Attachment 2

Economic Benefits of Diablo Canyon Power Plant

An Economic Impact Study
June 2013

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Executive Summary

The purpose of this study is to examine the economic impacts and other benefits provided by Diablo Canyon Power Plant (DCPP), owned and operated by Pacific Gas and Electric Corporation (PG&E), on San Luis Obispo and northern Santa Barbara counties, as well as on the state of California and the United States. In 2011, DCPP supplied 9.3% of California's electricity generation and 7% of its total consumed electricity. DCPP has operated at a steadily increasing percentage of capacity over its lifetime due to a practice of constant upgrading and updating of the equipment. The facility also boasts one of the best safety records in the industry according to the Institute of Nuclear Power Operations (INPO).

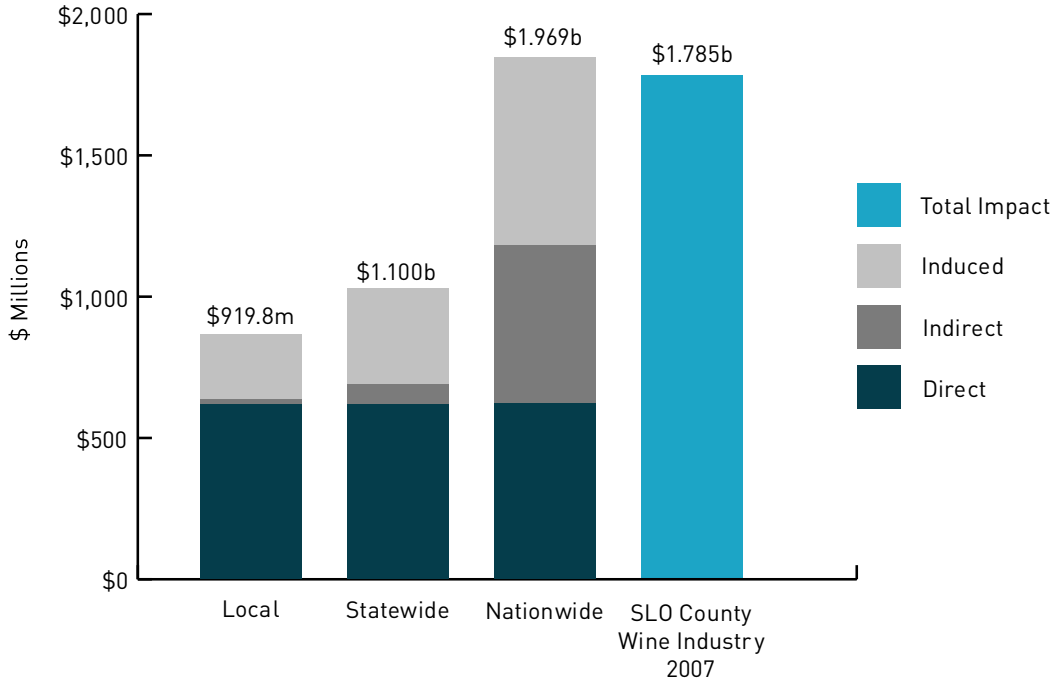
DCPP produced an estimated 18,566 megawatt hours of electricty in 2011, with a wholesale value of $675.6 million. In conjunction with the utilization of the industry-standard IMPLAN® software version 3.0 to analyze the impact of local expenditures for goods and services exceeding $22 million, a local payroll of $202.5 million, and 714 local retired PG&E employee pensions totaling over $19 million, this created a total 2011 economic impact on San Luis Obispo and Northern Santa Barbara counties of $919.8 million (Figure 1). The indirect and induced impacts totaled $244.3 million, and included positive influences on many local businesses such as restaurants, real estate, wholesale trade, retail shops, financial institutions and healthcare. With 11 and 12 years remaining on the current licenses, it is expected that PG&E would continue to operate DCPP for the duration of those licenses and that the Plant would continue to generate economic benefits similar to those that exist today.

When the study area is expanded to include all of California, the economic impacts grow significantly, due primarily to two factors: larger expenditures for goods and services, and larger multipliers. DCPP purchased an average of $69.7 million in goods and services from vendors in California over the last two years. In addition to the 1,483 employees living on the Central Coast, 60 DCPP employees work and live outside the local market (mostly in San Francisco or Sacramento), which adds $7.0 million to the payroll. These expenditures increase the indirect impact to $90.2 million, and the induced impact to $334.3 million, for a total of $1.1 billion injected by DCPP into the California economy each year.

The total output impact for DCPP nationally is $1.969 billion. To put this number in perspective, DCPP's production of $675.6 million of wholesale value electricity produced a total U.S. economic impact of nearly three times that number. Large expenditures averaging $291.8 million over the last two years for specialized equipment such as large steam turbines, generators and nuclear fuel (which can only be obtained outside California), causes the economic impact nationwide to increase significantly. As a comparison, San Luis Obispo County's wine industry, which includes $954.4 million in wine and grape sales and distribution, had a total national economic impact of $1.785 billion in 2007. [1]

[1] MKF Research LLC, "Economic Impact of Wine and Grapes in the Paso Robles AVA and the greater San Luis Obispo County 2007," Paso Robles Wine Country Alliance, 2007 (most recent available data).

FIGURE 1: TOTAL ECONOMIC IMPACT OF DCPP



Employment

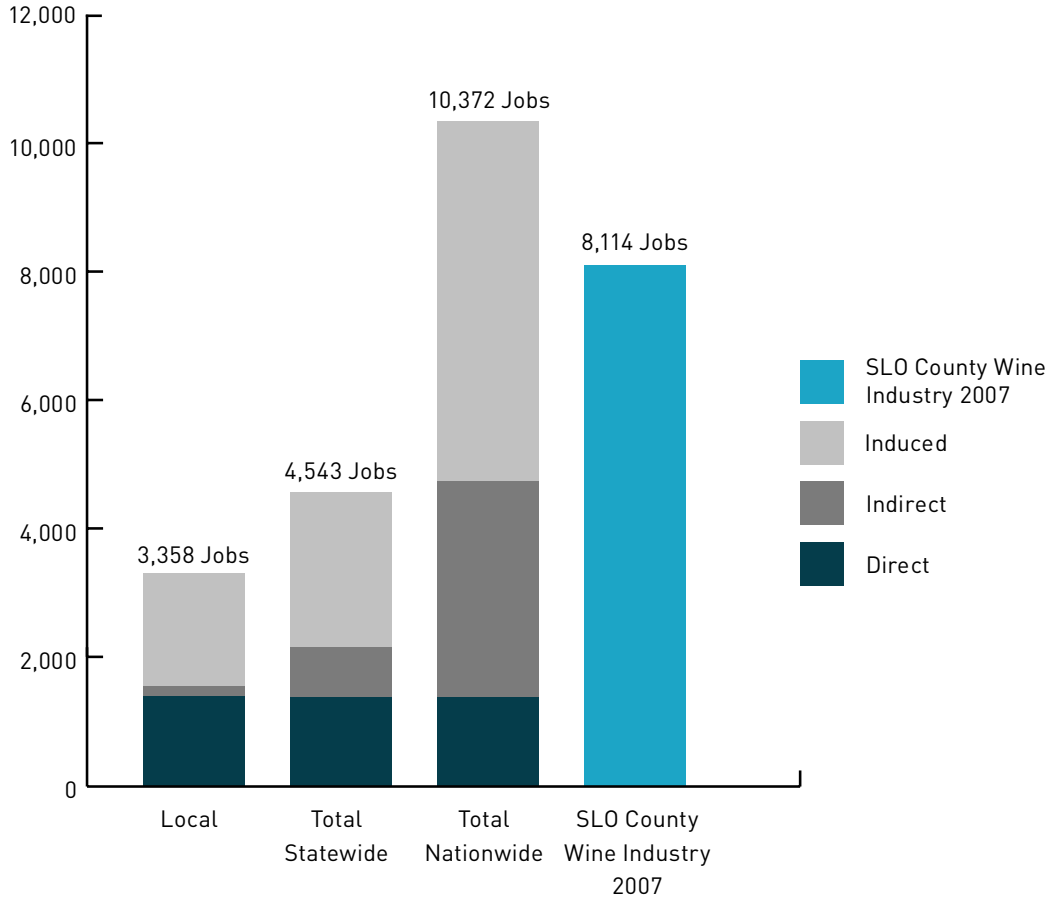
DCPP created 3,358 jobs locally in 2011, including 1,483 jobs at the Plant. The additional 1,874 jobs created by the spending and re-spending of DCPP purchases and payroll expenditures in the local area were in varying industries including food services, hospitals and healthcare, and real estate.

To state this another way, each DCPP job has created more than one additional job in the local economy.

Due to the high-technology nature of nuclear energy production, DCPP employs a large number of highly-trained engineers, scientists, mechanical and electrical tradespeople, plant security, and other operational occupations. DCPP's location in the largely rural area of California's Central Coast makes it one of the few providers of a large number of well-paying, head-of-household jobs in the region. In addition, DCPP employment is not seasonal or cyclical, as are agricultural and tourism-related jobs that dominate the local labor scene. Additionally, while the public sector provides many high-paying jobs in the county, they are affected by California's State budget crisis, while DCPP jobs are not.

Although there are only 60 DCPP employees outside the local study area (statewide), the impact of the total 1,543 jobs created an additional 2,999.5 jobs in California. The skills represent a cross-section of the California labor force, from highly-trained engineers and scientists to security personnel, nurses and physicians and restaurant staff. Total jobs created nationwide is similarly dramatic: a total of 10,372 jobs were created by the operation of DCPP. As with the California analysis, these positions were in a broad spectrum of occupations and industries.

FIGURE 2: TOTAL JOBS CREATED BY DCPP, 2011



Taxes

DCPP also had a significant impact on tax revenues. Table 1 shows that at the local level, the dominant forms of tax revenue are property taxes, which totaled $30.8 million in 2011. Of this figure, over $25 million represents the Unitary Property Tax bill paid by PG&E to local entities. Most of this money goes to local school districts, County operations and other County entities. This $25 million is equivalent to what would be paid by properties with a combined assessed value of $2.5 billion, or over 5,000 homes assessed at an average $500,000 value. Additionally, at the local level, approximately $5.3 million in sales taxes are generated.

TABLE 1: TAXES GENERATED BY DCPP, 2011

Taxes ($ millions)	Local	California	National
Sales Taxes	5.3	7.6	19.4
Property Taxes	30.8	33.3	44.1
State & Local Taxes	42.0	51.1	84.8
Total Federal Taxes			96.5

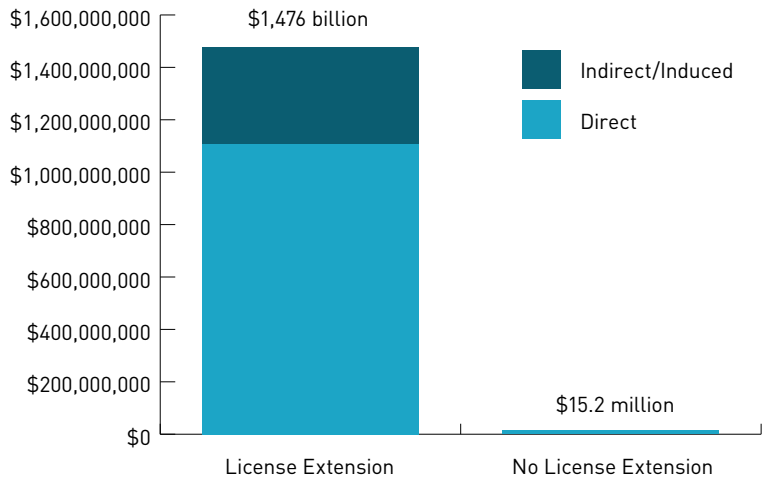
The total tax paid to the Federal government is substantial: $43.9 million in personal and corporate income tax, $4.5 million in excise taxes and duties and $43.3 million in Social Security taxes. Social Security tax dollars fund future Social Security benefits, and the other two taxes fund various government services.

PG&E has applied for a 20 year license extension, commencing in 2024 for Reactor One and 2025 for Reactor Two. In order to derive a true representation of economic impacts resulting from a potential shutdown of the plant, the year 2027 was used as the point in time in which the Plant would continue to operate with a license extension, or would be idle due to the lack of extension.

If DCPP is granted license extension beyond 2024, the estimated economic impact for the local area in year 2027 will be $1.48 billion (See Figure 3). If license extension is not granted, only cattle grazing and the Independent Spent Fuel Storage Installation (ISFSI) operations would continue at the site. The "No Extension" economic impact on the local area will be $15.2 million, a 98.9% reduction in economic benefit.

Most of the impact of a "No Extension" decision will be to the local area, and therefore is the focus of that section of the analysis. Losses of virtually all DCPP economic activity will occur, including loss of property taxes, sales taxes and direct plant expenditures.

FIGURE 3: ESTIMATED TOTAL ECONOMIC IMPACT ON LOCAL AREA (YEAR 2027), 2011



Additional Benefits

DCPP's economics benefits to San Luis Obispo and Northern Santa Barbara County are real and measurable. In addition to recognized benchmarks including expenditures, employment, tax revenues, economic output and labor income, PG&E also supports the community with dollars and value not as readily measured.

PG&E takes pride in a being a good neighbor. In 2011 the company awarded more than $23 million in charitable grants to recipients throughout its service area. These donations, funded entirely by shareholders, included approximately $1.1 million distributed to more than 90 non-profit organizations in San Luis Obispo and Northern Santa Barbara counties. In addition, PG&E employees donated more than 31,000 hours of volunteer time to a range of local organizations serving youth, education, seniors, fine arts and environmental interests.

Land stewardship is important to PG&E, a value reflected by the company's ongoing management of the 12,820-acres surrounding DCPP. PG&E's commitment to stewardship has enabled coastal hiking trails to be opened for public use, including the 3.3-mile Point Buchon Trail through Montaña de Oro State Park and the Pecho Coast Trail that leads to the restored Port San Luis Lighthouse. These trails offer hiker access to spectacular coastal vistas and add to the visitor experience for the county's important tourism industry. While these resources benefit coastal tourism, they were not valued as part of this study.

PG&E invests in and operates every day with a focus on safety and increased its expenditures for plant safety in the wake of the March 2011 Fukushima accident in Japan. In addition to extensive on site safety equipment and personnel, PG&E allocates $4 million to the San Luis Obispo County Office of Emergency Services, and anticipates spending $50 million over the next three years to meet all of the Nuclear Regulatory Commission's post-Fukushima requirements. Many local safety systems exist because of DCPP, with emergency response trailers and emergency siren systems available for area emergencies of any kind.

Methodology

The industry-standard IMPLAN 3 software and databases were used for estimating the economic impact of DCPP on local, statewide and national economies. IMPLAN was originally developed at the University of Minnesota, and then became a private firm, the Minnesota IMPLAN Group (MIG). IMPLAN software is based in the pioneering work of Nobel Prize-winning Harvard economist Wassily Leontief, who developed an Input-Output economic model that recognized the interrelationships among industries and between industries and households.

For instance, a dollar spent at a grocery store is divided between the suppliers of the grocery store, the workers at the grocery store, the landlord of the grocery store and the owner of the grocery store business. Any dollar spent at the grocery store is parceled out and "re-spent" by the store's suppliers and landlord (the "indirect effect"), and the employees' households (the "induced effect"). The "multiplier" effect of the original dollar spent combines the indirect and induced effects, often referred to as the indirect effect.

IMPLAN software and the accompanying databases all depend on the analyst to enter an input such as total employment, expected sales, or payroll in an existing or proposed business. IMPLAN then estimates the effect on revenues, payroll, employment, and taxes paid for every other sector of the economy in the study area. The key to accurate output estimates or predictions is good input estimates: purchased goods and services, number and types of employees, and average "returns to capital" for the industry/sector of the subject business or project. (IMPLAN can be also used to estimate the economic impact of not-for-profit enterprises such as schools, museums, and art shows).

In applying IMPLAN (or any other input-output analytic system) to the specific situation of DCPP, it was important to note that because most of the electricity generated by DCPP is "exported" out of San Luis Obispo County, the county does not benefit from the full retail value of the electricity produced. Derived from Department of Commerce, the Census Bureau, and other government sources, the economic databases used by IMPLAN appear to apply a nationwide retail price for electricity to the output of DCPP. The databases are used in estimating the GDP of San Luis Obispo County so shouldn't be completely ignored, but to use them as a measure of the "economic impact" of DCPP on San Luis Obispo County would overstate the impact.

In order to avoid overestimating the effect of DCPP on the San Luis Obispo County/ Northern Santa Barbara County market area, the authors chose to value the output at wholesale value, rather than the retail value of the electricity sold.

The IMPLAN system is a respected tool, but it does have some limitations in terms of defining an economic sector. IMPLAN relies on the North American Industry Classification System (NAICS) definitions used by the Department of Commerce (and virtually all economics researchers) for calculating the cost structure and interrelationships between a given industry and other indus-

tries in the economy. Relying on the IMPLAN industry/sector for electricity generation requires use of a weighted average of coal, gas, oil and nuclear power plants for determining cost structure. While nuclear power is a significant player in this industry (20% nationwide), it does not dominate the category. When DCPP is analyzed as part of the electricity generation sector, the model projects a large impact on petroleum extraction, mining and rail transportation, which are clearly not appropriate for a nuclear power plant.

In order to create a model that more closely resembled a nuclear power plant, a "custom industry" for DCPP was created within IMPLAN. Using DCPP expenditures provided by PG&E, each expenditure was allocated using more than 100 classes of commodities and services identified within IMPLAN. IMPLAN provides an option to enter actual labor income for use in capturing the effect of employee expenditure. The data is then used to estimate the impact of household expenditures on the various sectors of the economy. In the present case, salary figures were provided, but in order to capture the full impact of employee spending, salary figures were increased by the estimated 40% benefit load of the health plan and retirement plan provided by PG&E to DCPP employees. The resultant impacts created the indirect and induced impacts for the model.

For the direct impact for the model, the wholesale value of the power generated was used. Note, too, that many DCPP employees who moved to the Central Coast to work at DCPP have chosen to stay here after retirement, and therefore spend their PG&E pension checks in the local economy. While a smaller factor than either employee salaries or DCPP purchases of goods and services, it is worth including in the analysis.

