay City and, to a much lesser extent, Palacios, would also experience SMALL to MODERATE positive impacts from increased sales tax collections. In absolute terms, the amount of sales and use taxes collected over a potential 60-year operating period could be large, but SMALL when compared to the total amount of taxes collected by Texas and the affected counties and cities.

Other Sales- and Use-Related Taxes

Visitors to STP during the operations of STP 3 & 4, as well as workers used for outage maintenance activities over the life of the new (and existing) units, would use local motels and pay the hotel occupancy tax that is imposed by the state of Texas (currently 6%) and the City of Bay City (currently 7%). Because of Bay City's small population,

MODERATE benefits to the city could result from these tax collections, while benefits to the state of Texas would be SMALL when compared to overall hotel occupancy tax collections.

With new residents, the cities of Bay City and Palacios would receive positive impacts from increased sales tax collections on telecommunications services and on the residential use of gas and electricity. The amounts are unknown at this time but are expected to be relatively SMALL.

Property Taxes — Counties and Special Districts

During the operation of STP 3 & 4, the additional assessed valuation of the plant (over the existing amount for STP 1 & 2) would be based on some combination of cost, income from the sale of electric power, and market value. Some inputs to the formulas would be negotiated between the owners of STP 3 & 4 and the appraisal district.

During the 60-year operation period for STP 3 & 4, the plant owners subject to taxation would pay additional property taxes to Matagorda County, the Matagorda County Hospital District, Navigation District #1, Drainage District #3, and the Palacios Seawall District (see Table 2.5.2.3-15) based on the appraised valuation. Although the amount of these payments is unknown at this time, it is likely that such payments would provide a MODERATE to LARGE positive impact to those taxing jurisdictions and to the local economy.

One of the main sources of economic impact related to the operation of new units would be property taxes assessed on the facility. Currently, STP 1 & 2's tax payments represent approximately 75% of the total property taxes received by Matagorda County (see Table 2.5-14). Property taxes to be paid by the owners for STP 3 & 4 during operations would depend on many factors, including millage rates, the percent ownership of each co-owner, and the co-owner's taxable status. However, since the appraised value once STP 3 & 4 operations begin would increase substantially higher than if the project was not undertaken, it is likely that the beneficial impacts to Matagorda County and the special taxing districts would be LARGE.

Property tax revenues in Matagorda County and adjacent counties would also derive from new residents associated with the operation of STP 3 & 4. These increases would have a positive and SMALL impact on tax revenues in more heavily populated jurisdictions such as Brazoria County, but in Matagorda County, with a much smaller population, the relative impacts would be positive and SMALL to MODERATE.

Property Taxes — Independent School Districts

As discussed in Subsection 2.5.2.3.5, the owners of STP 1 & 2 pay taxes to the Palacios independent school district (ISD) and is its largest taxpayer. Expected increases in the appraised valuation of the STP facility as a result of operation of STP 3 & 4 would result in larger tax payments to the ISD. However, under current Texas school funding guidelines, additional revenues paid to Palacios ISD (a property-rich district) would flow to the state of Texas for redistribution to property-poor districts (see Subsections 2.5.2.3.5 and 4.4.2.2.2). Although the amount of the increased tax

payments cannot be known at this time, the larger payments would provide a relatively SMALL positive impact to the state of Texas as a whole. If Texas were to change its school funding mechanism, impacts to school districts would be different in a way that is impossible to predict.

The increased number of workers required to operate STP 3 & 4 could result in larger enrollments in Palacios schools (see Subsection 5.8.2.2.8). Since the Texas school funding formula is based on weighted average daily attendance, increases in the number of students would lead to increased revenues for the Palacios ISD, but would also result in the additional expenses related to a larger student body. Fiscal impacts to the Palacios ISD from increased enrollment would be SMALL to MODERATE.

Other school districts in the area do not receive property tax revenues from STPNOC, but could experience larger enrollments as STPNOC workforce grows with the operation of STP 3 & 4. Fiscal impacts to these districts would vary from SMALL to MODERATE, depending on the size of their existing enrollment, the amount of enrollment increases, their existing property tax revenues, and their status as a "property-rich" or "property-poor" school district under Texas school funding wealth equalization guidelines. These impacts are discussed more fully in Subsection 5.8.2.2.8.

A recently passed law could decrease STP's property tax obligations to the Palacios ISD without reducing Palacios ISD's overall revenues (see Subsection 4.4.2.2.2 for a complete discussion). The new law essentially will allow school districts to reduce the taxable value of new construction for nuclear plants, and allow the plants to defer the effective date of an abatement agreement for up to seven years after the date the agreement was made. Negotiations are underway between NRG and the Palacios ISD to implement this abatement (Reference 5.8-9).

Under current state funding formulas to maintain wealth equalization (described in Subsection 2.5.3.3.3), the Palacios ISD's overall revenues would not decline (Reference 5.8-10). The amount of any tax reduction and of any "sharing" payment on STP 1 & 2 from NRG to the Palacios ISD are unknown at this time, as are any tax arrangements between the Palacios ISD and the privately-owned operators of STP 3 & 4. However, any additional funds received by the Palacios ISD under this arrangement would not be subject to wealth-equalization limits (and could thus remain within the ISD), and could therefore have a SMALL to MODERATE beneficial impact on the school district.

Summary of Tax Impacts

Therefore, the overall potential beneficial impacts of taxes collected during the operational period of STP 3 & 4 would be positive and MODERATE to LARGE in Matagorda County and to other taxing jurisdictions within the county, beneficial and SMALL to MODERATE to the Palacios ISD, and positive and SMALL in surrounding areas and in the state of Texas. Mitigation would not be warranted.

5.8.2.2.3 Land Use

NUREG-1437, which provides the methodology used to prepare the socioeconomics section, presents an analysis of offsite land use during license renewal (i.e., operations) that is based on:

- The size of plant-related population growth compared to the area's total population
- The size of the plant's tax payments relative to the community's total revenue
- The nature of the community's existing land-use pattern
- The extent to which the community already has public services in place to support and guide development

In the same document, NRC presents an analysis of offsite land use during refurbishment (i.e. large construction activities) that is based on population changes caused by refurbishment activities. STPNOC reviewed the criteria and methodology in NUREG-1437 and determined that NRC's criteria and methodology are appropriate to evaluate socioeconomic impacts of operation of new units.

Matagorda County is the focus of the land use analysis because the new units and the majority of the workforce would reside there and Matagorda County and its municipalities would be the primary recipients of STP 3 & 4 property tax payments.

First, based on the case-study analysis of refurbishment in NUREG-1437, NRC concluded that all new land-use changes at nuclear plants would be:

SMALL	If population growth results in very little new residential or commercial development compared with existing conditions and if the limited development results only in minimal changes in the area's basic land use pattern.
MODERATE	If plant-related population growth results in considerable new residential and commercial development and the development results in some changes to an area's basic land use pattern.
LARGE	If population growth results in large-scale new residential or commercial development and the development results in major changes in an area's basic land-use pattern.

Second, NRC defined the magnitude of refurbishment-related population changes as follows:

SMALL	If plant-related population growth is less than 5% of the study area's total population, especially if the study area has established patterns of residential and commercial development, a population density of at least 60 people per square mile, and at least one urban area with a population of 100,000 or more within 50 miles.
MODERATE	If plant-related growth is between 5% and 20% of the study area's total population, especially if the study area has established patterns of residential and commercial development, a population density of 30 to 60 people per square mile, and one urban area within 50 miles.
LARGE	If plant-related population growth and density is greater than 20% of the area's total population is less than 30 people per square mile.

Third, NRC defined the magnitude of license renewal-related tax impacts as:

SMALL	If the payments are less than 10% percent of revenue.
MODERATE	If the payments are between 10% and 20% of revenue.
LARGE	If the payments are greater than 20% of revenue.

Finally, NRC determined that, if the plant's tax payments are projected to be a dominant source of the community's total revenue, new tax-driven land-use changes would be LARGE. This would be especially true where the community has no preestablished pattern of development or has not provided adequate public services to support and guide development in the past.

Offsite Land Use in Matagorda County

Matagorda County covers an area of 1114 square miles (Subsection 2.5.2.4.1). In 2002, approximately 70% of the land area of Matagorda County consisted of farms and ranches (Subsection 2.2.3). There are only two incorporated cities in Matagorda County—Bay City, the county's seat, and the City of Palacios—and they have the two largest concentrations of population.

There is no formal land use planning or zoning at the county, city, or town level in Matagorda County; only subdivision regulations. However, the cities of Bay City and Palacios, do (Subsection 2.5.2.4.1). The city of Bay City is in the process of developing a planning committee and hopes to have it operating in the next several years (Subsection 2.5.2.4.1).

Operations-Related Population Growth Impacts

Based on the residential distribution of the current operations STP 1 & 2 workforce, 60.7% of the workforce needed to operate the new units would reside in Matagorda County. As stated in Subsection 2.5.1, the 2000 population of Matagorda County was 37,957, with a population density of 34.1 people per square mile (Reference 5.8-6).

Operations-related population growth in Matagorda County would be 1347 workers and families, (Subsection 5.8.2.1), which equates to 3.6% of the total 2000 population of Matagorda County and a smaller percent of the projected 2020 population for Matagorda County. Four hundred ninety-seven workers and families would relocate to Brazoria County, while the remaining workers and families are expected to settle in the surrounding counties.

Using NUREG-1437 guidance, Matagorda County meets the NRC criteria for SMALL to MODERATE offsite land use impacts attributed to operations workforce population growth. Therefore, STPNOC concludes that offsite land use impacts attributed to operations workforce population growth would be SMALL to MODERATE.

Tax Revenue-Related Impacts

The STP owners' current tax payments represent 73%–75% percent of the total property taxes received by Matagorda County (see Table 2.5-14, Matagorda County Property Tax Information, 2000-2005). Using NUREG-1437 criteria, tax payments of the STP owners are of LARGE significance to Matagorda County. STPNOC expects that the new nuclear units would generate property tax revenues of a similar significance for Matagorda County. Additional tax information can be found in Subsection 2.5.2.3.