IMPLAN applies these inputs to the chosen economic model (local, state and national). In estimating the impact of an industry, IMPLAN takes account of the interactions between industries in the study area, the import/export patterns for goods and services, and the interactions between households and industries.

Section 1: Introduction

The purpose of this study is to examine the economic impacts and other benefits provided by the Diablo Canyon Power Plant (DCPP), owned and operated by Pacific Gas and Electric Company (PG&E), on the Central Coast (San Luis Obispo and Northern Santa Barbara counties), state of California, and the United States. This is the third study, updating two previous reports titled "Economic Benefits of Diablo Canyon Power Plant" authored by the Nuclear Energy Institute (NEI) in 2004 and 2010, local economic impacts of decommissioning the Diablo Canyon Power Plant. Consistent with most standard economic studies, direct impacts such as employment numbers and salaries, plant expenditures, power generation sales and taxes paid are analyzed and then applied to an input/output model to estimate the indirect and induced effects on the economy. This study will quantify DCPP's economic impacts and how those impacts relate to the overall gross product of this local area.

PG&E, California Polytechnic State University (Cal Poly), NEI and Productive Impact cooperated in the development of this study. PG&E provided detailed data on DCPP employment, expenditures and tax payments, and NEI provided recent nuclear energy trends. The methodology employed in this study utilizes standard economic impact study practices and was modified by experts from Productive Impact to more closely model a nuclear power generation plant.

Finally, faculty and staff of the Orfalea College of Business at Cal Poly peer reviewed the study to ensure that it was conducted in a manner consistent with industry standards and based on reasonable assumptions.

The report is presented in seven sections, which are:

Section 1 provides an introduction **9**

Section 2 offers background on Diablo Canyon that includes Plant history, performance, production costs, taxes paid and local area details such as total employment and earnings **10**

Section 3 examines the economic impacts of the Plant at local, state and national levels **25**

Section 4 provides benefits not captured in a standard input/output analysis **48**

Section 5 examines the net economic impact caused by license extension vs. no license extension beyond 2025 **52**

Section 6 discusses nuclear energy trends such as performance, cost competitiveness and industry safety **58**

Section 7 provides a conclusion **67**

A **glossary** is included at the end of the report **68**

Section 2: Diablo Canyon Power Plant

This section includes a brief history of DCPP as well as information on the facility's capacity, performance and employment numbers. It also discusses national production costs, local data (such as county demographics), total employment and earnings.

2.1 History and Information

The Diablo Canyon Power Plant is located along the Pacific Coast of California about halfway between Los Angeles and San Francisco near Avila Beach. The plant occupies fewer than approximately 545 acres of the 12,820 acre-property owned by Pacific Gas and Electric Company. The remaining property is maintained as part of the PG&E Land Stewardship Program. Originally owned by the Pecho and Marre families, the outlying property continues to be used for cattle grazing and agriculture under PG&E-managed leases.

DCPP began commercial operation in 1985. The plant is powered by two Westinghouse-designed 4-loop pressurized water reactors (PWR) – Unit 1 and Unit 2. The two reactors have a generation capacity of 2,300 megawatts and produce about 18,000 gigawatt hours (GWh) of electricity annually.

FIGURE 4: LOCATION OF DCPP

Source: www.calpoly.edu

The two PWRs with steam generators are housed in two massive steel-reinforced concrete containment structures centered between a turbine building, spent-fuel handling building and security facilities. Other plant components include water intake system, water discharge structure and the independent spent fuel storage installation (ISFSI) known as dry cask storage. The ISFSI is an interim storage facility built to store spent fuel used to generate electricity at DCPP.

Three 500 kilovolt transmission lines, known as the Diablo Loop, connect the Diablo Canyon Nuclear Power Plant to the electrical grid by providing parallel transmission paths between two substations (Gates and Midway).

The company delivers power to 15 million customers, or one in every 20 Americans.

In 2009, PG&E filed an application with the Nuclear Regulatory Commission (NRC) to extend the operating license for DCPP. The two nuclear reactors are currently licensed until 2024 and 2025, respectively, and will be decommissioned if the Nuclear Regulatory Commission (NRC) does not extend the licenses for an additional 20 years (to 2044 and 2045).

In March 2011, a devastating earthquake struck northern Japan, creating a tsunami that caused extensive damage to the Fukushima Nuclear Power Plant. PG&E voluntarily suspended its license renewal application while it completed advanced seismic studies of earthquake faults in the region.

In addition to its ongoing investments in safe operations, DCPP expects to spend a total of $50 million over the next three years to meet internal goals and all of the NRC's post-Fukushima requirements.

2.2 Generation

Generating at least 22% of the power PG&E provides to the 48 California counties in its service territory, DCPP provides low-cost, carbon-free electricity for nearly 3 million Northern and Central California homes, and does so without the approximately 6 to 7 million tons per year of greenhouse gases (GHG) that would be emitted by conventional generation sources. Nuclear power plays a major role in meeting the state's growing energy demand while helping efforts to improve air quality.

The plant has two Westinghouse-designed 4-Loop pressurized-water nuclear reactors (PWR). Together, the twin 1,150 megawatt reactors–known as Unit One and Unit Two–produce about 18,000 gigawatt hours of clean, reliable and affordable electricity annually, sent via three 500-kV lines that connect to this plant to the grid. Unit One went online on May 7, 1985, and is currently licensed to operate through November 2, 2024. In 2011, Unit One generated 9,863,660 megawatt hours of electricity, at a nominal capacity factor of 100.4 percent. Unit Two went online on March 3, 1986, and is licensed to operate through August 20, 2025. In 2011, Unit Two generated 8,702,414 Mwh of electricity, at a capacity factor of 88.9% (See Table 2).

TABLE 2: DIABLO CANYON POWER PLANT GENERATION, 2011

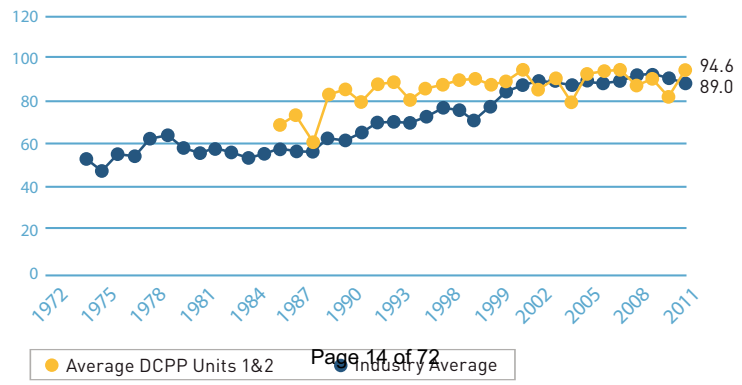
Unit Number	Net Capacity Mw	Net Generation Mwh	Capacity Factor Percent	Commercial Operation Year	License Expiration Year	Reactor Type
1	1,122	9,863,660	100.4	1985	2024	PWR
2	1,118	8,702,414	88.9	1986	2025	PWR

Mw=megawatts PWR=pressurized water reactor Mwh=megawatt hours
Capacity factor (output proportion of their nominal full-power capacity)

2.3 Efficiency

DCPP is a leader in the nuclear energy industry. As shown in Figure 5, DCPP maintained capacity factors at or above the industry average for most of its years of operation. In the three years previous to 2011, DCPP replaced steam generators for both reactors, causing capacity factors to dip slightly during the replacement project outage. Since completing the project, DCPP has outperformed the current national average for capacity by 5.6%.

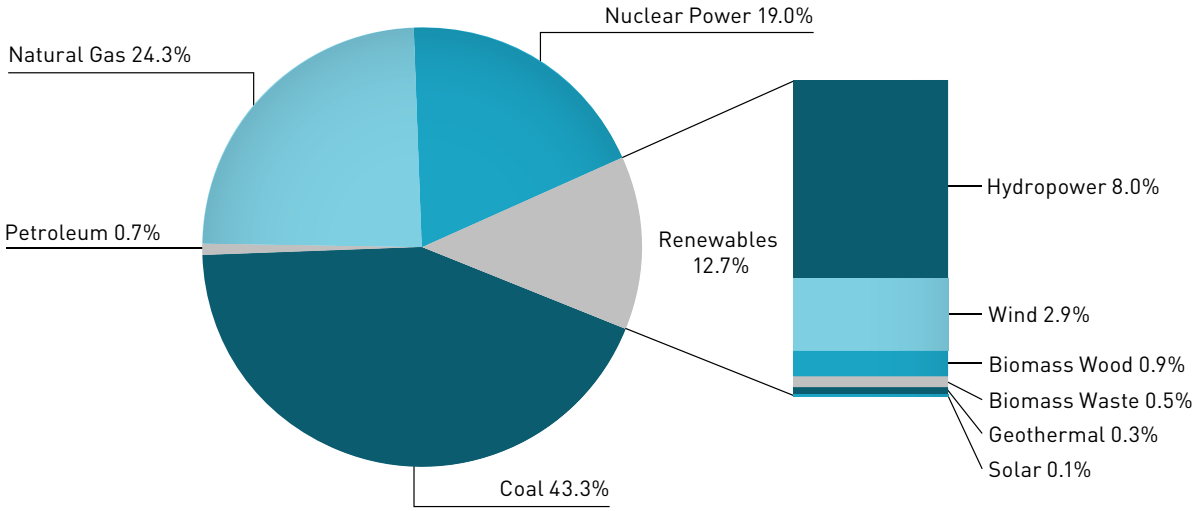
FIGURE 5: HISTORICAL DCPP CAPACITY FACTORS (TOTAL PLANT), 2011



2.4 U.S. Electricity Generation

Coal and natural gas-powered plants generate more than half of the nation's electricity. 19% of energy Americans consume comes from nuclear sources (See Figure 6). Although renewable energy is on the rise, it still accounts for only 12.7% of overall generation. Wind power (2.9%) is second to hydroelectric power (8.0%), and continues to grow more quickly than all other renewables.

FIGURE 6: SOURCES OF U.S. ELECTRICITY GENERATION, 2011



Source: U.S. Energy Information Administration

California's in-state electricity generation system produces more than 200,000 gigawatt-hours each year, transported over the state's 32,000 miles of transmission lines. In 2011, California sources produced 70% of the electricity used in the state. The remaining 30% was imported from the Pacific Northwest (10%) and the U.S. Southwest (20%). Natural gas is the main source for electricity generation at 45% of the total in-state electric generation system power.

Nuclear power provides 18.4% of California's electricity generation, with DCPP supplying 18,556,074 Mwh, or 9.3% in 2011. According to the California Energy Commission, demand for electricity in California will continue to rise despite the fact that the California industrial sector's power demands will remain flat. The main drivers for increased electricity demand lie in commercial, agricultural and residential sectors. Rise in demand will be driven by an increase in the number of households and the number of people per household as well as demand for more commercial floor space. Additionally, it is estimated that electric car charging will increase the average household demand 370 kWh by 2022. [2] Each electric vehicle load is the equivalent of adding two new houses to a neighborhood, if those vehicles are charged during peak energy times.

[2] Preliminary California Energy Demand Forecast 2012-2022, California Energy Commission, August 2011.

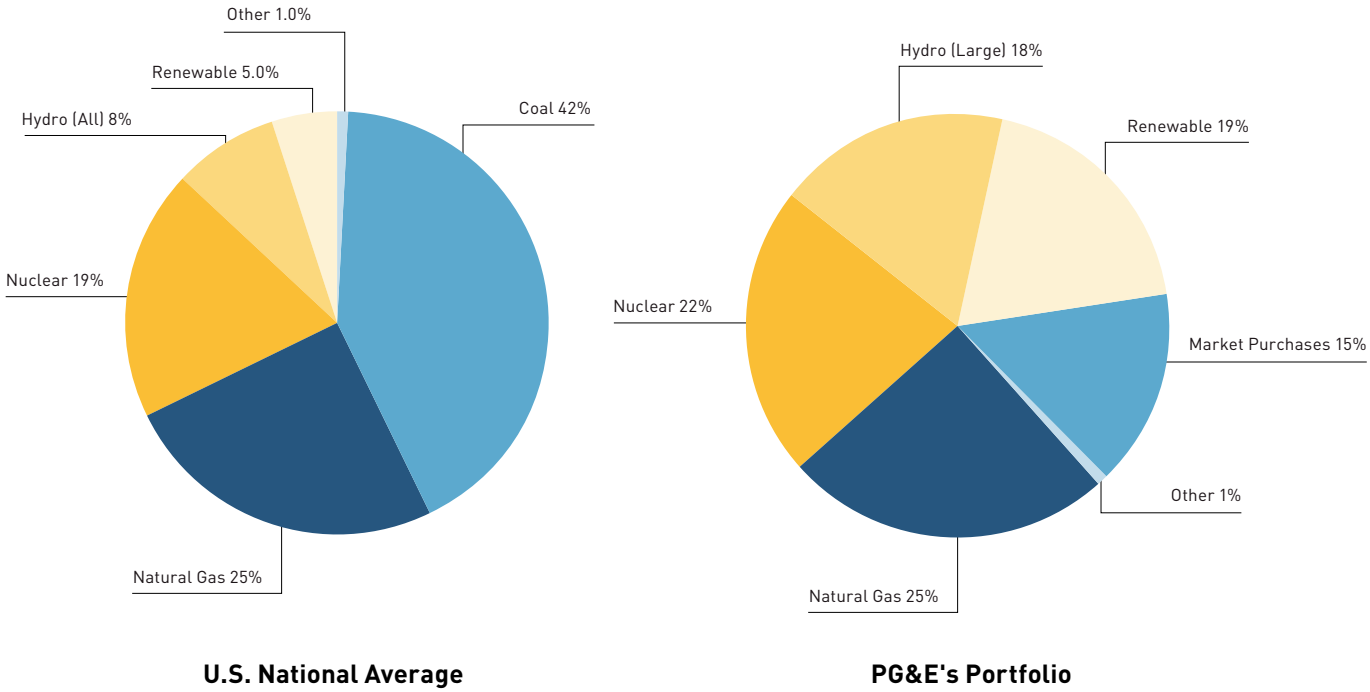
California's challenge is to ensure adequate electricity supplies while reducing greenhouse gas emissions as required by Assembly Bill 32: Global Warming Solutions Act. AB32 calls for reductions in greenhouse gas emissions to 1990 levels by the year 2020.

In addition, under the Renewables Portfolio Standard, the State's goal was to increase the amount of electricity generated from renewable energy resources to 20% by 2010. PG&E is on track to surpass 25% renewable energy resources in 2013. Legislation passed in 2011 pushes that goal to 33% by 2020. Currently, California's in-state renewable generation is comprised of biomass, geothermal, small hydro, wind and solar generation sites that make up approximately 17% of the total in-state generational output.[3]

DCPP electricity production costs remain competitive. At 2.78 cents per kilowatt-hour, DCPP's average production costs are lower than all other forms of electricity, but are higher than the national average of 2.19 cents per kilowatt-hour for nuclear power (See Figure 7). California's higher taxes, wages, and regulatory/corporate taxes drive up production costs for DCPP by about 20%. Production costs include the operation, maintenance and fuel costs of each type of plant.

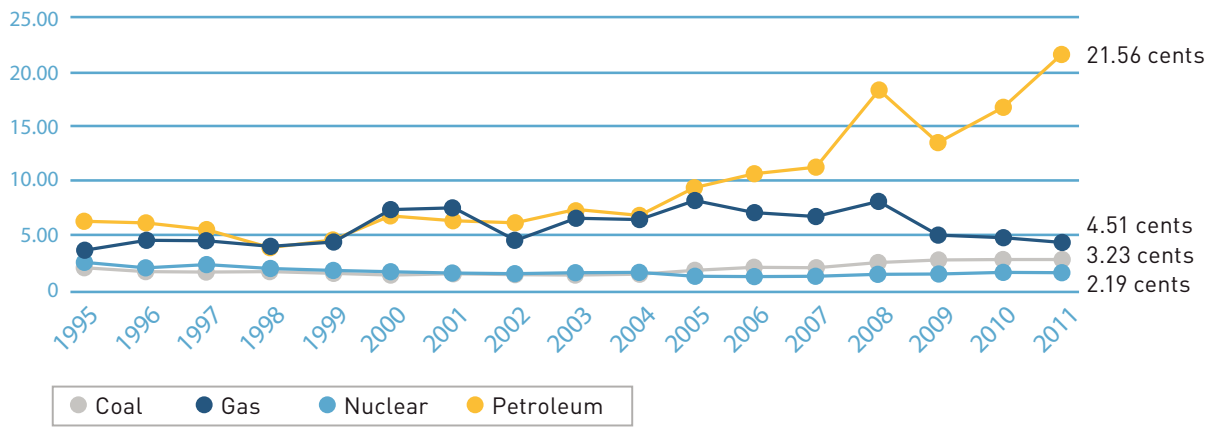
FIGURE 7: 2011 ELECTRIC GENERATION PORTFOLIO MIX

PG&E vs. National Average



[3] California Electricity Statistics & Data, http://energyalmanac.ca.gov/electricity/index.html, 2011

FIGURE 8: US ELECTRICITY PRODUCTION COSTS, PER KWH

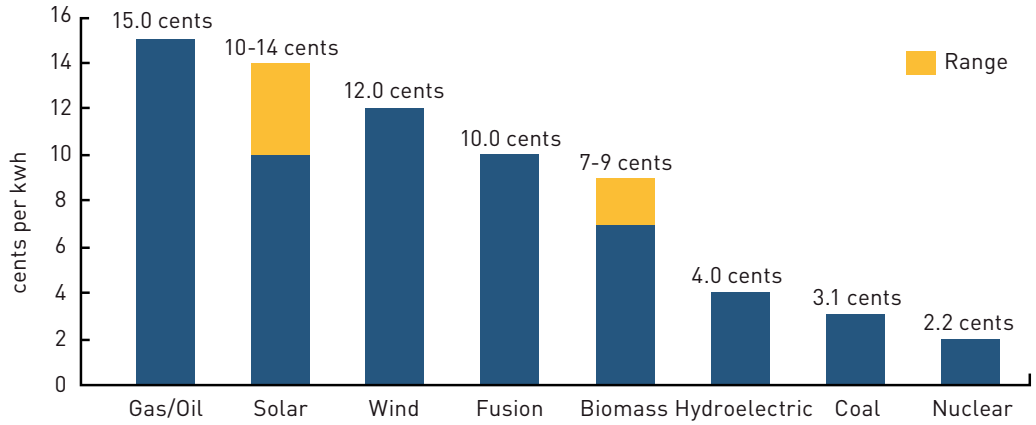


It is estimated that $243 billion has already been invested worldwide in renewable electricity sources, with China, Germany and the U.S. leading the way. However, geographical remoteness and high capital costs have caused the use of renewables to be less than expected. A wind farm or a solar park requires a large amount of land compared to a nuclear power plant.

To build the equivalent of a 1,000-Mw nuclear plant, a solar park would require 11,000 acres of PV solar panels and a wind farm would need 50,000 acres of wind turbines. By contrast, Diablo Canyon is able to produce twice as much power (2300 Mw) in a footprint of approximately 545 acres.[4]

Production costs for renewable electricity sources are currently difficult to estimate. Renewables are comparatively more expensive because of the large scale production needed for significant cost reduction. Experts believe, however, that the costs per kWh will come down over time as economies of scale improve. A cost comparison performed in 2010 of renewable production costs is shown in Figure 9.

FIGURE 9: COMPARISON OF PRODUCTION COSTS, 2010



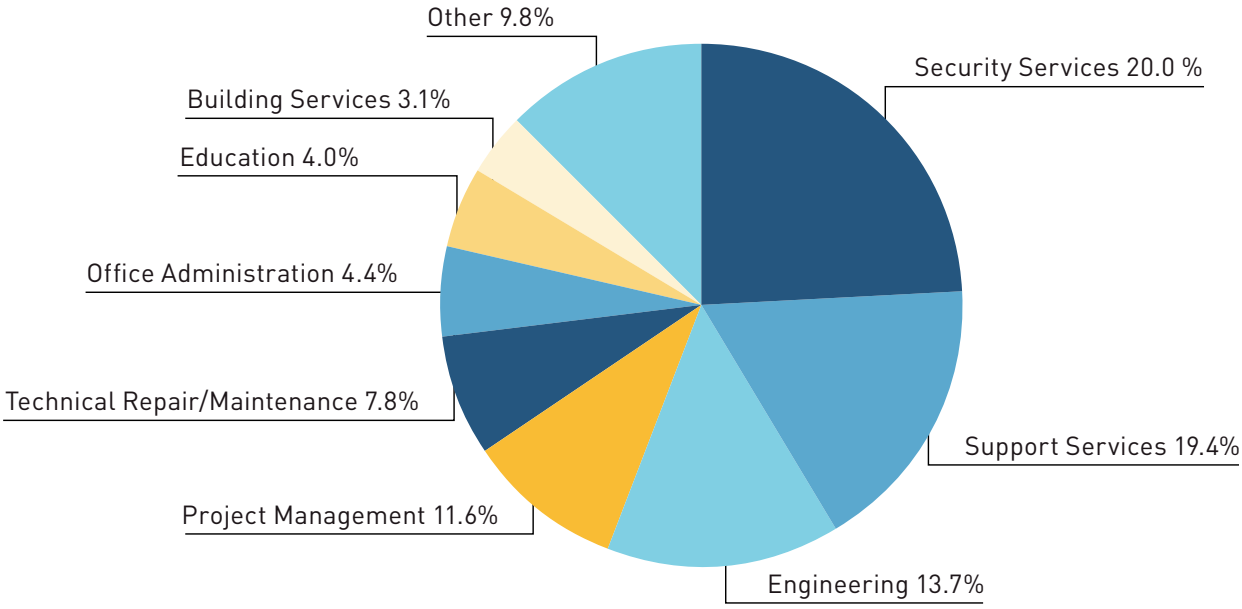
Source: Planetsave.com

[4] US Department of Energy, Office of Utility Technologies, Energy Efficiency and Renewable Energy & Electric Power Research Institute; US Department of Energy, Energy Information Administration; American Wind Energy Association

2.5 Employment

DCPP provides a large number of well-paying jobs not only to residents of San Luis Obispo and Northern Santa Barbara counties, but to residents throughout California and the nation as well. With 1,483 employees living in San Luis Obispo and northern Santa Barbara counties, DCPP is the area's largest private sector employer and the fifth largest overall. Only the County of San Luis Obispo, California Polytechnic State University, Atascadero State Hospital and the California Men's Colony employ more people than does DCPP. Locally, the payroll of DCPP in 2011 totaled $202.5 million, with an average salary of $136,561 (See Table 3). Because many of the jobs at DCPP are highly skilled, DCPP employees are compensated well above the 2010 county median household income of $57,365.[5] Technical/maintenance and engineering jobs make up about 35% of all jobs held at DCPP (See Figure 10).

FIGURE 10: DCPP JOB CLASSIFICATIONS



[5] U.S. Census Bureau data; California median household income is $60,883

TABLE 3: DCPP EMPLOYEES, 2011

Home City	Employees	Average Salary	Total Payroll
Arroyo Grande	243	$135,778	$32,994,071
Atascadero	216	$138,340	$29,881,338
Avila Beach	29	$155,404	$4,506,729
California, not Local	60	$116,819	$7,009,114
Cayucos/Cambria	5	$164,422	$822,111
Creston/Shandon/Templeton	71	$136,710	$9,706,438
Grover Beach	109	$130,734	$14,250,046
Guadalupe/Lompoc/Orcutt	8	$112,036	$896,286
Los Osos/Morro Bay	76	$131,055	$9,960,143
Nipomo	117	$136,311	$15,948,444
Oceano	29	$143,471	$4,160,648
Paso Robles/San Miguel	128	$137,006	$17,536,712
Pismo Beach/Shell Beach	73	$145,101	$10,592,375
San Luis Obispo	238	$141,912	$33,775,156
Santa Margarita	15	$130,819	$1,962,282
Santa Maria	126	$123,234	$15,527,528
U.S., not CA	16	$140,753	$2,252,041
Subtotals			
Local	1483	$136,561	$202,520,307
State	1543	$135,794	$209,529,421
National	1559	$135,844	$211,781,462

In addition to their base salaries, PG&E employees enjoy a higher-than-average benefit load of approximately 40%.[6] PG&E's business requires finding and retaining highly qualified employees to ensure that the company continues to deliver high-quality, cost effective, uninterrupted service to all of its customers.

An added benefit of DCPP salaries is that total employment numbers, salaries and benefit costs are not seasonal, subject to national economic cycles or State budget woes. In that sense, DCPP is a significant financial stabilizer to the local economy which has been buffeted in recent years by a number of factors such as fluctuations in crop values in the agriculture sector, reduced tourist spending due to the economic recession and wide fluctuations in government payroll. All have all affected local economic stability.

There are 714 retired PG&E employees who reside in San Luis Obispo and Santa Barbara counties, most of whom were likely employed at DCPP. Total 2011 pension cost for the local retirees was estimated at $19,049,361. Since PG&E and its employees pay into Social Security, DCPP retirees also qualify for Social Security benefits. And since retirees continue to receive medical coverage from PG&E, they will likely not utilize Medi-Cal or other publicly-funded medical insurance programs.

[6] Benefit load typically includes health benefits, 401k type plans, and retirement/pension plans.

2.6 Expenditures for Goods and Services

DCPP is a major purchaser of goods and services from local, state and national sources, averaging over $374.6 million per year nationally. Purchases include procurement of parts, tools and services from a wide variety of businesses. Expenditures vary from year to year as shown in Table 4.

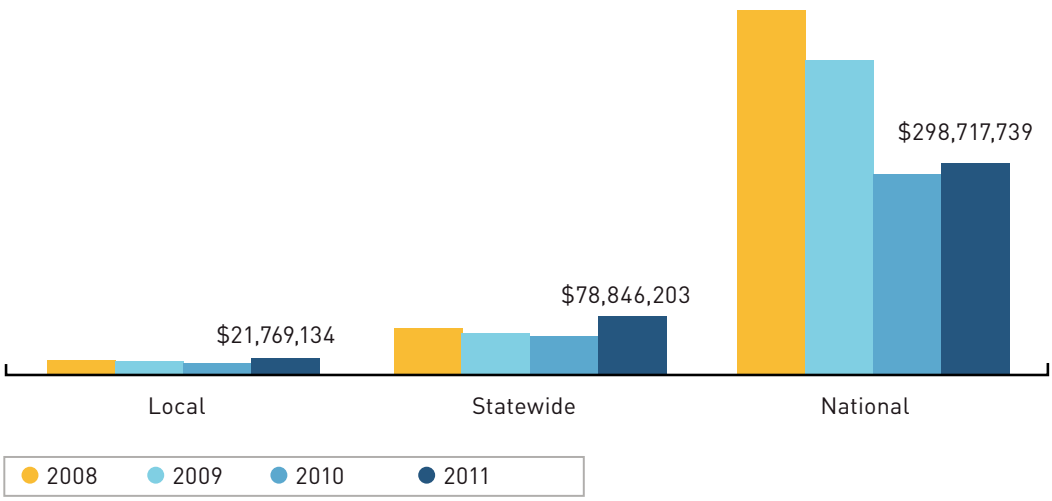
Local expenditures in San Luis Obispo and Northern Santa Barbara counties in 2011 totaled about $21.8 million, owing in part to PG&E's policy of sourcing goods and services locally wherever feasible. When specialty parts or expertise are unavailable locally, DCPP goes out of area to purchase goods and services. PG&E's state and nationwide spending in 2011 totaled $78.8 million and $298.7 million, respectively. The jump in nationwide expenditures from 2010 to 2011 reflects increased fuel costs, capital expenditures and upgrades, and purchase of specialty services that cannot be found in California.

TABLE 4: DCPP EXPENDITURES BY STUDY AREA

	2008	2009	2010	2011	Average
Local*	$18,876,057	$16,067,412	$14,648,894	$21,769,134	$17,840,374
California	$64,141,332	$57,234,057	$53,334,162	$78,846,203	$63,388,938
Nationwide	$492,576,885	$422,540,247	$284,930,918	$298,717,739	$374,691,447

*San Luis Obispo and Northern Santa Barbara counties

FIGURE 11: DCPP EXPENDITURES 2008–2011



DCPP benefits the community in a number of ways, including sourcing local goods and services whenever possible. San Luis Obispo and Santa Barbara counties have enjoyed–on average–$21.8 million of direct spending in the community from the operations of DCPP. The specialized nature of a nuclear plant requires that purchase, maintenance and repair of power generation equipment and parts are priorities (See Figure 12 for the top 25 impacted sectors). There are many qualified service companies in the local area that DCPP uses whenever possible.

FIGURE 12: TOP 25 EXPENDITURES IN SAN LUIS OBISPO AND SANTA BARBARA COUNTIES
TOTAL 2011 LOCAL EXPENDITURES $21,769,134

2.7 Property Taxes (Unitary)

Public utility assets, including generating facilities like DCPP, are subject to the same taxation as other property. By State law (Article XIII, Section 19 of the California State Constitution), public utilities pay property taxes directly to the State Board of Equalization (BOE) which in turn, distributes taxes back to the local taxing jurisdictions.

The BOE establishes property taxes for utility companies based on the value of all utility–operated property and assets throughout the state. This is called a single "unitary" value, and is used instead of separately assigning a value to each component part. The BOE allocates the unitary value of public utility assets among taxing jurisdictions in proportion to the replacement cost new, less depreciation, value of each item of unitary property. The amount of the tax revenues distributed back to each county is based on the ratio of the total unitary value to the proportion of total PG&E property located in a particular county.

Without Proposition 13 protection and as DCPP performs plant capital improvements for safety or in preparation for potential relicensing, PG&E's unitary tax liability continues to increase each year.[7] As shown in Figure 13, unitary tax distributions have a significant effect on numerous local entities, especially schools and other county and city operations.

As a result of multibillion-dollar investment made by PG&E in DCPP, the Power Plant has a very large property assessment. PG&E's 2011/2012 Unitary Property Tax payment for San Luis Obispo County was $25,373,098.[8] This is the equivalent of a one % property tax on over 5,070 single-family residences (assuming an average assessed value of $500,000 per residence). And given that DCPP provides its own water, sewer, and roads, and most of its own security and fire protection, the plant places a very low burden on County public services.

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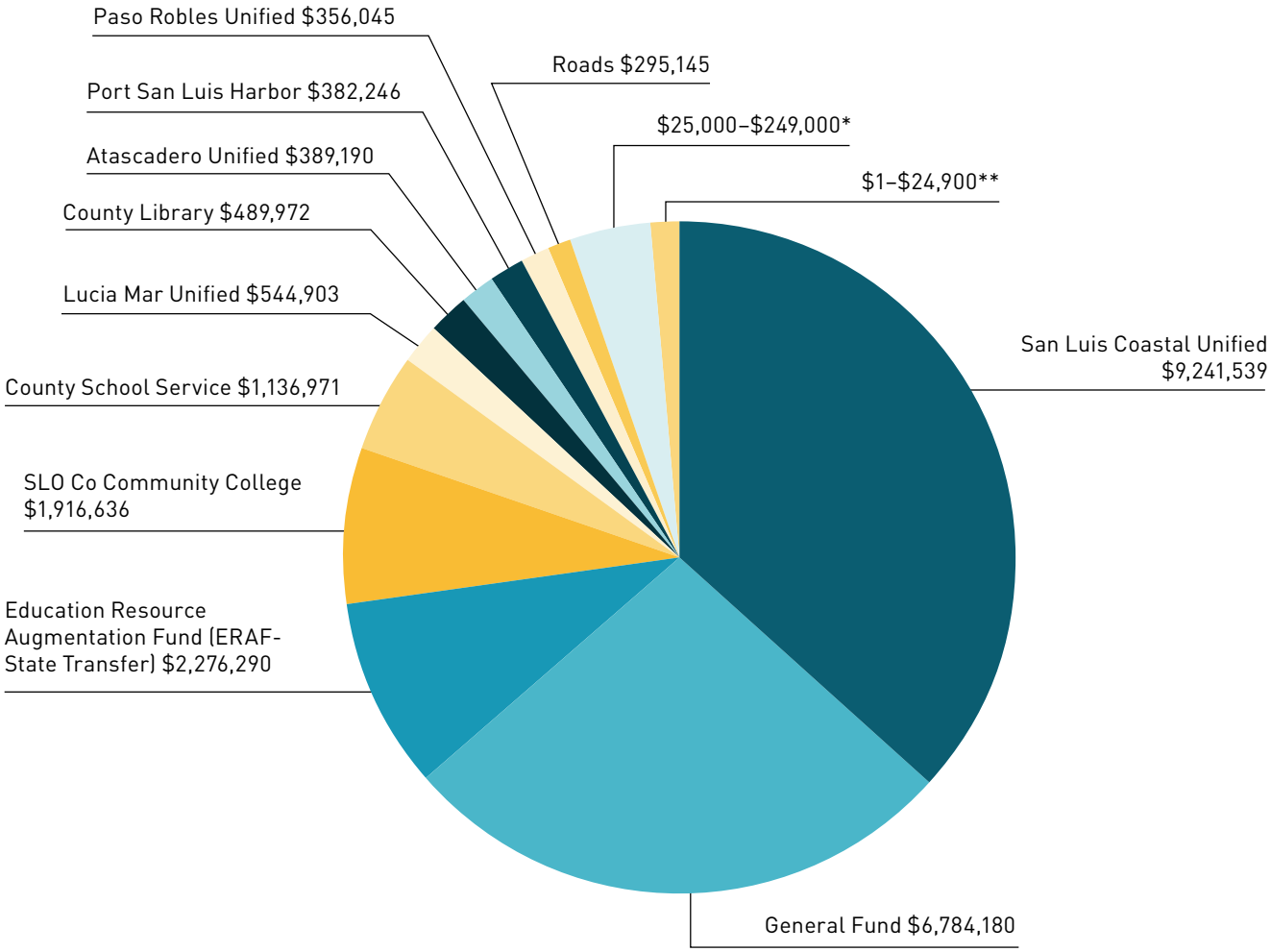
[7] Proposition 13 was passed in California in 1978 and established a fixed property tax rate of 1% of assessed value (plus amounts required to repay any assessment bonds approved by the voters). Source: California State Board of Equalization, 2013

[8] Data obtained from actual 2011 San Luis Obispo County tax records for PG&E. Although 88% of the actual unitary taxes paid are directly attributable to DCPP, it could be argued that without the existence of DCPP, much of the other PG&E property would not be in existence (i.e. power transmission lines, etc.)

FIGURE 13: PG&E 2011/2012 UNITARY TAX REVENUE ALLOCATION



*There are 17 governmental entities that receive between $25,000 to $249,999

**There are 63 governmental entities that receive between $1 to $24,999

To help understand the substantial effect that annual DCPP unitary tax payments have on the Central Coast, a sampling of three jurisdictions that receive unitary taxes is reviewed below.

San Luis Obispo County General Fund:

The total 2011-2012 budget for San Luis Obispo County is $464,428,463, with $383,347,164 earmarked for the General Fund. The General Fund receives 26.7% of the DCPP unitary tax payment each year. In 2011, the County of San Luis Obispo received $6,784,180 from PG&E's tax payment, which accounts for 1.8% of the County's General Fund. These monies help fund public work projects, probation and sheriff offices and health and other vital services. This $6.8 million could fund both the Animal Shelter ($1.58 million) and Child Support Services ($4.87 million) in their entirety.

As the County budget is subject to shortfalls, DCPP's steadily-growing property tax payment helps mitigate potential cuts to funds for roads, libraries and employees' jobs and benefits. PG&E pays more property taxes than any other entity in the county because of the method of assessment and lack of Proposition 13 property tax protection. As long as Diablo Canyon operates, payments will continue.

San Luis Coastal Unified School District:

In the 2010/2011 tax year, San Luis Coastal Unified School District received $9,241,539, or 36.4% of the unitary taxes paid by PG&E. The overall school district budget for 2012/2013 is estimated at $79.9 million. PG&E's unitary tax payment supports approximately 11.6% of the school district's entire budget. The amount of annual property tax dollars received by the school district from PG&E has led to the district becoming a "basic aid" or "community funded" district.