Conclusion

From the land use perspective, Matagorda County is predominantly rural, and most of the land would likely continue to be used for agriculture purposes into the foreseeable future. Commercial and residential development in Matagorda County is minimal and has experienced little change. However, the operation of STP 3 & 4 would create an increase in residential and commercial activity, possibly converting some land to other uses such as housing developments, retail centers, public service facility expansions, etc. Because Matagorda County is rural, these land use conversions would have a noticeable impact.

Therefore, employing NUREG-1437 criteria, offsite land use changes would be considered SMALL to MODERATE in Matagorda County, as 50% of the movers are expected to remain in the area (Subsection 4.4.2.1). To mitigate these impacts, STPNOC would maintain communication with local and regional governmental and nongovernmental organizations, including but not limited to the Department of Housing and Community Affairs and the Matagorda County Economic Development Corporation, to disseminate project information in a timely manner. This would allow these organizations to be given the opportunity to plan accordingly.

5.8.2.2.4 Transportation

Impacts of STP 3 & 4 operations on transportation and traffic will be greatest on the rural roads of Matagorda County, particularly FM 521, a two-lane, farm-to-market roadway that provides the only access to the STP site. Impacts on traffic are determined by four elements: (1) the number of operations workers and their vehicles on the roads, (2) the number of shift changes for the operations workforce, (3) the

projected population growth rate in Matagorda County, and (4) the capacity of the roads.

STPNOC estimates it will employ an operation workforce of 888 workers to maintain and operate STP 3 & 4. This analysis conservatively assumes one worker per vehicle. The STP 1 & 2 workforce of 1365, including contractors, will access the STP site via FM 521, as would outage workers during scheduled outages for each unit. Traffic congestion will be most noticeable during shift-change, which will occur twice in a 24-hour period.

Traffic on FM 521, as measured by the 2005 Average Annual Daily Traffic was 2530 (62% of the total traffic) in the westward direction and 1543 (38%) in the eastward direction, with a total of 4073 (Table 2.5-12) (Subsection 4.4.2.2.4). Texas Department of Transportation (TXDOT) assumes the maximum vehicle capacity of FM 521 to be 58,420 pounds or 31,200 passenger cars, equaling 19,344 in the westward direction and 11,856 in the eastward direction.

For purposes of analysis it is assumed that 100% of the 4073 vehicles are attributable to the current STP 1 & 2 workforce.

Operations workers are on a 35-day rotation. On any given day, 58% of the total operations workforce will be on the day shift or in training, 23% will be on the night shift, and 19% will be off (Reference 5.8-9). After conservatively assuming that all traffic is due to STP workers, it is assumed that all traffic on FM 521 would occur during shift change (5:30 a.m.— 7:00 a.m. and 5:30 p.m.—7:00 p.m.). The night-to-day shift change (totaling 58% of the operations workforce) will result in the highest traffic count as approximately 1262 day-shift workers arrive and 500 night-shift workers leave. However, the arrival and departure times for workers will vary over a 1.5-hour time period, alleviating some congestion at the site entrance.

The 2000 Matagorda County population was 37,957 and will increase by an estimated 18% by 2020 and 28% by 2040 (Table 2.5-5). However because most of the traffic on FM 521 is site-related and because of the conservative assumptions made regarding the timing of STP traffic, local traffic was not factored into the analysis.

FM 521 is load zoned to 58,420 gross pounds, so there is enough capacity for 31,200 passenger cars or equivalent to 1130 passenger cars beyond the current 170-cars-per-hour use now. STP 3 & 4 operations will increase the existing STP workforce by 888 workers divided into two shifts. It is assumed that the number of new operations workers per shift will be similar, in percentage, to the current operations workforce. Therefore, during the day-shift change, approximately 58% of the total 2253 (1365 current workers and 888 new workers) operations workers will leave the STP site while 23% will arrive for a total of 1825 vehicles during the shift change, above the maximum designated capacity of 1300 vehicles per hour. STP operations traffic will exceed road capacity during shift change. There could also be as many as 2000 outage workers per unit (divided between two shifts) for approximately 17–35 days every 18 months. During outages, assuming 1500 to 2000 additional vehicles in a 24-hour period, for two

12.5 hour shifts, the number of vehicles on FM 521 could be 153 to 174 vehicles per hour.

STPNOC will stagger outage schedules so only one unit will be down at a time. Impacts to traffic will be MODERATE to LARGE during shift changes during outages and that mitigation is warranted. Mitigation could include widening of FM 521 to increase its capacity (TXDOT), and staggering of arrival and departure times.

5.8.2.2.5 Aesthetics and Recreation

As with the original units, STPNOC will work to minimize the visual impact of the structures through use of topography, design, materials, and color. The embankment of the MCR, which varies in elevation from 65.75 feet mean sea level (MSL) to 67 feet MSL and is approximately 13 miles long, is the only structure related to the plant that is visible from offsite areas to the southeast along the Colorado River. Recreational users on the Colorado River are used to seeing the embankment of the MCR (Subsection 2.5.2.5). Since the topography surrounding the site is relatively flat (elevation of 23 MSL) and treeless, there is little to no screen for the plant from area roadways (Subsection 2.5.2.5). However, the majority of property surrounding the site is privately owned and not publicly accessible. The proposed location of STP 3 & 4 integrates well with the existing units, and the layout has been designed to give the originally designed appearance of a plant site with four units. STP 3 & 4 will be different in design to the existing units. The appearance of STP 3 & 4 will be similar to two large warehouse-like structures, as opposed to the domed structures currently housing STP 1 & 2 (Figure 3.1-2). The height of the tallest building in the new units will be constructed to match the existing units' tallest building, with a height of 140 feet. STPNOC has determined that impacts of operations on aesthetics will be SMALL and will not warrant mitigation.

The FM 521 River Park, which has trails, picnic areas, and a boat landing on the Colorado River, is upstream of the STP site approximately four miles west of Wadsworth. Additional operations worker traffic on FM 521 is not expected to adversely affect seasonal hunters, fishermen, and bird enthusiasts using the road to get to recreation facilities. Use of the boat landing located at FM 521 River Park is seasonal and not likely to coincide with shift traffic. Because it will be unlikely that hunters, fishermen, and bird enthusiasts will be on FM 521 at the same time as the workers, impacts will be SMALL and will not warrant mitigation. The operation of STP 3 & 4 at the existing STP site will not affect any other recreational facilities in the 50-mile region.

5.8.2.2.6 Housing

For operation of STP 3 & 4, approximately 888 operations workers would migrate into the 50-mile region. Of these, approximately 539 and 199 workers would settle in Matagorda County or Brazoria County, respectively, for a total of 738.

While there is no way of accurately estimating the number of available housing units at the commencement of operations, Subsection 2.5.2.6 discusses the availability of housing in the region in 2000.

As shown in Table 2.5-19, in 2000, 5081 vacant housing units were available for sale or rent in Matagorda and Brazoria Counties: 3853 were vacant rental units and 1228 were vacant housing units for available sale (Subsection 2.5.2.6.1). In absolute numbers, it is likely that adequate housing would be available, especially in Brazoria County where 4152 of the vacant units for rent or sale were located. Nine hundred and twenty-nine of the vacant units for rent or sale were located in Matagorda County. If 60.7% of the new workforce moved to Matagorda County (about 539 families), there would likely be enough vacant housing in Matagorda County. However, in both counties, the average income of the new workforce would be expected to be higher than the median or average income in those counties; therefore, the new workforce could exhaust the high-end housing market. (As stated in Subsection 2.5.2.6, the median price of housing in Matagorda County in 2000 was $61,500. The median price of housing in Brazoria County was $88,500 for the same year.) Matagorda County is the most likely county for this to occur. Therefore, some of the 539 families would have to rent housing, construct new homes, or live elsewhere within the 50-mile region.

Given this increased demand for higher-end housing, prices of existing housing could rise. Matagorda County, and other counties, to a lesser extent, would benefit from increased property values and the addition of new houses to the tax rolls. However, increasing the demand for homes could increase rental rates and housing prices. It is possible that some low-income populations could be priced out of their housing because of upward pressure on housing prices and rents.

Demands on the housing market would be mitigated by the housing that would be vacated by the portion of the construction workforce that would migrate back out of the 50-mile region upon construction completion. The housing may not be the type of permanent housing sought by the incoming operations workforce, but would be sufficient to house some of the families until other housing could be found or new homes could be constructed. With time, normal market forces would increase the housing supply to meet this demand, causing housing prices and rental rates to stabilize.

Refueling outages would occur at least annually, and sometimes semiannually, when all four units are operational. STPNOC estimates that the maximum increase in workforce during refueling outages would be 1500 to 2000 outage workers. These workers would need temporary housing for 17 to 35 days. Most of the outage workers would stay in local extended-stay hotels, rent rooms in local homes, or bring travel trailers. The outage workforce would not affect the permanent housing market in the region.

STPNOC concludes that the potential impacts on housing would be SMALL in Brazoria County and in the 50-mile region and MODERATE in Matagorda County. Mitigation of these impacts to Matagorda County would include the self-relocation of the operations workforce that could not find housing in Matagorda County to other counties within a 50-mile radius of the site, the use of the housing vacated by the construction workforce, and normal market forces. Additionally, STPNOC would maintain communication with local and regional governmental officials including the Matagorda County Judge, nongovernmental organizations, and the general public to disseminate project

information in a timely manner. This would allow these organizations, including developers and real estate agencies, the opportunity to plan accordingly.

5.8.2.2.7 Public Services

Water Supply Facilities

STPNOC considered both plant demand and plant-related population growth demands on local water resources. Subsection 2.5.2.7 describes the public water supply systems in the area, their permitted capacities, and current demands. Operation of STP 3 & 4 could bring as many as 2433 people to the region. The average per capita water usage in the U.S. is 90 gpd per person. Of that, 26 gallons is used for personal use (Reference 5.8-11). The balance is used for bathing, laundry, and other household uses.