Basic aid districts do not receive funding based on enrollment. Rather, districts rely on a large, steady property tax base that creates a stable revenue source for the districts, mitigating the effects of State budget shortfalls. Despite its status as a basic aid school district, San Luis Coastal Unified School District is experiencing budgetary challenges and has made cuts in personnel and programs including music, adult education, special education and professional development. Cuts would have been more severe and much earlier if not for the unitary taxes paid by PG&E.

Port San Luis Harbor District:

In 1954, the citizens of southern San Luis Obispo County voted to create and fund a Harbor District for the Port San Luis area. The district was created to help refurbish and maintain the Harbor District's old facilities and increase commerce for the South County. Five harbor commissioners were elected and, in 1955, the State Legislature granted the Harbor District the area's tidelands in trust. The State of California owns and manages the waters extending to the three-mile mark. The Harbor District owns the Harford Pier and surrounding property.

In 2011/2012, the Harbor District's $4,166,400 budget was used to repair District facilities and tend to environmental responsibilities while maintaining funds needed to serve the boating and general public. PG&E's unitary tax payment allotment to the Harbor District for 2011/2012 is $383,246, or 9.2% of the Harbor District's total budget. In 2011/2012, the Harbor District budgeted $50,000 for Harford Pier and Canopy design and permits in preparation for a $1.5 million Pier and Canopy upgrade. Without the tax dollars paid by PG&E, that project could have been delayed or postponed indefinitely. Many additional projects - such as land craft mechanized repairs, parking lot repaving or dredging pump replacements - could be at risk without this tax revenue stream.

Section 3: Economic and Fiscal Impacts

Most of DCPP's employees live in San Luis Obispo County or Northern Santa Barbara County. Wages employees receive are mainly spent in their area of residence. DCPP strives to source local vendors for its expenditures; however, a significant amount of goods and services are procured from outside the local area and much of the specialized equipment and technical expertise must be purchased outside California.

Terminology

In economic parlance, the **direct impact** of a business or project is the total value of the good or service generated by the business or activity being analyzed. For a private business, direct impact would generally be the sales generated by the firm. For a public service, such as a homeless shelter, it would be the value of the services delivered. For certain types of activities, such as retail or wholesale trade, the **total output** direct impact is the difference between the price of the goods purchased for sale, and the revenues received from the sale. The logic of this difference is that the wholesale price of the goods is already captured in the output of the producers of the goods.

The **indirect impact** of a business is the revenue generated by other firms as a result of the business' operation. For example, if a supermarket buys lettuce from a local farm, the farm's sale to the supermarket is classified as indirect impact.

The **induced impact** of a business/activity is the change in household expenditures, owing to the business operation. For instance, spending by employees of the supermarket as well as employees of the farm and other suppliers generate induced impact.

The distinction between indirect impact and induced impact is very important to economists but may not have as much interest to the public. Economic impact reports often combine indirect impact and induced impact, and report the total as indirect impact. This report maintains the distinction between the two for readers interested in seeing the information.

Another term which needs some explanation is **imputed rental activity** [or IRA Value] for owner-occupied dwellings. IRA value methods were developed by national accounting economists to determine the economic effect of household expenditures used for purchasing and maintaining a home. IRA assumes that homeowners are their own landlords, and that while homeowners are not paying rent to landlords, payments for mortgages, landscaping and maintenance stimulate the economy in the same way that a landlord's expenditures for these same expenses do and are accounted for in the national accounting totals. Even while "**imputed rental value**" is not as concrete an expenditure as are purchases of food and furniture, it is a legitimate contributor to the economy.

Tax Effects

In addition to the local expenditures directly or indirectly attributable to the presence of DCPP, another significant benefit is the increased tax revenue from these activities. Tax revenues take several forms: personal and business income taxes, property taxes, sales taxes, building permits, auto license fees and many other taxes. Since many of these taxes are used to cover the cost of providing a related service, they are reported separately.

Value of Electricity Produced

When modeling the economic activity of DCPP, the direct impact is the value of the electricity generated at DCPP. Using production figures and daily spot wholesale rates, the value of this electricity is estimated at $675.6 million in 2011. When comparing this value to the $1.226 billion total value of all electricity generated in San Luis Obispo County as reported by the Department of Commerce, it reinforces the conservative nature of this study.

The $1.226 billion represents approximately 10% of San Luis Obispo County's total Gross Regional Product, but it has little direct effect on the people of San Luis Obispo County, since most of the power is exported to other areas of PG&E's market. And although Department of Commerce does not report DCPP's electricity output separately, there are no other significant sources of electricity generation in San Luis Obispo County other than the Morro Bay Power Plant, which is only put into service during times of very high demand, and two Carrizo Plains solar projects that have not yet come online. Therefore, it is safe to assume that the entire $1.226 billion estimation represents only the electricity generated by DCPP.

Model Inputs

DCPP's spending lifts economic activity. This effect is experienced by the private sector through increased sales and employment, and by the public sector through increased tax revenue to support public services. The economic and fiscal impacts of DCPP's operations go well beyond spending on employee and retiree benefits, purchases, salaries, and taxes. They also reflect the strong stimulus that plant operations provide to key measures of economic activity–the value of electricity production, employment, and labor income–in the economy. More important to local residents are the effects of money flowing into the local economy as a result of DCPP's presence here. This cash stimulus comes in three main forms: local expenditures by DCPP employees, which is based upon their salaries and benefits, purchases of goods and services from local vendors and local expenditures by retired DCPP employees who have stayed in the area after retirement.

Employee Expenditures

The number of employees working at DCPP and residing on the Central Coast at the end of 2011 was 1,483. Total payroll during 2011 was $202,520,307. In addition to salaries, DCPP employees receive competitive benefits in the form of healthcare, dental care and retirement benefits, generally about a 40% additional value. DCPP employees have a guaranteed benefit retirement plan similar to Cal Poly or municipal employees. This means that they have to set aside less in tax-deferred retirement plans and have more discretionary income to spend locally. More of their wages can be used to purchase homes, groceries, cars, meals and movie tickets. As a result, the induced impact of these wages is about the same as the direct wages–$203.2 million.

Purchases of Goods and Services

The next largest source of financial stimulus to the local economy results from DCPP's purchases of goods and services from local businesses and tradespeople. The list of local vendors includes office supply stores, plumbers, fence builders, roofers, welders, painters, parts and hardware stores. The actual mix varies significantly from year to year, so 2010 and 2011 expenditures were averaged to obtain a representative mix. The average annual expenditure (or "spend") was $18,209,014.

Retiree Expenditures

The third source of financial stimulus is money spent locally by DCPP retirees. There were 714 PG&E retirees living in San Luis Obispo and Northern Santa Barbara counties at the end of 2011, with estimated pensions of $19,049,361 for the year.

TABLE 5: DCPP VITAL STATISTICS 2011

Study Area	Local (San Luis Obispo and Santa Barbara counties)	State (California)	National (USA)
Employees	1,483	1,543	1,559
Payroll	$202,520,307	$209,529,421	$211,781,462
Annual Expenditures for Goods and Services	$18,209,014	$69,735,934	$293,585,539
PG&E retirees living in San Luis Obispo/Santa Barbara counties	$19,049,361	n/a	n/a
Total	**$239,780,165**	**$279,266,898**	**$505,581,900**

3.1 Local Economic Impact

Economic Impact in the Local Economy

The largest economic impact of DCPP on San Luis Obispo and Santa Barbara Counties is in the **imputed rental activity** for owner-occupied dwellings. As described earlier, this variable is the "rent" that homeowners would pay to rent their own homes. It reflects DCPP employees and suppliers stimulus to the local economy by building and maintaining homes. Homes are seen as both an investment as well as a "consumer durable good." Seven of the remaining top ten categories listed on Table 6 reflect the consumption, healthcare, and investment expenditures of DCPP employees, and employees of DCPP vendors. The only exception, wholesale business, ranks high because of DCPP's policy of purchasing goods from local vendors where feasible. Many commodity-type goods, such as petroleum products and some office supplies, can be purchased in wholesale quantities.

TABLE 6: DCPP LOCAL TOTAL ECONOMIC IMPACT, 2011

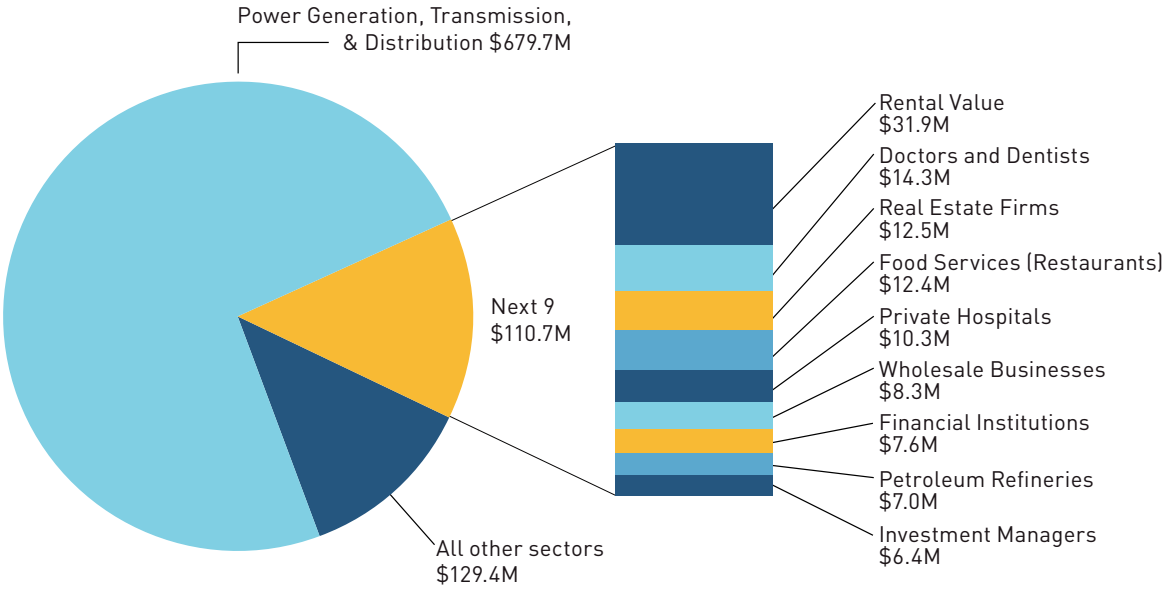
Rank	Description	Direct*	Indirect*	Induced*	Total
	Total	**$675,572,354**	**$21,996,794**	**$222,253,912**	**$919,823,060**
1	Electric power generation, transmission, and distribution	$675,572,354	$113,870	$3,988,787	$679,675,011
2	Imputed rental activity for owner-occupied dwellings		$0	$31,864,664	$31,864,664
3	Offices of physicians, dentists, and other health practitioners		$362	$14,312,112	$14,312,474
4	Real estate establishments		$213,473	$12,318,973	$12,532,446
5	Food services (i.e. restaurants)		$139,381	$12,245,125	$12,384,506
6	Private hospitals		$351	$10,282,620	$10,282,971
7	Wholesale trade businesses		$299,395	$8,020,818	$8,320,213
8	Monetary authorities and depository credit intermediation activities		$159,237	$7,486,983	$7,646,220
9	Petroleum refineries		$194,874	$6,809,443	$7,004,318
10	Securities, commodity contracts, investments, and related activities		$73,168	$6,289,903	$6,363,071
11	Nondepository credit intermediation and related activities		$112,482	$4,717,455	$4,829,937
12	Medical and diagnostic labs and outpatient and other ambulatory care		$16,396	$4,453,737	$4,470,133
13	Retail Stores - Food and beverage		$4,920	$4,184,188	$4,189,108
14	Other state and local government enterprises		$37,264	$3,422,775	$3,460,039
15	Retail Stores - Motor vehicle and parts		$6,253	$3,167,321	$3,173,574
16	Nursing and residential care facilities		$0	$3,141,147	$3,141,147
17	Telecommunications		$118,315	$2,825,343	$2,943,658
18	Retail Stores - General merchandise		$3,423	$2,930,800	$2,934,223
19	Facilities support services		$2,667,004	$60,379	$2,727,383
20	Legal services		$101,803	$2,509,997	$2,611,800
21	Management, scientific, and technical consulting services		$1,442,994	$1,085,823	$2,528,817
22	Retail Nonstores - Direct and electronic sales		$2,197	$2,328,031	$2,330,228
23	Civic, social, professional, and similar organizations		$20,235	$2,218,715	$2,238,950
24	Retail Stores - Clothing and clothing accessories		$2,379	$2,207,133	$2,209,511
25	Maintenance and repair construction of nonresidential structures		$658,288	$1,337,986	$1,996,273
	Total all other categories		$15,608,731	$68,043,653	$83,652,384

***Direct:** Total value of the good or service generated by the business or activity being anaylzed. **Indirect:** Revenue generated by other firms. **Induced:** Change in household expenditures.

Source: © 2012 Minnesota IMPLAN Group, Inc.

The Total Economic Impact of DCPP on the local economy in 2011 was $919,823,060 (See Table 6). This includes almost $22 million of incremental revenue in other local businesses and $222.3 million in local household spending by employees of DCPP, their suppliers and their suppliers' suppliers. As shown in Figure 14, this impact is spread across a wide spectrum of the local economy, including medical services, restaurants and bars, real estate firms, investment managment firms, etc.

FIGURE 14: TOP TEN IMPACTED SECTORS, LOCAL TOTAL ECONOMIC IMPACT $866.2M



Source: © 2012 Minnesota IMPLAN Group, Inc.

The perceptive reader might notice that the **direct impact** of energy output, $675.57 million, is slightly less than the estimated value of electricity produced, $679.7 million. In the present case, a custom IMPLAN industry for DCPP was created, since the closest existing industry in IMPLAN sector plan is electricity production, which includes all forms of fossil-fuel electricity, nuclear and renewable energy production. Our input weighting was based upon actual DCPP "spend," as described earlier. The most significant contributor to the discrepancy is purchases through wholesale trade. IMPLAN considers the **direct output impact** of wholesalers to be the difference between the cost of goods sold, and the sale price of the goods. This avoids double-counting the purchase price of the goods purchased, and resold, by the wholesaler.

Job Creation in the Local Economy

In 2011, expenditures by DCPP, its employees and vendors generated over 3,300 jobs in the area which means that each DCPP job has created more than one additional job in the local economy. Additional detail on job creation is provided in the table and graph that follow. Table 7 shows the jobs generated in the local economy cover the full spectrum of skill levels and job types, from accountants to nurses to grocery store clerks.

FIGURE 15: ECONOMIC IMPACTS OF DCPP EMPLOYMENT

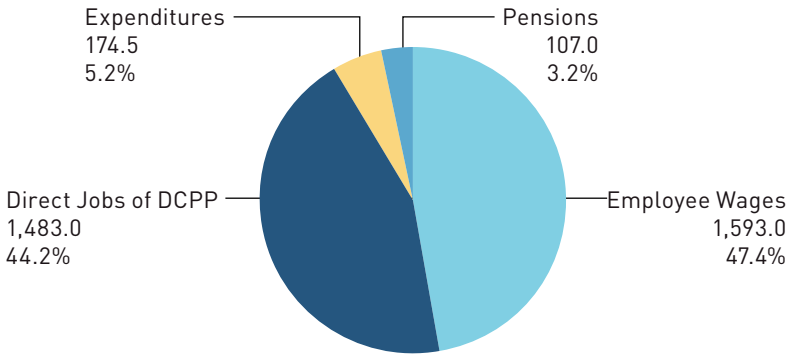


TABLE 7: JOBS CREATED IN SAN LUIS OBISPO AND SANTA BARBARA COUNTIES BY DCPP, 2011

Rank	Description	Direct*	Indirect*	Induced*	Total
	Total	**1,483.0**	**132.2**	**1,742.3**	**3,357.5**
1	Electric power generation, transmission, and distribution	1,483.0	0.1	5.0	1,488.1
2	Food services (restaurants)	0.0	2.3	199.9	202.2
3	Offices of physicians, dentists, and other health practitioners	0.0	0.0	120.4	120.4
4	Private hospitals	0.0	0.0	68.6	68.6
5	Real estate establishments	0.0	1.2	66.5	67.7
6	Retail Stores - Food and beverage	0.0	0.1	64.5	64.5
7	Securities, commodity contracts, investments, and related activities	0.0	0.6	53.8	54.4
8	Private household operations	0.0	0.0	53.7	53.7
9	Wholesale trade businesses	0.0	1.9	50.7	52.6
10	Nursing and residential care facilities	0.0	0.0	51.5	51.5
11	Retail Stores - General merchandise	0.0	0.1	49.5	49.5
12	Retail Nonstores - Direct and electronic sales	0.0	0.0	40.5	40.5
13	Individual and family services	0.0	0.0	40.5	40.5
14	Retail Stores - Clothing and clothing accessories	0.0	0.0	35.4	35.4
15	Nondepository credit intermediation and related activities	0.0	0.8	34.5	35.4
16	Employment services	0.0	4.4	28.4	32.8
17	Retail Stores - Miscellaneous	0.0	0.0	32.4	32.4
18	Retail Stores - Motor vehicle and parts	0.0	0.1	32.0	32.0
19	Civic, social, professional, and similar organizations	0.0	0.3	30.5	30.8
20	Medical and diagnostic labs and outpatient and other ambulatory care services	0.0	0.1	27.0	27.1
21	Services to buildings and dwellings	0.0	4.1	22.3	26.5
22	Home health care services	0.0	0.0	24.8	24.8
23	Retail Stores - Health and personal care	0.0	0.0	24.0	24.1
24	Management, scientific, and technical consulting services	0.0	13.1	9.8	22.9
25	Private elementary and secondary schools	0.0	0.0	21.3	21.3
	Total all other categories	0.0	0.0	0.0	0.0

***Direct:** Total value of the good or service generated by the business or activity being anaylzed. **Indirect:** Revenue generated by other firms. **Induced:** Change in household expenditures.

Source: © 2012 Minnesota IMPLAN Group, Inc.

Tax Impact at the Local Level

As seen in Table 8, DCPP generated over $38 million in state and local taxes. The largest single item, $30.8 million in property tax payment, includes the $25 million paid directly by PG&E, as well as additional property taxes paid by DCPP vendors and employees. Over $5 million of sales taxes are paid annually by DCPP and their vendors and employees, which helps county and municipal governments balance their budgets.