STPNOC does not use water from a municipal system. Therefore, water usage by the workforce, while onsite, would not impact municipal water suppliers. Five active onsite wells provide makeup water, process water, potable water, and supply for the fire protection system for STP 1 & 2. In conjunction with surface water from the Colorado River, the wells would provide the water for operation of STP 3 & 4 as well. The wells extend into the Chicot Aquifer, range in depth from 600 to 700 feet, and have design yields of 200 to 500 gpm. Current permitted total withdrawal rates are 3,000 acre-feet per year (approximately 2.7 million gpd). Average daily usage for STP 1 & 2 from 2001 through 2006 was approximately 1.1 million gpd (763 gpm), for all purposes (Subsection 4.2.2). In 2005, STPNOC withdrew 422,333,662 gallons (1,296 acre-feet) of water from five active onsite groundwater wells for all uses (Subsection 2.5.2.7.1.1).

During operations, an additional 888 people on site could increase potable consumption by a maximum of approximately 23,088 gpd (888 × 26 gpd) for personal use.

Groundwater would be withdrawn from wells for cooling system makeup at the rate of 1077 gpm for normal operations and up to the permitted withdrawal amount for maximum operations. Additional water needs during maximum operations would be met by withdrawal from the MCR.

Currently, municipal water suppliers in the region have excess capacity (see Table 2.5-22). The impact to the local water supply systems from operations-related population growth can be estimated by calculating the amount of water that would be required by the total population increase. The average person in the U.S. uses approximately 90 gpd (Reference 5.8-11). An operations-related population increase of 2433 people (1477 in Matagorda County; 545 in Brazoria County; and 411 in the remainder of the 50-mile radius) could increase consumption by approximately 218,970 gpd (90 gpd × 2,433) in the 50-mile region. Matagorda and Brazoria Counties would need approximately 181,980 gpd (90 gpd × 2022) of this amount. Currently, there is excess capacity in every major public water supply system in Matagorda and Brazoria Counties and, under present conditions, the total increase in population would not stress municipal water supplies or infrastructure. However, the regional water planning groups created by the Texas Water Development Board predict that there will be water

supply and, possibly, infrastructure issues in both Regions K (which includes Matagorda County, see Figure 2.5-7) and H (which includes Brazoria County, see Figure 2.5-7) some time after 2010 (see Subsection 2.2.2.7.1.1). Demand is nearly equal to supply in 2010 and, by 2060, demand significantly exceeds supply. Both regional governmental entities are in the process of analyzing and implementing strategies to mitigate predicted water shortages.

As stated previously, operation of STP 3 & 4 would increase the population in the 50-mile region by 2433 people. Of those 1477 people would locate to Matagorda County and 545 people would locate to Brazoria County. These numbers constitute 3.9% and 0.2% of the 2000 Census populations of Matagorda and Brazoria Counties (Table 2.5-5), respectively, and 3.3% and 0.2% of the 2020 population projections of Matagorda and Brazoria Counties, respectively. Additionally, between 2000 and 2020, the in-migrations represent a 21.9% and 0.6% increase in the projected additional population for Matagorda and Brazoria Counties, respectively. (Note: STPNOC has chosen 2020 projections because they are near the startup of operations and county populations will continue to grow beyond that date, causing the STPNOC percentage of the population growth in those counties to begin decreasing.)

As a result, impacts of the in-migrating operations workforce on municipal water supplies in Brazoria County would be SMALL and would not warrant additional mitigation. The incremental increase in population, resulting from operation of STP 3 & 4, would represent a very small percentage of the county's current and future populations, and of the projected increase in population based on current population growth trends. The Region H planning group has already identified water shortage issues for the region and is planning and implementing strategies to mitigate these issues (Subsection 2.5.2.7.1.1). The addition of the operations-related population would not noticeably add to current stresses experienced by Region H.

Impacts of the in-migrating operations workforce on municipal water supplies in Matagorda County (Region K) could be MODERATE. The incremental increase in population, resulting from operation of STP 3 & 4, would represent a small percentage of the county's current and future populations, but a 19.9% increase in the projected growth in population from 2000 to 2020. The Region K planning group has already identified water shortage issues for the region, which could begin shortly after 2010, and is planning and implementing strategies to mitigate these issues (Subsection 2.5.2.7.1.1). The addition of the operations-related population would add to current stresses experienced by Region K. Region K mitigation strategies include reuse, seawater desalination, conservation, and the LCRA/San Antonio Water System Project (Subsection 2.5.2.7.1.1). In addition to the Region K mitigations, STPNOC has been (and would be) in communication with local government and planning organizations regarding the construction and operation of the new units. These organizations would be aware of the in-migration of the workers and their families and would have ample opportunity to plan for the influx.

In addition, the in-migration of the operations workforce would be offset by the departing construction workforce, resulting in a net loss in plant-related population

growth (Subsection 4.4.2). This workforce exchange would serve to assist in mitigating the plant's contribution to the projected water shortages in the region.

Waste Water Treatment Facilities

The STP 3 & 4 site currently has two wastewater treatment systems that will be expanded or replaced to meet the increased need for waste water treatment.