TABLE 8: STATE AND LOCAL TAX IMPACT, SAN LUIS OBISPO/ SANTA BARBARA COUNTIES

Description	Indirect Business Tax	Households	Corporations
Social Ins Tax- Employee Contribution		$124,326	
Social Ins Tax- Employer Contribution	$288,051		
Indirect Business Tax: Sales Tax	$5,328,432		
Indirect Business Tax: Property Tax	$30,810,022		
Indirect Business Tax: Motor Vehicle Lic	$121,431		
Indirect Business Tax: Other Taxes	$1,531,435		
Corporate Profits Tax			$1,070,926
Personal Tax: Income Tax		$2,005,062	
Personal Tax: (Fines- Fees)		$541,156	
Personal Tax: Motor Vehicle License		$87,398	
Personal Tax: Property Taxes		$40,083	
Personal Tax: Other Tax (Fish/Hunt)		$20,964	
Total State and Local Tax	$38,079,371	$2,818,989	$1,070,926

Source: © 2012 Minnesota IMPLAN Group, Inc.

In addition to the size of tax revenue estimates, it is worth noting that underlying expenditures remain constant and tax revenues stable, regardless of the state of the local or State economy, and unlike revenues from more cyclical businesses and sectors that have fallen significantly from historic high peaks, such as the housing and real estate market.

A tangential question which arises when discussing property taxes is the effect DCPP closure would have on the local housing market if DCPP were to close and its employees move away. While an analysis would be highly speculative, this study examines several statistics for indicators. If most of the 1,483 local DCPP employees are members of different households, approximately 1,450 homes would be vacated over a relatively short time period if the plant closed and DCPP employees relocated to another area. By comparison, San Luis Obispo County has averaged 1,291 new housing starts per year since 1990.

A large number of homes for sale has the potential to significantly depress property values, in turn causing a large drop in new housing starts. If new housing starts decreased by half, it would take about 2.5 years to absorb excess inventory. A drop in local housing prices could draw a significant number of retirees and other mobile households with moderate income and net worth into the area. It appears likely that there would be, at least temporarily, a drop in housing prices, followed by corrections and eventual recovery. In the meantime the precipitous drop in new home construction, a major local source of employment, and the drop in home prices would cause major disruptions in the local economy.

Overall, this analysis shows that DCPP provides a significant stimulus to the local economy in the revenue it provides to local firms, the jobs it generates for local residents, and the tax revenues it generates to help local governments provide services to local residents. And as a non-seasonal, non-cyclical operation, DCPP is a significant stabilizer to the local economy.

3.2 California Economic Impact

Economic Impact on California

The total Economic Impact of DCPP on the State of California is $1.1 billion in 2011. In addition to this financial boost to the California economy, DCPP generated 4,542 jobs in California, with over 1,000 of them outside San Luis Obispo and Santa Barbara counties.

The Economic Impact of DCPP on the State of California is larger than the impact on the local market for three reasons. First, since many of the goods and services that DCPP needs are not available locally but are available elsewhere in California, total statewide purchases of goods and services are larger than the local number. Second, because dollars spent in California recirculate more times within California before "leaking out" to other states or countries, the multiplier is larger. Third, there are 60 DCPP employees who work and live in California, but outside the local DCPP area. These factors result in an across-the-board increase in the total dollar impact of DCPP on the California economy.

The $1.1 billion total Economic Impact of DCPP on the state of California (pacing far ahead of the local impact), is due in part to the greater amount of purchases of sophisticated equipment and increased fees paid for specialized engineering consulting outside the local area. The economic sectors of engineering consulting and wholesale trade, rank very high in the statewide analysis.

On the other side, those sectors most influenced by household spending, such as restaurants and bars, ranked lower. The direct impact is slightly greater because of the small number (60) of DCPP-related employees whose work location and residence are outside the local area. Total impact is greater because of the larger multiplier effect. For instance, in the local market, a payroll of $202,520,300 produced a **total output impact** of $203,211,941 for a multiplier of 1.003. The reason that the impact is not larger is that a significant proportion of an employee's wages goes to income taxes and Social Security withholding, which reduces spendable income. At the statewide level, the net spendable income is recirculated several times throughout California before "leaking out" to the rest of the world. Therefore, the statewide ratio of wages to total output impact is $277,968,322 / $209,529,421, which equals 1.33.

FIGURE 16: TOP TEN IMPACTED SECTORS, CALIFORNIA TOTAL ECONOMIC IMPACT $1.1 BILLION

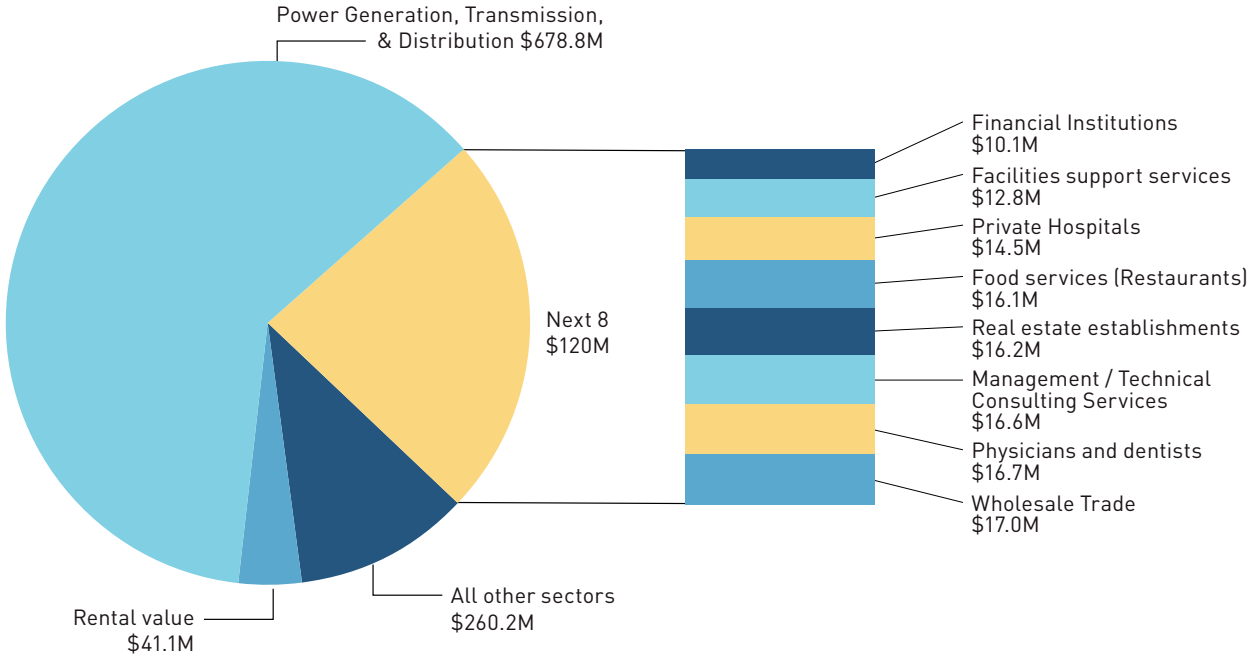


Figure 16 and Table 9 show that other than the value of the electricity itself, the largest economic impact is in the **imputed rental activity** for owner-occupied dwellings. As mentioned earlier, this is the rent that homeowners would pay to rent their own homes. It reflects the fact that employees of DCPP and DCPP suppliers stimulate the California economy by building and maintaining their homes. It is worth noting that after housing cost, the sector most significantly affected is medical care—the combined impact of doctors and dentists, and private hospitals is $31.2 million.

TABLE 9: DCPP CALIFORNIA TOTAL ECONOMIC OUTPUT, 2011

Rank	Description	Direct	Indirect	Induced	Total
	Total	**$675,572,354**	**$90,162,430**	**$334,332,031**	**$1,100,066,815**
1	Electric power generation, transmission, and distribution	$675,572,354	$207,144	$2,982,044	$678,761,542
2	Imputed rental activity for owner-occupied dwellings		0	$41,107,325	$41,107,325
3	Wholesale trade businesses		$1,137,205	$15,862,428	$16,999,634
4	Offices of physicians, dentists, and other health practitioners		$317	$16,690,915	$16,691,232
5	Management, scientific, and technical consulting services		$14,805,832	$1,747,185	$16,553,017
6	Real estate establishments		$940,264	$15,261,471	$16,201,735
7	Food services (Restaurants)		$711,256	$15,431,963	$16,143,219
8	Private hospitals		$2,554	$14,542,177	$14,544,731
9	Facilities support services		$12,724,919	$81,546	$12,806,466
10	Monetary authorities and depository credit intermediation activities		$758,991	$9,335,119	$10,094,110
11	Insurance carriers		$391,704	$9,257,917	$9,649,622
12	Petroleum refineries		$479,392	$8,965,220	$9,444,612
13	Securities, commodity contracts, investments, and related activities		$280,882	$8,113,495	$8,394,377
14	Employment services		$6,516,550	$1,442,495	$7,959,045
15	Nondepository credit intermediation and related activities		$455,927	$7,408,454	$7,864,381
16	Pharmaceutical preparation manufacturing		$2,737	$6,878,461	$6,881,198
17	Medical and diagnostic labs and outpatient and other ambulatory care services		$20,658	$5,723,846	$5,744,504
18	Legal services		$782,549	$4,819,467	$5,602,016
19	Retail Stores - Food and beverage		$15,423	$5,357,010	$5,372,432
20	Telecommunications		$627,792	$4,394,548	$5,022,340
21	Other state and local government enterprises		$151,835	$4,714,653	$4,866,488
22	Retail Stores - Motor vehicle and parts		$21,386	$4,550,862	$4,572,248
23	Retail Stores - General merchandise		$12,429	$4,467,282	$4,479,711
24	Industrial process variable instruments manufacturing		$4,397,048	$33,247	$4,430,295
25	Management of companies and enterprises		$1,066,748	$3,067,555	$4,134,303
	All other sources		$43,650,889	$122,095,345	$165,746,234

Source: © 2012 Minnesota IMPLAN Group, Inc.

The sector with the second largest impact is managerial and technical consulting services, which reflects the significant amount of engineering and design work that PG&E contracts out to leading consulting firms in California. In addition, the wholesale trade business sector receives a great deal of business from selling goods such as fuels, lubricants, office supplies, paint, and nuts and bolts to DCPP. Other high-ranking sectors reflect purchases by households of employees of DCPP and their suppliers—real estate firms, food service and banking institutions, for example.

Job Creation in the California Economy

The jobs created in California by DCPP, beyond those directly employed by DCPP, reflect the DCPP's purchases of goods and services. The ratio of total jobs created to DCPP employees is 4,542.5/1,543=2.94. This high ratio is due to the fact that DCPP employees are relatively well-paid—with an average salary of over $135,000 per year—but the jobs created by their spending are often less-well paid.

FIGURE 17: ECONOMIC IMPACT OF EMPLOYMENT IN CALIFORNIA

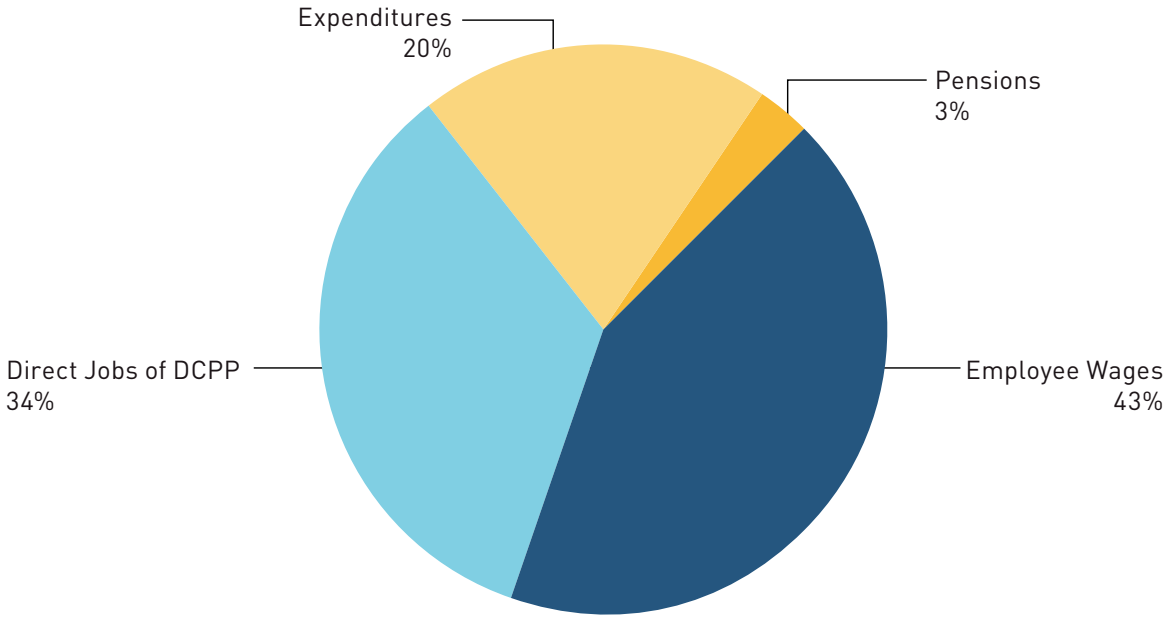


TABLE 10: CALIFORNIA JOBS CREATED, 2011

Rank	Description	Direct	Indirect	Induced	Total
	Total	**1,543.0**	**668.8**	**2,330.7**	**4,542.5**
1	Electric power generation, transmission, and distribution	1,543.0	0.3	3.7	1,547.0
2	Food services (Restaurants)		11.5	248.7	260.1
3	Employment services		156.2	34.6	190.8
4	Offices of physicians, dentists, and other health practitioners		0.0	136.7	136.7
5	Management, scientific, and technical consulting services		111.2	13.1	124.3
6	Wholesale trade businesses		6.6	92.0	98.6
7	Facilities support services		97.1	0.6	97.7
8	Private hospitals		0.0	94.0	94.0
9	Private household operations		0.0	85.5	85.5
10	Real estate establishments		4.9	79.8	84.7
11	Retail Stores - Food and beverage		0.2	78.9	79.2
12	Retail Stores - General merchandise		0.2	73.3	73.5
13	Nursing and residential care facilities		0.0	65.8	65.8
14	Securities, commodity contracts, investments, and related activities		2.1	59.7	61.8
15	Nondepository credit intermediation and related activities		2.9	47.6	50.5
16	Individual and family services		0.0	47.9	47.9
17	Retail Stores - Clothing and clothing accessories		0.1	44.5	44.6
18	Retail Stores - Motor vehicle and parts		0.2	44.1	44.3
19	Retail Nonstores - Direct and electronic sales		0.1	43.2	43.3
20	Business support services		30.4	8.2	38.6
21	Services to buildings and dwellings		9.0	28.6	37.6
22	Retail Stores - Miscellaneous		0.1	37.2	37.3
23	Medical and diagnostic labs and outpatient and other ambulatory care services		0.1	32.9	33.0
24	Private junior colleges, colleges, universities, and professional schools		0.0	32.8	32.8
25	Legal services		4.4	27.0	31.4

Source: © 2012 Minnesota IMPLAN Group, Inc.

As seen in Table 10, the sector with the largest number of jobs created is food services. This illustrates the fact that jobs at both lower and higher skill levels have been created by DCPP expenditures, both to vendors and to their employees. By way of clarification, the employment services sector can include temporary employment services, which may specialize in anything from security guards to engineering and scientific talent. In addition, this sector can include union trades, where the union (electrician, plumbing) serves as a clearing house for its members.

Tax Impact at the State Level

The statewide number, $33,255,105, is $2 million more than the local impact, which indicates that counties outside the local market have benefited from DCPP's activities. The State Corporate Income Tax, $1,650,893, would include the portion of PG&E income taxes attributable to DCPP operations, as well as taxes paid by DCPP vendors, and companies that provide goods and services to PG&E employees. The State Personal Income Tax exceeds $4.1 million, which is substantial.

TABLE 11: STATE AND LOCAL TAX IMPACT, CALIFORNIA, 2011

Description	Indirect Business Tax	Households	Corporations
Social Ins Tax- Employee Contribution		$185,358	
Social Ins Tax- Employer Contribution	$429,457		
Indirect Bus Tax: Sales Tax	$7,570,844		
Indirect Bus Tax: Property Tax	$33,255,105		
Indirect Bus Tax: Motor Vehicle Lic	$172,534		
Indirect Bus Tax: Other Taxes	$2,175,923		
Corporate Profits Tax			$1,650,893
Personal Tax: Income Tax		$4,169,876	
Personal Tax: NonTaxes (Fines- Fees)		$1,166,362	
Personal Tax: Motor Vehicle License		$189,064	
Personal Tax: Property Taxes		$83,182	
Personal Tax: Other Tax (Fish/Hunt)		$45,777	
Total State and Local Tax	$43,603,863	$5,839,619	$1,650,893

Source: © 2012 Minnesota IMPLAN Group, Inc.

DCPP impacts the California economy in many ways, raising the question: if DCPP were to shut down, what would be the net impact on California? There are many possible scenarios. Based on current State policy, it is highly unlikely that another nuclear plant would be built in California. DCPP generation could be replaced with new fossil units, renewable power, or a combination thereof. However important policy implications, like those of AB32 are outside the scope of this report. A fossil fuel plant outside California, whether in a neighboring state or Mexico, is a possibility. However, citizens of these areas are expressing increasing resistance to power plants and their accompanying pollution being built in their backyards, while the power is exported to help support the California economy. While PG&E is working diligently to comply with AB32 and bring renewable sources into its energy portfolio, renewable sources of energy are more expensive than nuclear or fossil fuel electricity and would increase the cost of doing business or living in California. Based on these scenarios, it would be extremely difficult and expensive to replace DCPP's electric generation.

If DCPP were replaced by a "generic" power plant producing the same amount of power, valued at $678.74 million, the IMPLAN model can be used to estimate the impact of replacing DCPP with a variety of existing power plant technologies. Briefly, the total jobs generated statewide would be 2,280, versus 4,542 for DCPP. This is due to the fact that most of the power would be generated by fossil fuels, which cost more than nuclear, and because the plants require fewer personnel. So, changing over the power plant would induce a net loss of 2,262 jobs statewide. The total economic impact statewide would be $896 million, versus $1.1 billion, which would represent a loss of $204 million in GDP. And this does not take into account the fact that, since the replacement power would be more expensive than DCPP power, there would be further depression of economic activity statewide.