Subsection 2.5.2.7.1.2 describes the public wastewater treatment systems in Matagorda and Brazoria Counties, their plant-designed average flows, and monthly average wastewater processed. Wastewater treatment facilities in the two counties have excess capacity (see Table 2.5-23). The impact to local wastewater treatment systems from operations-related population increases can be determined by calculating the amount of water that would be used and disposed of by these individuals. The average person in the U.S. uses approximately 90 gpd (Reference 5.8-11). To be conservative, STPNOC estimates that 100% of this water would be disposed of through the wastewater treatment facilities. An operations-related population increase of 2433 people (1477 in Matagorda County, 545 in Brazoria County, and 411 in the remainder of the 50-mile radius) could require 218,970 gpd (90 gpd × 2433) of additional wastewater treatment capacity. Matagorda and Brazoria Counties would need 181,980 gpd (90 gpd × 2,022) of this capacity. Currently, there is excess treatment capacity in both counties, which indicates that there is sufficient infrastructure to meet this need. However, regional water planning groups predict that there will be water supply (and, possibly, infrastructure) issues in both Regions K and H some time after 2010. As stated previously, water demand is nearly equal to supply in 2010 and, by 2060, demand significantly exceeds supply. Both regions are in the process of analyzing and implementing strategies to mitigate predicted water shortages. Therefore, impacts of the in-migrating operations workforce on wastewater treatment facilities in the region would be similar to those for public water supplies.

Impacts of the in-migrating operations workforce on wastewater treatment facilities in Brazoria County would be SMALL and would not warrant additional mitigation. The incremental increase in population resulting from operation of the new units would represent a very small percentage of the county's current and future populations, and the projected increase in population based on current population growth trends.

Impacts of the in-migrating operations workforce on wastewater treatment facilities in Matagorda County (Region K) could be MODERATE. The incremental increase in population, resulting from new unit operations, would represent a small percentage of the county's current and future populations, but a 19.9% increase in the projected growth in population from 2000 to 2020.

Police, Fire, and Medical Facilities

Police Services

In 2002, Matagorda and Brazoria Counties' residents-per-police personnel ratios were 394:1 and 419:1, respectively (see Table 2.5-30). Between Matagorda and Brazoria Counties, Matagorda County has the larger police force relative to the size of its

population. Local planning officials state that police protection is adequately provided at this time (Subsection 2.5.2.7.2). STPNOC does now, and will continue to, employ its own security force at STP.

The operation of STP 3 & 4 would produce an influx of approximately 1477 new residents to Matagorda County and 545 new residents to Brazoria County. The rest of the operations workforce and families would live in other counties in the 50-mile region. These population increases would increase the persons-per-police personnel ratios (Table 5.8-2) by 3.7% and 0.3% in Matagorda and Brazoria Counties, respectively.

Based on the percentage increase in persons-per-police personnel ratios (Table 5.8-2), operations-related population increases would not adversely affect existing police services in Matagorda or Brazoria Counties.

STPNOC concludes that the potential impacts of new unit operations on police services in Matagorda and Brazoria Counties and in the 50-mile region would be SMALL and would not warrant mitigation.

Fire Protection Services

In 2000, Matagorda and Brazoria Counties' persons-per-firefighter ratios were 217:1 and 477:1, respectively (Table 2.5-30). Brazoria County has the higher persons-per-firefighter ratio.

For STP 3 & 4 operations, Matagorda County would see an influx of approximately 1477 new residents and 545 new residents would move into Brazoria County. The rest of the workforce would live in other counties in the 50-mile region. These population increases would increase the persons-per-firefighter ratios (Table 5.8-3) by 3.7% and 0.2% in Matagorda and Brazoria Counties, respectively.

Based on the percentage increase in persons-per-firefighter ratios (Table 5.8-3), operations-related population increases would not adversely affect existing fire protection services in Matagorda or Brazoria Counties.

STPNOC concludes that the potential impacts of the new reactors' workforce on fire protection services in Matagorda and Brazoria Counties and the 50-mile region would be SMALL and mitigation would not be warranted.

Medical Services

Detailed information concerning the medical services in Matagorda and Brazoria Counties is provided in Subsection 2.5.2.7.3. Minor injuries to operations workers would be assessed and treated by onsite medical personnel. Other injuries would be treated at one of the hospitals in the two-county region, depending on severity of the injury. For the existing STP 1 & 2 workforce, agreements are in place with local medical providers to support emergencies. STPNOC would reach similar agreements to provide emergency medical services to the STP 3 & 4 operations workforce. Operations activities should not burden existing medical services.

The medical facilities in Matagorda and Brazoria Counties provide medical care to much of the population of the two counties. As indicated in Table 2.5-5, the 2000 population of Matagorda and Brazoria Counties, combined, was 279,724. According to Table 2.5-31, in 2006, there were 296 staffed hospital beds and an average daily census of 107 in Matagorda and Brazoria Counties' medical facilities. Adding 2022 residents to the combined population of the two counties would increase the combined population by 0.7%. A 0.7% increase in the average daily census of 107 would increase the average daily census by less than one person, well below the total number of staffed hospital beds in the two counties—296 beds. Additionally, the total number of annual admissions, and annual outpatient visits for the two-county region reported by the American Hospital Association and presented in Table 2,5-31 were 11,084 and 210,946, respectively. A 0.7% increase in these statistics would equate to 11,162 admissions and 212,423 outpatient visits. An increase of less than 1% (i.e., 0.7%) due to the project-related increase in population in the two counties during operations would be a small impact to capacity. Even when adding the state demographer-projected population growth for the two counties (Table 2.5-5), there would still be excess capacity. Therefore, the potential impacts of new unit operations on medical services would be SMALL and mitigation would not be warranted.