3.3 National Economic Impact

Economic Impact on the National Level

On the national level, there is a dramatic increase in the amount of "spend" for goods and services. Much of the generating equipment such as turbine heat-exchangers are produced by two or three manufacturers nationally, none in California. In addition, the nuclear fuel, which averages over $75 million per year, is sourced totally from outside California. Adding the increased "multiplier" resulting from the larger market to these expenditures results in a greatly increased total impact number: over $1.8 billion in 2011. The largest item, other than the value of the electricity itself, is the nuclear fuel component labeled "All other basic inorganic chemical manufacturing" (Table 12), also known as "Nuclear Fuel Manufacturing" (Figure 18).

FIGURE 18: TOP TEN IMPACTED SECTORS, NATIONAL TOTAL ECONOMIC IMPACT $1.845 BILLION

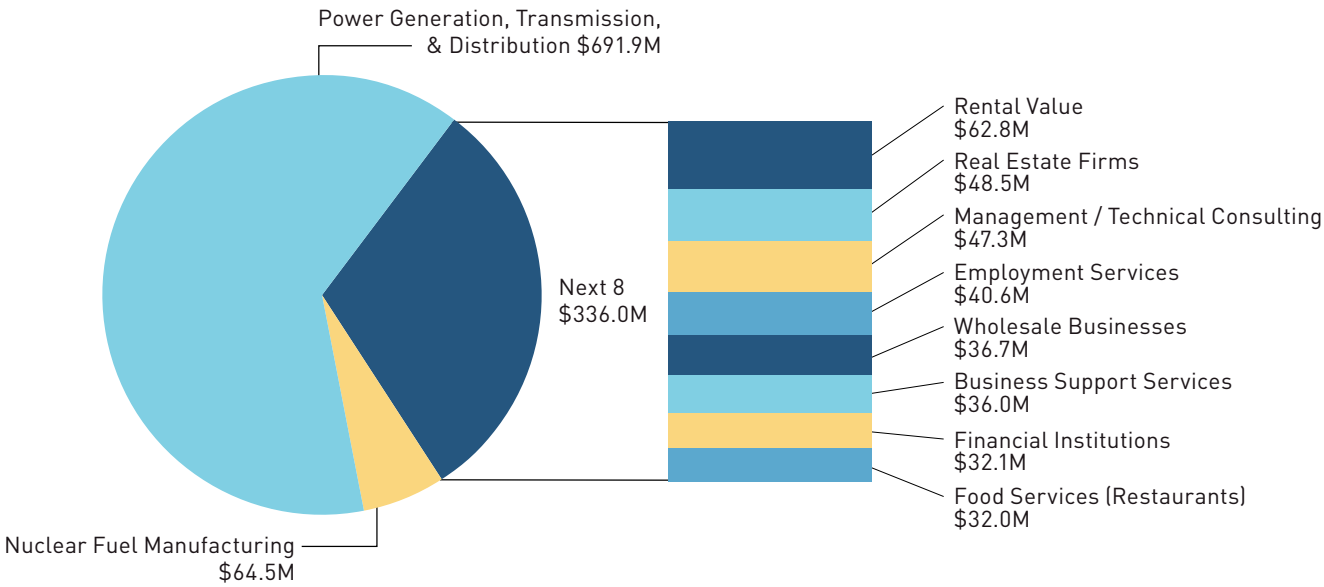


TABLE 12: NATIONAL TOTAL ECONOMIC IMPACT, 2011

Rank	Description	Direct	Indirect	Induced	Total
	Total	**675,572,354**	**495,895,790**	**673,582,189**	**1,845,050,334**
1	Electric power generation, transmission, and distribution	$675,572,354	$6,191,423	$10,098,322	$691,862,099
2	All other basic inorganic chemical manufacturing		$64,183,247	$361,027	$64,544,275
3	Imputed rental activity for owner-occupied dwellings		$0	$62,771,661	$62,771,661
4	Real estate establishments		$6,302,072	$42,230,609	$48,532,681
5	Management, scientific, and technical consulting services		$42,246,743	$5,023,269	$47,270,011
6	Employment services		$36,303,049	$4,322,258	$40,625,307
7	Wholesale trade businesses		$7,388,484	$29,346,872	$36,735,356
8	Other support services		$34,842,600	$1,120,723	$35,963,323
9	Monetary authorities and depository credit intermediation activities		$5,533,481	$26,598,423	$32,131,903
10	Food services (Restaurants)		$3,763,636	$28,191,332	$31,954,968
11	Private hospitals		$4,412	$30,801,014	$30,805,426
12	Offices of physicians, dentists, and other health practitioners		$1,833	$30,346,648	$30,348,481
13	Insurance carriers		$2,517,829	$23,623,268	$26,141,097
14	Securities, commodity contracts, investments, and related activities		$2,351,244	$22,055,089	$24,406,333
15	Petroleum refineries		$6,377,427	$16,470,586	$22,848,013
16	Telecommunications		$5,928,656	$16,689,432	$22,618,088
17	Nondepository credit intermediation and related activities		$3,104,094	$19,177,681	$22,281,775
18	Other general purpose machinery manufacturing		$20,155,500	$12,156	$20,167,657
19	Management of companies and enterprises		$8,007,353	$9,988,447	$17,995,800
20	Legal services		$3,808,740	$10,214,219	$14,022,959
21	Facilities support services		$13,507,506	$357,985	$13,865,491
22	Pharmaceutical preparation manufacturing		$9,519	$12,043,260	$12,052,779
23	Architectural, engineering, and related services		$8,677,216	$2,473,363	$11,150,578
24	Industrial process variable instruments manufacturing		$10,532,456	$145,358	$10,677,815
25	Other state and local government enterprises		$1,262,177	$9,282,669	$10,544,846
	Total all other sources		**$202,895,095**	**$383,400,752**	**$586,295,847**

Source: © 2012 Minnesota IMPLAN Group, Inc.

Jobs Created at the National Level

The number of jobs created nationally is proportionally larger: over 10,372 jobs have been created by DCPP nationally, in a broad spectrum of skill levels and career paths. Each of the 1,559 direct DCPP jobs has generated over five additional jobs in other businesses serving DCPP or their employees, or their employees' employees. This is due to the nearly self-contained nature of the US economy, where a dollar spent locally will circulate within the economy several times before "leaking out."

FIGURE 19: NATIONAL ECONOMIC IMPACTS OF DCPP EMPLOYMENT

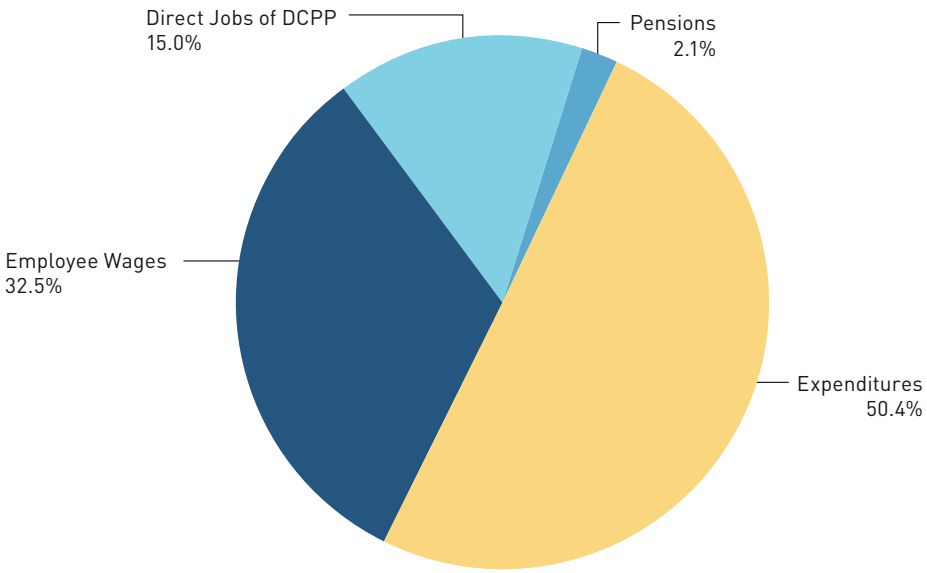


TABLE 13: NATIONAL JOBS CREATED, 2011: 9477.1 JOBS

Rank	Description	Direct	Indirect	Induced	Total
	Total	**1,559.0**	**3,215.0**	**5,598.3**	**10,372.3**
1	Electric power generation, transmission, and distribution	1,559.0	9.8	16.0	1,584.9
2	Employment services		926.5	110.3	1,036.8
3	Food services (Restaurants)		67.2	503.1	570.2
4	Management, scientific, and technical consulting services		312.4	37.1	349.6
5	Other support services		330.6	10.6	341.2
6	Real estate establishments		41.8	280.0	321.8
7	Offices of physicians, dentists, and other health practitioners		0.0	239.8	239.9
8	Private hospitals		0.0	233.0	233.0
9	Wholesale trade businesses		43.6	173.2	216.8
10	Nursing and residential care facilities		0.0	162.2	162.2
11	Securities, commodity contracts, investments, and related activities		15.3	143.2	158.5
12	Retail Stores - General merchandise		1.1	154.2	155.3
13	Retail Stores - Food and beverage		1.1	154.1	155.2
14	Nondepository credit intermediation and related activities		21.0	129.9	150.9
15	Business support services		108.6	34.0	142.6
16	Services to buildings and dwellings		49.8	84.4	134.2
17	Private household operations		0.0	120.4	120.4
18	Facilities support services		115.2	3.1	118.3
19	Civic, social, professional, and similar organizations		8.5	90.4	98.9
20	Retail Stores - Motor vehicle and parts		1.1	92.4	93.5
21	Individual and family services		0.0	91.9	91.9
22	Architectural, engineering, and related services		70.8	20.2	91.0
23	Management of companies and enterprises		39.5	49.2	88.7
24	Monetary authorities and depository credit intermediation activities		14.8	71.3	86.1
25	All other basic inorganic chemical manufacturing		84.8	0.5	85.3
	Total all other industries		951.4	2,593.8	3,545.2

Source: © 2012 Minnesota IMPLAN Group, Inc.

Tax Impact at the National Level

DCPP's expenditures (in the process of generating electricity) generate a substantial amount of federal tax revenue. Unlike state and local tax revenues, which are dominated by property taxes, sales taxes and various fees, the federal government relies very heavily on personal and corporate income taxes to fund its operations. DCPP generates over $16 million in federal corporate income tax, $27.5 million in Federal Personal Income Taxes, $43.3 million in Social Security taxes, and $6.6 million in excise taxes, customs duties and other fees (See Table 14).

TABLE 14: FEDERAL TAX IMPACT, NATIONAL, 2011

Description	Employee Compensation	Proprietor Income	Indirect Business Tax	Households	Corporations	Total
Social Insurance Tax: Employee Contribution	**$21,808,360**	**$2,662,715**				**$24,471,075**
Social Insurance Tax: Employer Contribution	$21,498,620					**$21,498,620**
Indirect Business Tax: Excise Taxes			$3,230,467			**$3,230,467**
Indirect Business Tax: Custom Duty			$1,267,371			**$1,267,371**
Indirect Business Tax: Fed NonTaxes			$2,158,076			**$2,158,076**
Corporate Profits Tax					$16,398,957	**$16,398,957**
Personal Tax: Income Tax				$27,487,792		**$27,487,792**
Total Federal Tax	**$43,306,980**	**$2,662,715**	**$6,655,914**	**$27,487,792**	**$16,398,957**	**$96,512,358**

In addition to the taxes collected by the federal government, out-of-state DCPP vendors and consulting firms generate tax revenues for their respective states. As shown in Table 15, these revenues are dominated by property taxes and sales taxes, but state corporate and personal income taxes are also significant.

TABLE 15: STATE AND LOCAL TAX IMPACT, NATIONAL

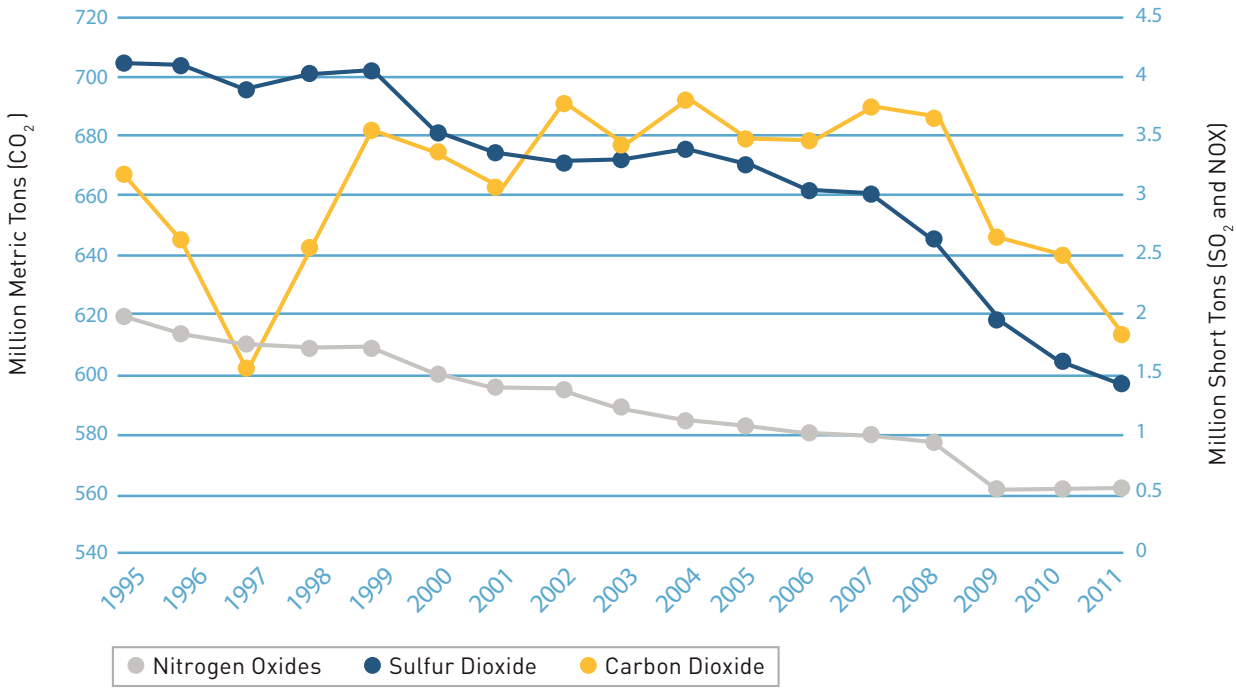
Description	Indirect Business Tax	Households	Corporations
Social Security Insurance Tax- Employee Contribution		$295,462	
Social Security Insurance Tax- Employer Contribution	$684,558		
Indirect Business Tax: Sales Tax	$19,424,322		
Indirect Business Tax: Property Tax	$44,082,572		
Indirect Business Tax: Motor Vehicle Lic	$403,166		
Indirect Business Tax: Other Taxes	$5,528,352		
Corporate Profits Tax			$3,006,542
Personal Tax: Income Tax		$8,184,395	
Personal Tax: NonTaxes (Fines- Fees)		$2,273,385	
Personal Tax: Motor Vehicle License		$492,076	
Personal Tax: Property Taxes		$232,929	
Personal Tax: Other Tax (Fishing/Hunting Licenses)		$213,855	
Total State and Local Tax	**$70,122,970**	**$11,692,102**	**$3,006,542**

3.4 Value of Environmental Benefits

Greenhouse gas emission levels are reported in terms of metric tons of carbon dioxide equivalents. The 1990 U.S. baseline was 6,133 million metric tons. By 2009 that figure had grown to 6,576 metric tons, an increase of 443 million metric tons. The use of nuclear-generated electricity helped avoid 613 metric tons of carbon dioxide in 2011 (see figure 20), or the equivalent of carbon dioxide released from 118 million passenger cars (60% of all U.S. cars currently on the road).

Without the emission avoidances of nuclear generation, required U.S. reductions would increase by more than 50% to achieve targets agreed to under the Kyoto Protocol.[9]

FIGURE 20: EMISSIONS AVOIDED BY THE U.S. NUCLEAR INDUSTRY 1995-2011



Source: Nuclear Energy Institute (NEI)

[9] The Kyoto Protocol refers to an international agreement linked to the United Nations Framework Convention on Climate Change. The agreement, signed in Kyoto, Japan in 1997, includes the U.S. among participants who committed to internationally binding emission reduction targets

According to testimony by PG&E[10], DCPP avoids the emission of seven to eight million tons per year of greenhouse gases (GHG) that would otherwise be produced by conventional generation sources such as fossil fuel plants. The cost to purchase equivalent carbon credits on the Intercontinental Exchange (ICE) for six to seven million tons of GHG ranges from $3,129,000 and $18,375,000 per year.[11] A total of 1.34 million acres of pine forest would be needed to sequester carbon emitted at those levels, and 1.25 million passenger vehicles would have to be removed from service to avoid seven million tons of GHG.

Additionally, nuclear energy avoids the annual production in the U.S. of more than half a million tons of nitrogen oxide[12] and 1.4 million tons of sulfur dioxide. As part of the U.S. EPA Acid Rain Program from 1990-1995, results from 21 states showed that a 16.4% increase in nuclear generation avoided release of 480,000 tons of sulfur dioxide (37% of the required emissions reduction). Under the 1990 Clean Air Act Amendments, no credit was allocated to nuclear plants, but based on the average value of publicly traded sulfur dioxide credits, the savings would have a value of about $50 million.

[10] Pacific Gas & Electric Company 2014 General Rate Case Prepared Testimony Exhibit (PG&E-6) Energy Supply, November 15, 2012

[11] Estimate based on futures price range of $1.49–$8.75 metric ton contract on the ICE market between September 2011 and September 2012. One lot = 1000 metric tons of carbon = 3,326 metric tons of CO2

[12] Equivalent to NO released by 28 million cars

Section 4:
License Extension vs. No License Extension

Presently, there are two nuclear reactors in operation at DCPP, with one licensed to operate until 2024 and the second to 2025. If the Nuclear Regulatory Commission (NRC) does not extend the licenses for an additional 20 years (2044 and 2045), as requested by PG&E, the reactors would be decommissioned. As a centerpiece of the economies of San Luis Obispo and Northern Santa Barbara counties, DCPP produced an estimated $675.6 million of electricity in 2011,[13] contributing at least $1 million to 46 different sectors of the local economy. If DCPP is granted extension to licenses, the plant would continue to generate economic benefits similar to those produced today. However, if license extensions are not granted, DCPP would be required to cease operations and begin to shut down the Plant.