Social Services

This section focuses on the potential impacts of operations on the social and related services provided to disadvantaged segments of the population. This section is distinguished from environmental justice issues, which are discussed in Subsection 5.8.3.

The population influx likely would economically benefit the disadvantaged population served by the Texas Health and Human Services Commission and local governmental and nongovernmental organizations. The additional direct jobs would increase the number of indirect jobs that could be filled by currently unemployed workers, thus removing them from social services client lists. Many of these benefits would accrue to Matagorda County, where, because of the smaller economic base, the impact would be more noticeable. Increased property tax revenues resulting from homes and land purchased by the operations workforce could increase government-sponsored social service programs. Therefore, impacts would be positive and SMALL and not require mitigation.

5.8.2.2.8 Education

STPNOC assumes that the new workforce would relocate to the 50-mile region with their families, increasing the population by approximately 4164 people. Approximately 60.7% would settle in Matagorda County, 22.4% in Brazoria County, and the remaining 16.9% will be distributed across the six other counties within the region (Table 4.4-1).

STPNOC conservatively estimates that in an operations workforce related population of 4,650, approximately 952 will be school-aged (Table 2.5-6). This would result in a 23% increase in school-aged population within the 50-mile region. Matagorda County would see the largest increase at 14% and the Brazoria County school population would increase by 5%. The remaining 4% would be distributed across the seven other

counties within the 50-mile region. However, when spread over K-12 grades, it is unlikely this increase would be noticeable on class size, particularly since these children will attend schools that were losing the children of construction workers (Section 2.5).

Increased property tax revenues as a result of the increased population, and, in the case of Matagorda County, Palacios ISD, property taxes on the new reactors would fund additional teachers and additional facilities if necessary (Subsection 2.5.2.3). The remaining revenue tax monies not used by the school district would be collected by the state of Texas and combined with tax revenues from all other Texas counties. These monies would be redistributed to “property-poor” school districts throughout the state of Texas, determined annually by the Texas Legislature Texas Education Code Chapter 42 (Subsection 2.5.2.3).

The impact to the counties within the 50-mile region would be SMALL. The Matagorda County student population could increase by 14%, which would be a MODERATE impact on its education system and would require mitigation. Matagorda County is not planning to construct additional schools (Subsection 2.5.2.8). The quickest mitigation will be to hire additional teachers and move modular classrooms to existing schools. Increased property tax revenues as a result of the increased population, and, in the case of Matagorda County, property taxes on the new reactors, would fund additional teachers and facilities for Palacios ISD. Bay City ISD, if determined by the Texas Legislature to be a “property-poor” school district, would be eligible for monies allocated by the state of Texas for any additional teachers or facilities (Subsection 2.5.2.3).

5.8.3 Environmental Justice

Environmental justice refers to a federal policy under which each federal agency identifies and addresses, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority or low-income populations (Executive Order 12898, Reference 5.8-12). The NRC has a policy on the treatment of environmental justice matters in licensing actions (69 FR 52040), which states, “NRC believes that an analysis of disproportionately high and adverse impacts needs to be done as part of the agency's NEPA obligations to accurately identify and disclose all significant environmental impacts associated with a proposed action. Consequently, while the NRC is committed to the general goals of Executive Order 12898, it will strive to meet those goals through its normal and traditional NEPA review process.”

STPNOC located minority and low-income populations within the 50-mile radius of the STP site (Figures 2.5-10 through 2.5-15). Nineteen census block groups, out of a total of 230, within the 50-mile radius have significant Black or African American populations. One block group has a significant Asian minority population and six block groups have a significant “some other race” population. Thirty census block groups within the 50-mile radius have significant Hispanic ethnicity populations. The closest of these groups is approximately 10 miles distant.

STPNOC evaluated whether the health or welfare of minority and low-income populations could be disproportionately adversely affected by potential operations impacts. STPNOC identified the most likely pathways by which adverse environmental impacts associated with the operation of new units at the STP site could affect human populations. As described earlier in Chapter 5, STPNOC analyzed potential operations impacts on land use, water, air, socioeconomics, ecological resources, health and safety, waste management, and cultural resources. STPNOC has identified SMALL impacts in all resources areas in the 50-mile radius, with the exception of socioeconomic impacts in Matagorda County. In Matagorda County, SMALL impacts were found in all socioeconomic resource areas except:

- Economy – beneficial and MODERATE
- Property tax revenue – beneficial and MODERATE to LARGE
- Transportation – MODERATE at shift change during outages
- Housing – MODERATE to LARGE
- Education - MODERATE to LARGE

Increased property tax revenues and their boost to the local economy are considered to be beneficial. Moderate increases in traffic would mostly affect people living along or traveling on FM 521 Road during morning and afternoon shift change. MODERATE impacts to housing are expected to be mitigated by new housing construction and should not affect homeowners or renters already residing in Matagorda County.