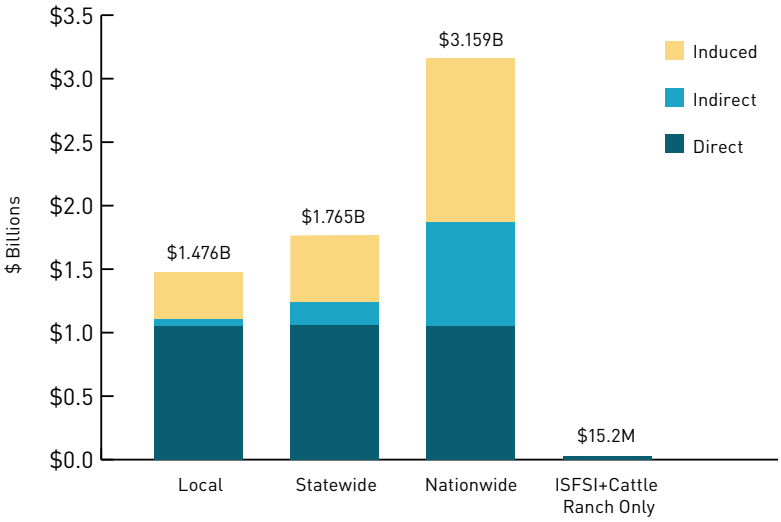
The year 2027 was used as the reference point for analyzing economic impacts that would result from an NRC decision to not extend licenses. This is a point in time when either full operation would continue with license extension, or the plant would be idle during the decommissioning and removal process. In either case, the Independent Spent Fuel Storage Installation (ISFSI), known as the Dry Cask Storage Facility, would continue to operate, so economic benefits associated with the ISFSI is included in all scenarios. According to the March 2010 report entitled "The Local Economic Impacts of Decommissioning the Diablo Canyon Nuclear Power Plant," the most reasonable alternative use of the site after decommissioning is cattle grazing, a use that has been included in the economic analysis of no license extension.

4.1 Economic Impact on the Economy

In 2011, DCPP contributed $919.8 million of total economic impact (direct, indirect and induced) to San Luis Obispo and Northern Santa Barbara counties. The state and nation also benefited economically from the operations of DCPP, receiving $1,100 billion and $1,969 billion in total economic impact, respectively. By 2027, if DCPP is granted license extension, the total economic impact for the local area is expected to grow to $1.48 billion per year, assuming a 3-percent-per-year growth rate and no change in employment (see Figure 3). State and national economic impacts are substantial as well, respectively yielding $1.76 billion and $3.16 billion in 2027.

[13] According to the US Energy Information Administration, DCPP produced 18,566 MWH in 2011 and the California weighted average wholesale price (SP-15 Gen DA LMP Peak) for 2011 was $36.39 per MWH, for a total of $675,572,354 electricity produced

FIGURE 21: ESTIMATED ECONOMIC IMPACT FOR YEAR 2027



In the case of no license extension, there will be limited activity on the site. The Independent Spent Fuel Storage Installation (ISFSI) and guard station will continue to operate until the Department of Energy has taken custody of all the spent fuel. Since there is no specific date for this to occur, this report assumes operations of the ISFSI will continue well after the decommissioning of DCPP has been completed. According to PG&E, the operation of the ISFSI facility requires 41 employees with a combined payroll of $6.7 million. Because these employees will live in the local communities, they will contribute to the local economic impact. Besides employee expenditures, it is estimated that only about $203,142 local expenditures will result from ISFSI continued operations. Based on these figures, the total economic activity of the ISFSI facility is estimated to be $13.68 million in 2027.

Additionally, assuming the best alternate usage of the nearly 10,000 acre property after decommissioning would be cattle grazing, the total direct economic impact created by this activity in the local area is $1.5 million in 2027. A total of $15.2 million of economic impact would continue to occur even after denial of DCPP relicensing. Therefore, the denial would result in a net loss of 1.46 billion (99.1% decline) to the local area in year 2027 alone. An estimated $42.5 billion would be lost over the entire re-licensing period if the extension request is denied.[14]

DCPP's economic impact is not only large in size, but it has a stabilizing effect on the local economy. Refueling takes place every 18 to 22 months for each reactor and occurs during the tourism industry's off-season. Refueling brings in several hundred workers from outside the local area who stay in motels, hotels or short-term rentals and often eat at local restaurants. Each reactor alternates its refueling schedule, usually resulting in at least one refueling or significant equipment installation per year, typically during a slack period of the tourist season. The economic impacts of these planned outages will be discussed in a future publication.

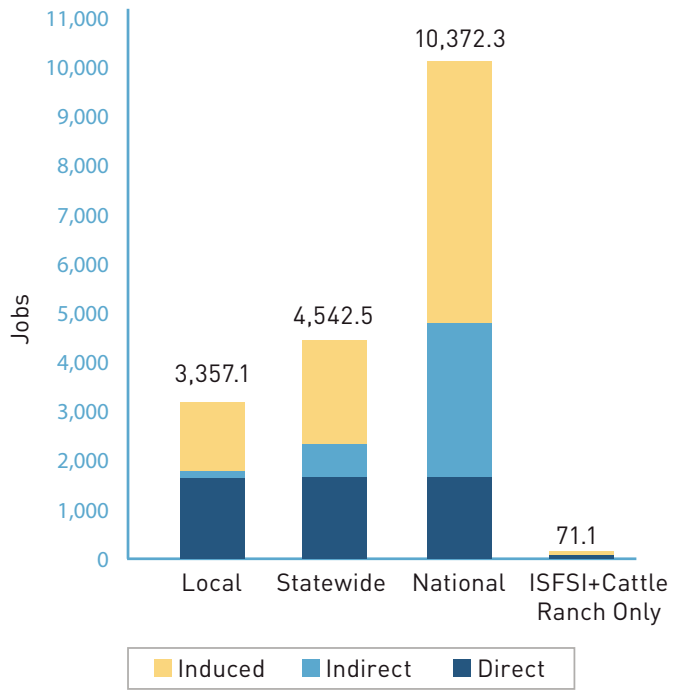
[14] Source of all ISFSI and Cattle Ranching impact estimates: The Local Economic Impacts of Decommissioning the Diablo Canyon Power Plant, March 2010

4.2 Loss of Jobs

In 2011, DCPP employed 1,483 direct employees in San Luis Obispo and Northern Santa Barbara counties, which created an additional 1,875 jobs for a total of 3,358 jobs in the local economy. DCPP also employs 60 additional employees in California who do not reside in the local economy, and 16 other employees live outside California. DCPP's out-of-area impact causes a ripple effect, creating an additional 2,999.5 and 8,813 jobs, respectively. It is not expected that the number of direct jobs would increase because of license extension, but rather would stay the same or slightly reduce in number. By 2027, the total number of jobs created is estimated to be the same as the year 2011 (See Figure 22).

A report to the California Public Utilities Commision determined the best alternate usage of the nearly 12,000 acre property after decommissioning would be cattle grazing. The total direct jobs created for cattle grazing is estimated at three. Because of the ripple effect throughout the economy, an additional 27.1 indirect and induced jobs would be created, where a total of 71.1 total jobs would be created in the local economy in the case of no license extension in 2027. Therefore, the loss of this stimulus would result in the elimination of more than 3,286 jobs from virtually every sector of the economy.

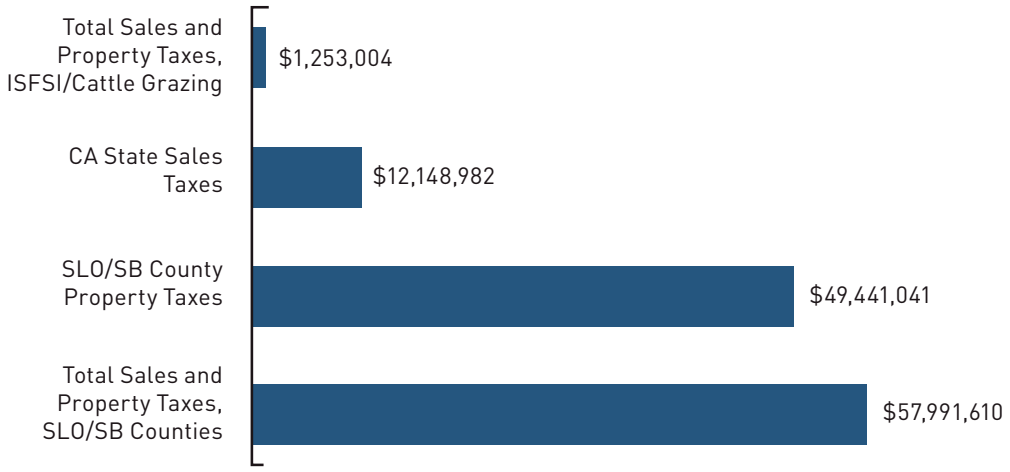
FIGURE 22: ESTIMATED TOTAL JOBS (DIRECT AND INDIRECT) FOR YEAR 2027



4.3 Loss of Taxes Generated

In 2011, PG&E paid over $25 million in Unitary Taxes to San Luis Obispo County related to DCPP operations. An additional $5.8 million of property taxes are generated from other indirect and induced sources, resulting in property taxes of $30.8 million paid in 2011. By 2027, it is estimated that these property taxes will grow to $49.4 million. California will receive an estimated $12.1 million in sales taxes in 2027 from DCPP operators, while combined sales taxes and property taxes generated in the local area will total $58.0 million (See Figure 23).

FIGURE 23: ESTIMATED TAXES GENERATED 2027 BY DCPP



In the case of no license extension, the ISFSI and guard station will continue to operate, as well as the nearly 12,000–acre property would be used for grazing cattle. These activities would generate $1.253 million in local area property and sales tax; however, funds garnered will be nothing close to the scale of that which the continued operations of DCPP would produce.

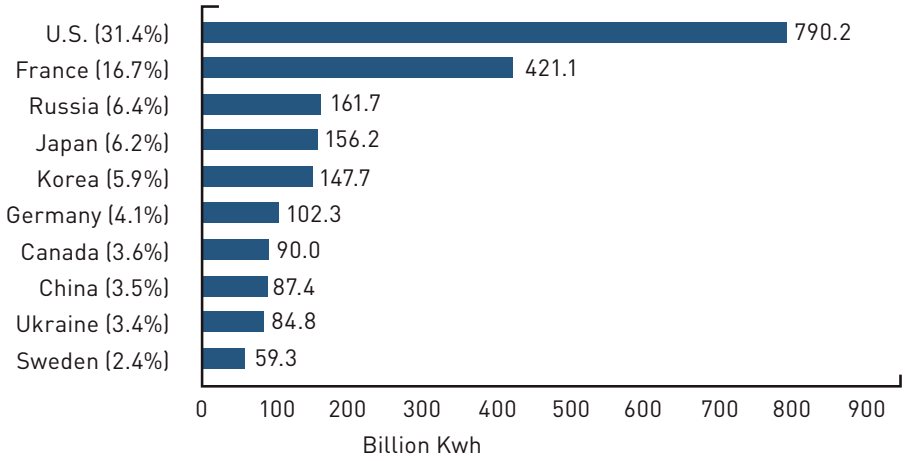
It is estimated that Unitary Property Taxes paid to San Luis Obispo County would decline by 97.3% if license extension does not occur.

This decline would adversely affect the entire region. Almost all of the $12.1 million California sales tax revenue in 2027 alone would be lost.

Section 5: Nuclear Industry Trends

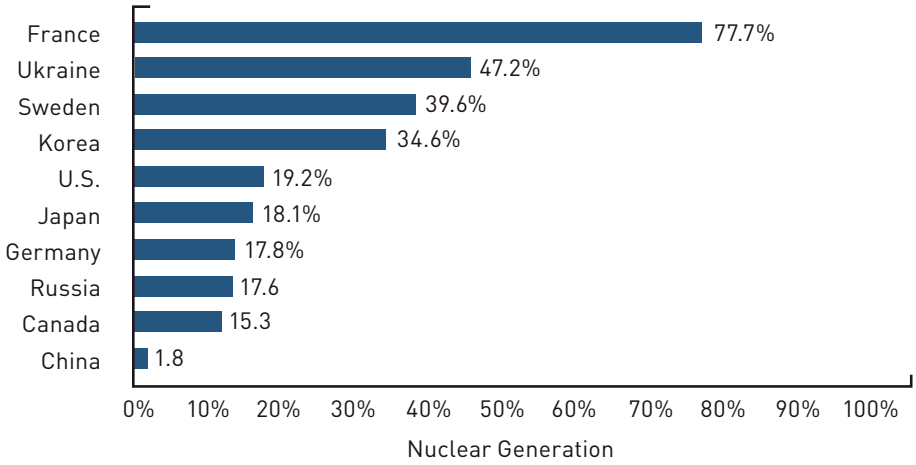
Currently, 14% of the world's electricity is provided by nuclear power, including 436 plants operating in 30 different countries. Thirteen countries rely on nuclear power for over one-quarter of their electricity generation. The U.S. ranks number one in total worldwide nuclear power generation at 31.4% (See Figure 24).

FIGURE 24: TOP TEN NUCLEAR POWER GENERATING COUNTRIES (2011)



Although the U.S. generates the most electricity worldwide, nuclear falls to the middle of the pack as a percentage of national power generation. In 2011, the U.S. generated 19.2% of its entire electricity portfolio through nuclear power. France generated 77.7% of its electricity through nuclear power, and at the other extreme, China generated most of its power through fossil fuels (mainly coal), with only 1.8% through nuclear generation (See Figure 25).

FIGURE 25: PERCENTAGE OF NATIONAL ELECTRICAL POWER (2011)

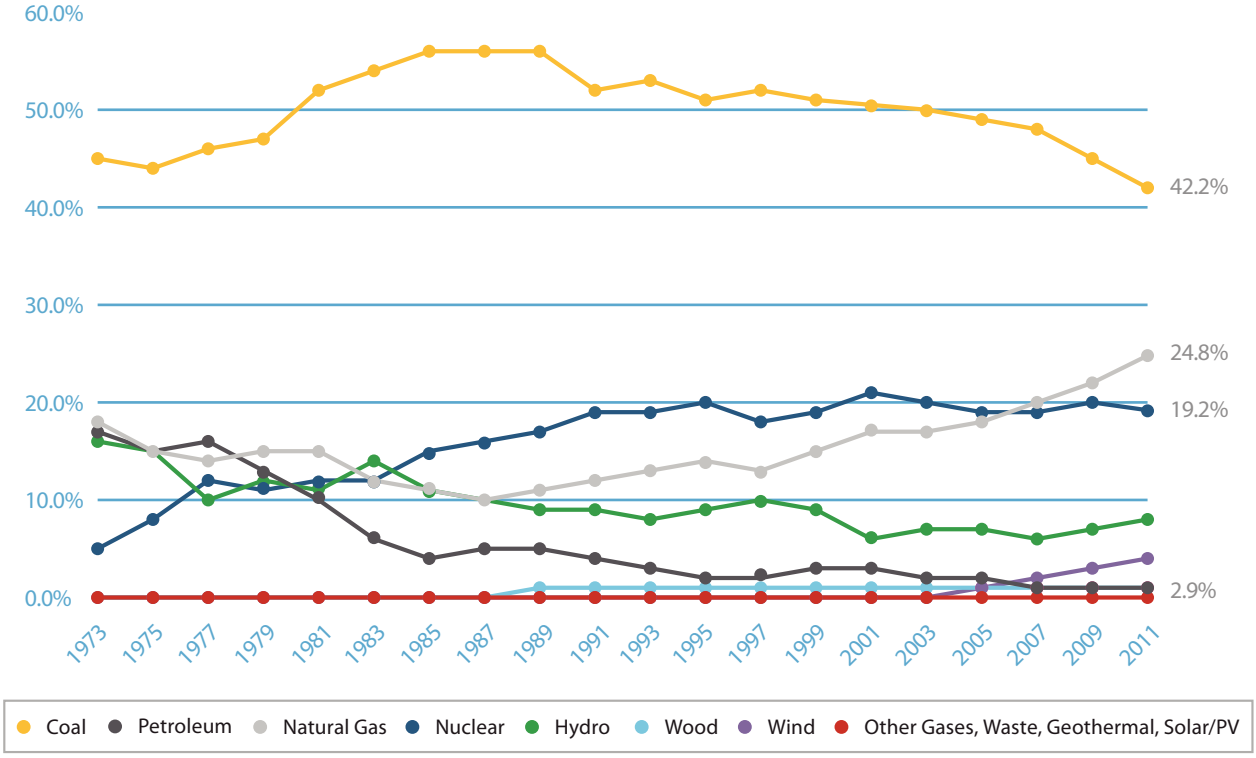


In the aftermath of the Fukushima accident, several countries—including Germany and Switzerland—have indicated that they do not plan further nuclear expansion, but many more plan to proceed with nuclear power development. Fourteen countries are moving ahead with 66 new plants under construction; others have longer-term plans for new nuclear development. China has 51 reactors currently planned out of 120 total proposed, and India plans to build 16 reactors of a proposed 40 to keep up with demand.[15] The U.S. Department of Energy projects that U.S. electricity demand will rise 24% by 2035, about one percent each year. Therefore, U.S. energy companies have proposed to build up to 19 new nuclear plants, and has 11 reactors currently planned to start construction including three under construction at Vogtle in Georgia, Summer in South Carolina and Watts Bar in Tennessee.

In 2011, nuclear energy provided 19.2% of the United States' electricity, or 790.2 billion kilowatthours (bkWh) out of a total U.S. electricity generation of 4,105 bkWh (See Figure 26). There are currently 104 licensed reactors operating in 31 different states, of which 35 are boiling water reactors and 69 are pressurized water reactors. To put the scale of this energy generation into perspective, the amount of electricity generated by just an average sized 1,000-MWe reactor at 90% capacity factor in one year is 7.9 billion kWh—enough to supply electricity for 690,000 households. If generated by other fuel sources, power of this magnitude would require 13.7 million barrels of oil, 3.4 million short tons of coal and 65.8 billion cubic feet of natural gas.