STPNOC also investigated the possibility of subsistence-living populations in the vicinity of the STP site by contacting local government officials, the staff of social welfare agencies, and businesses concerning unusual resource dependencies or practices that could result in potentially disproportionate impacts to minority and low-income populations. STPNOC asked about minority, low-income, and migrant populations or locations of particular concern, and whether subsistence living conditions were evident. No one that was contacted reported such dependencies or practices, as subsistence agriculture, hunting, or fishing, through which the populations could be disproportionately adversely affected by the project.

In summary, no operations-related adverse health or environmental effects that would disproportionately affect minority or low-income populations were identified. Therefore, STPNOC concludes that impacts of operations of new nuclear units at the STP site on minority and low-income populations would be SMALL and mitigation would not be warranted.

5.8.4 References

5.8-1 “2005 Annual Environmental Operating Report,” South Texas Project Electric Generating Station, April 2005.

5.8-2 "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," EPA (U.S. Environmental Protection Agency) March 1974, Pages B-1 and B-2. Available at http://www.nonoise.org/library/levels74/levels74.htm, accessed September 15, 2006.

5.8-3 "Construction Noise Hazard Alert," Center to Protect Worker's Rights, available at http://www.cpwr.com/hazpdfs/kfnoise.PDF, accessed April 17, 2007.

5.8-4 Code of Federal Regulations, Title 40, part 81, section 38, Designation of Areas for Air Quality Planning Purposes; Texas; Revised Geographical Designation of Certain Air Quality Control Regions.

5.8-5 Code of Federal Regulations, Title 40, part 50, National Primary and Secondary Ambient Air Quality Standards.

5.8-6 "State and County Quickfacts. Matagorda County, Texas and Brazoria County, Texas," USCB (U.S. Census Bureau) 2000. Available at http://factfinder.census.
gov/, accessed May 16, 2007.

5.8-7 "RIMS II Multipliers for Matagorda and Brazoria Counties, Texas," BEA (U.S. Bureau of Economic Analysis), U. S. Department of Commerce. Economic and Statistics Administration. Bureau of Economic Analysis, Washington, D.C., February 2, 2007.

5.8-8 "80th Texas Legislature: Biennial Revenue Estimate, 2008-2009." Texas Comptroller of Public Accounts, January 2007. Available at http://www.
window.state.tx.us/taxbud/bre2008/BRE_2008-09.pdf, accessed July 18, 2007.

5.8-9 Palacios Independent School District, 2007. Information from Herbert Ressler, Business Manager, Palacios ISD regarding tax abatement legislation. May 2007.

5.8-10 Texas Legislature Online, 2007. Status of House Bill (HB) 2994. Available at
http://www.legis.state.tx.us/billlookup/History.aspx?LegSess=80R&Bill=HB2994, accessed June 22, 2007.

5.8-11 "Water on Tap: What You Need to Know," EPA (U.S. Environmental Protection Agency) EPA 815- K-03-007, Office of Water, Washington, DC, 2003.

5.8-12 Office of the President, Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations, Executive Order 12898, February 11, 1994.

5.8-13 “Local Area Unemployment Statistics,” BLS, 2007. Available at http://www.stats.bls.gov, accessed on February 5, 2007.

Table 5.8-1 Direct and Indirect Employment

Demographic	ABWR 2 Units
Operations Workforce Peak	888
Number of workers who migrate into the 50-mile radius	888
Indirect jobs (888 × 1.47)	1,305
Total number of jobs (direct plus indirect)	2,193
2005 unemployed in the two counties [1]	8,870
2005 unemployment rate in the two counties	5.9%
Total number of indirect jobs as a percent of unemployed population in two-county area	14.7%

[1]Reference 5.8-13.

Table 5.8-2 Police Protection in the Two Counties of Interest, Adjusted for the Operations Workforce and Associated Population Increase

County	Total Population in 2000	Additional Population Due to New Plant Operations	Total Population	Police Protection in 2002	Operations Workforce-Adjusted Persons-per-Police Personnel Ratio	Percent Increase from 2000 Persons-per-Police Personnel Ratio
Matagorda	37,957	1,477	39,434	100	394:1	3.7
Brazoria	241,767	545	242,312	578	419:1	0.3

Source: Table 2.5-30 Police and Fire Protection

Table 5.8-3 Fire Protection in the Two Counties of Interest, Adjusted for the Operations Workforce and Associated Population Increase

County	Total Population In 2000	Additional Population Due to New Plant Operations	Total Population	Firefighters (Full time and Volunteer) in 2007	Operations Workforce-Adjusted Persons-per-Firefighter Ratio	Percent Increase from Current Persons-per-Firefighter Ratio
Matagorda	37,957	1,477	39,434	175	225:1	3.7
Brazoria	241,767	545	242,312	507	478:1	0.2

Source: Table 2.5-30 Police and Fire Protection