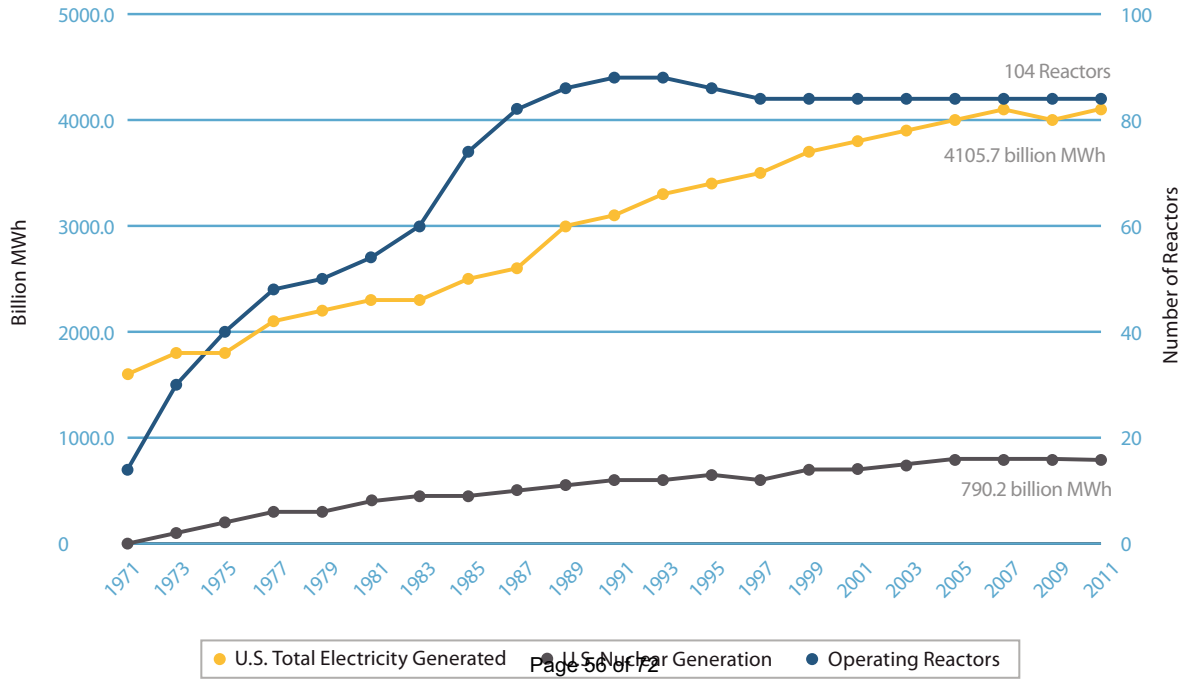
[15] Source: NEI White Paper, "Global Nuclear Power Development: Major Expansion Continues" May 2012.

FIGURE 26: U.S. ELECTRICITY GENERATION, 2011
(Total Electricity Generated 4,105.7 billion mWh)



Although there are a number of new domestic reactors in the pipeline, additional nuclear capacity is not expected to be online until 2017, at the earliest. As the demand for electricity continues to climb, the U.S. will struggle to meet demand without new power plants. The nuclear industry has been able to generate more electricity as older reactors go offline due to increased operational efficiency (section 5.1), but license renewal for many plants is crucial to maintain current production (See Figure 27).

FIGURE 27: U.S. ELECTRICITY GENERATION
(Total Operational Reactors)



5.1 Nuclear Industry Performance

A significant achievement of the U.S. nuclear power industry over the last 20 years has been the increase in operating efficiency due to improved maintenance and technology. This has resulted in an upward trend in capacity factor (output proportion of their nominal full-power capacity), which has gone from 56.3% in 1980 and 66% in 1990 to 89.0% in 2011.[16] A major component of this upward trend is the length of refueling outages. In 1990 refueling outages averaged 107 days, but dropped to 40 days by 2,000, with the record being 15 days. Typical refueling outages happen every 18 to 24 months and create a significant decrease in capacity factor. Additionally, overall generation has increased because of improved thermal efficiency. The average thermal efficiency rose from 32.49% in 1980 to 33.85% in 1999. Nuclear power generation capacity factors are the highest of all fuel types since power can be generated 24 hours a day, seven days per week (See Table 16).

TABLE 16: US CAPACITY FACTORS BY FUEL TYPE, 2011

Fuel Type	Average Capacity Factors
Nuclear	89.0%
Geothermal	69.5%
Biomass	64.6%
Coal (Steam Turbine)	61.1%
Hydro	48.3%
Gas (Combined Cycle)	45.6%
Wind	31.8%
Solar	24.0%
Gas (Steam Turbine)	13.4%
Oil (Steam Turbine)	8.1%

Source: Nuclear Energy Institute (NEI)

Another way to increase overall generation is through uprate, which is the process of increasing the maximum power level at which a commercial nuclear power plant operates. Power uprates at nuclear plants are very common and require additional capital investment. More than 120 uprates have been approved by the NRC and implemented, generating approximately 6,211 mWe of power or equivalent to adding another six nuclear reactors. Sixty-seven more uprate projects are currently in sight, with capital costs of $250 to $500 million each. A nationwide capacity increase of 2,637 mWe by 2016 is currently under review and expected. In addition to increasing generating capacity, these uprate projects also improve the reliability of the units and support operating license extensions, which require extensive review of plant equipment condition.

Through a reduction in reactor downtime, improved thermal efficiency, and uprate projects, nuclear power generation has increased from 577 bkWh hours in 1990 to 790.2 bkWh in 2011, a 36.9% improvement, or capacity addition equivalent to approximately 29 new 1,000 MWe reactors.

[16] Source: Nuclear Energy Institute (NEI)

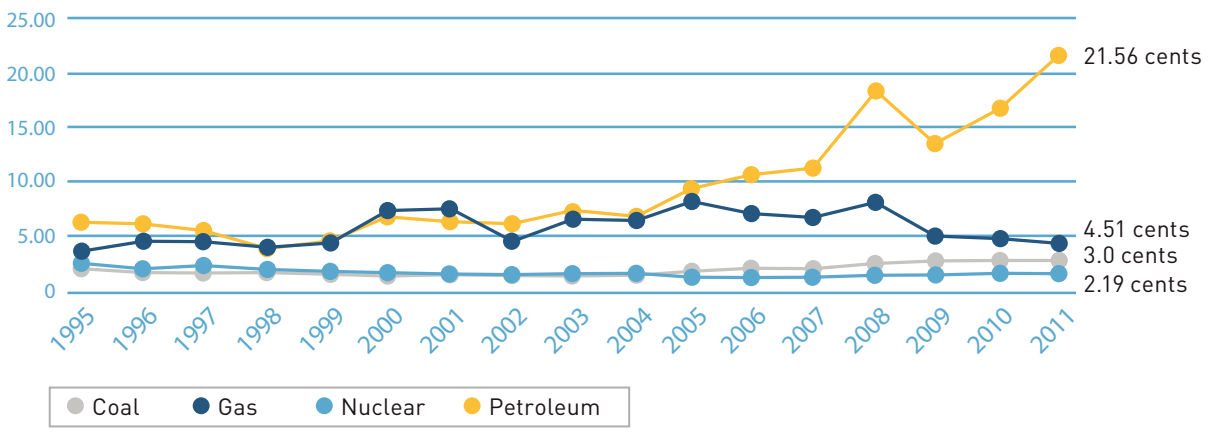
5.2 Cost Competitiveness: Production Costs and Fuel Costs

The cost of nuclear power generation has remained flat over the last decade. Although efficiency improvements have occurred, fuel costs (including enrichment), and operating and maintenance (O&M) costs have increased. In general, the construction costs of nuclear power plants are significantly higher than for coal or gas-fired plants because of the requirements for special materials, the incorporation of sophisticated safety features and back-up control equipment. These contribute to much of the nuclear generation cost, but once the plant is built the cost variations are minor.

Production Costs

Production costs include O&M and fuel costs at a power plant. Since 2001, nuclear power plants have achieved the lowest production costs compared to coal, natural gas and oil. For nuclear power plants, spent fuel management, plant decommissioning, and final waste disposal are included in the production costs. These costs, while usually external for other technologies, are internal for nuclear power (See Figure 28).

FIGURE 28: U.S. ELECTRICITY PRODUCTION COSTS



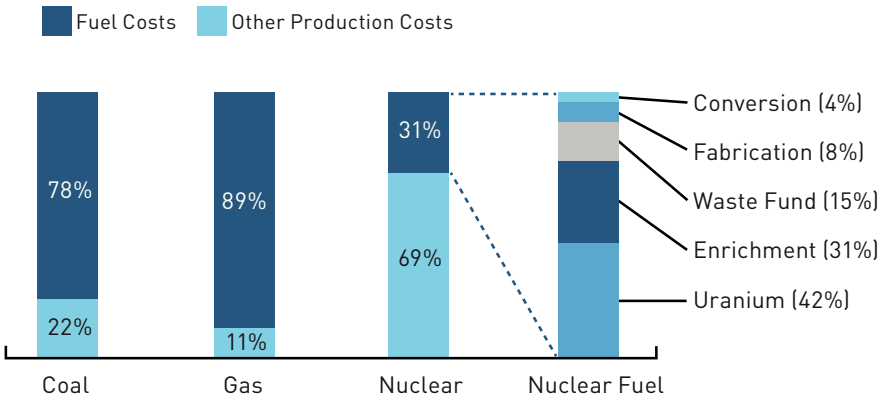
Source: Nuclear Energy Institute (NEI)

This figure shows the annual cost associated with the operation, maintenance, administration, and support of a nuclear power plant. Included are costs related to labor, material and supplies, contractor services, licensing fees and miscellaneous costs such as employee expenses and regulatory fees. The average non-fuel O&M cost for a U.S. nuclear power plant in 2011 was 1.51 cents per kWh and the overall production cost was 2.19 cents per kWh. Because nuclear plants refuel every 18 to 24 months, they are not subject to fuel price volatility like natural gas and oil power plants.

Fuel Costs

This is the total annual cost associated with the consumption of nuclear fuel resulting from the operation of the unit. This cost is based upon the amortized costs associated with the purchasing of uranium, conversion, enrichment, and fabrication services along with storage and shipment costs and inventory (including interest) charges less any expected salvage value. The average fuel cost at a U.S. nuclear power plant in 2011 was 0.68 cents per kWh. Nuclear fuel costs were at a low of 0.51 cents per kWh in 2005, and since then, fuel costs for nuclear power plants have increased 33.3 percent.

FIGURE 29: FUEL AS A PERCENTAGE OF ELECTRIC POWER PRODUCTION COSTS, 2011



Source: Nuclear Energy Institute (NEI)

Fuel costs make up 31% of the overall production costs of nuclear power plants. Fuel costs for coal and natural gas and oil, however, make up more than 78% of the production costs (See Figure 29) and all subject to rapid market fluctuation.

Section 6: Community Benefits Provided by DCPP

In addition to the economic benefits that DCPP contributes to San Luis Obispo and Northern Santa Barbara counties, the state and nation in the form of jobs, income, and taxes, the plant also enhances the local community in ways that are often intangible and unquantifiable. PG&E strives to be a good corporate citizen by engaging, supporting and improving the neighborhoods where their customers and employees live and work. PG&E's community investment program is completely funded by shareholders and has no impact on customers' utility rates. This section of the report includes a discussion of benefits beyond the IMPLAN economic model previously presented. Although actual quantified results of these programs are not estimated, it should be noted that each has economic value.

6.1 Local Charitable Grants and Volunteerism

Charitable Grants

PG&E has been part of California for over 100 years and believes in its responsibility to contribute to the growth and vitality of the communities PG&E serves. In 2011, through PG&E's nationally recognized giving program, the company donated over $23 million in charitable, shareholder-funded investments.

In San Luis Obispo and northern Santa Barbara counties in 2011, more than 90 local nonprofit organizations shared a total of $1.1 million of PG&E's charitable funds. A contribution of $250,000 to the Lucia Mar School District helped create Central Coast New Tech High, a new school offering an innovative approach to 21st century education. PG&E's $25,000 grant to the Prado Day Center in San Luis Obispo helped reduce the homeless services center's energy costs using weatherization, energy improvements and building repairs. PG&E employees bolstered the effort in an afternoon spent painting and refurbishing the center's dining area and bathrooms. PG&E's partnership with Habitat for Humanity provided a $37,500 grant to fund solar panels on three newly built homes. Not only do the solar panels help save families $500 a year on energy costs, but each panel also helps avoid the release of more than 132,000 pounds of carbon dioxide over the 30-year life of the system, or the equivalent greenhouse gas savings realized by recycling 20.9 tons of waste.

PG&E actively supports DCPP's local area through various specially targeted community investments programs, including:

PG&E Bright Ideas Grants: Teaching students about solar energy and conservation through a $10,000 grant for Arroyo Grande High School's solar education project.

Cal Poly Journalism: Enabling students to develop key employment skills through a $38,000 grant for state-of-the-art audio visual equipment.

Port San Luis Marine Institute: Advancing education for underserved students in San Luis Obispo and Santa Barbara counties through a $15,000 donation to ongoing environmental education efforts.

PG&E Ambassadors: Training 40 PG&E employee ambassadors to support community events and offer public speaking presentations throughout the region.

REACH (Relief for Energy Assistance through Community Help): Relieving families in need with $25,000 of assistance to help pay energy bills.

California Mid State Fair Heritage Foundation: Assisting the fairgrounds to save money and energy through a $25,000 donation to replace outdated lighting fixtures at the fairgrounds.

Food Bank Coalition of San Luis Obispo County: Funding energy efficiency upgrades and volunteering for the group's annual Hope for the Holidays and Hunger Awareness campaigns.

More online at: www.pge.com/myhome/edusafety

Volunteerism

PG&E recognizes that its employees are an integral part of the company's community outreach and improvement efforts. Collectively, employees volunteered 32,585 hours in 2011, assisting in a range of charitable efforts throughout Northern and Central California. In December of 2011, over 100 PG&E employees from across DCPP's local area worked with the non-profit Kaboom! and other community volunteers, collaborating to build a new playground at the Boys and Girls Club in Oceano. Over the course of a single day, the club's barren asphalt was transformed into an impressive playground, complete with a rock-climbing wall and a twisty slide. The project also included shade structures, murals and an outdoor classroom. The work required mixing 18,000 pounds of concrete and moving 105 yards of mulch – all done by hand with the help of PG&E volunteers. The day culminated with a ceremony in which PG&E's chief nuclear officer presented the group a $73,000 check in support of the project.

Employee Giving

In keeping with the company's goal to engage, support and improve the neighborhoods where its customers and employees live and work, San Luis Obispo and Northern Santa Barbara county employees pledged more than $429,000 to local organizations through PG&E's annual employee giving campaign.

6.2 Environmental Preservation/Land Stewardship

PG&E is proud of its long history of managing lands and waters in a responsible and environmentally sensitive manner. That commitment is exemplified by PG&E's preservation of the 12,820 acres that make up the land upon which Diablo Canyon sits. The land is comprised of 14 miles of pristine coastline extending from Port San Luis Harbor to Montaña de Oro State Park and stretches inland about a mile and a half to the peaks of the Irish Hills.

Diablo Canyon is located in a unique and sensitive biome, home to fauna like American peregrine falcon, brown pelican, southern sea otter and northern elephant seal. As DCPP has a vast network of pipes and wires traversing this habitat, PG&E has an obligation to protect these resources while performing operations to meet customers' expectations for reliability and service. Diablo Canyon's Land Stewardship Program was initiated to manage and protect natural and cultural resources, share these resources with communities and educational organizations, provide opportunities for sustainable agricultural practices and develop managed access to promote environmental appreciation. The Land Stewardship team consists of professionals from many disciplines including archaeologists, biologists, engineers, land planners and foresters who closely monitor the land.

PG&E's active stewardship of this natural resource includes livestock grazing, resulting in a healthier rangeland habitat that sustains native plant species while reducing invasive plant species. PG&E also allows researchers to explore the area's habitat and ecology. This includes archaeology students from nearby Cal Poly who, in partnership with PG&E, are engaged in a multi-year research project focused on the prehistory of the Pecho Coast, and State Parks, Cal Poly and CALFIRE presonnel who partner with PG&E to conduct prescribed burns to restore a closed-cone Bishop Pine grove.

The property also includes two scenic trails open to the public for hiking opportunities—the 3.3-mile Point Buchon Trail (round trip is 7.5 miles), and 3.75-mile Pecho Coast Trail (round trip is 8 miles). As part of PG&E's broader effort to promote environmental education, docent naturalists, who include plant employees, lead groups along Pecho Coast Trail and provide information about the location's history, cultural resources and biological diversity. The Point Buchon Trail is located on the northern end of the property, and in an effort to preserve the landscape, has a daily limit of 275 hikers. This 3.3-mile trail is accessed through Montaña de Oro State Park and allows hikers to enjoy the area's pristine coastline. PG&E has partnered with the California Coastal Commission, California Conservation Corps, and Cal Poly San Luis Obispo to protect resources from hiker impact and to conduct trail maintenance. Interpretive signage has been developed to provide the public an opportunity to appreciate the natural resources of the Point Buchon Trail and build awareness of the stewardship programs (such as rotational grazing programs and prescribed burns), that the Stewardship team has developed.

Additionally, the Pecho Coast Trail, which has been open since 1993, offers a hike to the beautiful 1890's Victorian Lighthouse located on the south end of the DCPP property. This docent-guided trail is available by reservation only, passing through a pathway close to the entrance of the plant's employee access road. This 1.75-mile hike affords access to beautiful rugged cliffs and broad coastal terraces as well as the newly restored Point San Luis Lighthouse. The trail continues another 2 miles up the coast to an ancient oak grotto.

PG&E has partnered with the California Coastal Commission, California Conservation Corps, Port San Luis Harbor District and Point San Luis Lighthouse Keepers (non-profit that maintains the Lighthouse) and many volunteers to conduct trail maintenance such as eradicating noxious weeds, and develop educational programs for underserved youth. Through its Land Stewardship Program, PG&E has preserved these areas that offer examples of the Central Coast in its natural, open space context.

For more information, please visit www.pge.com/myhome/environment/commitment

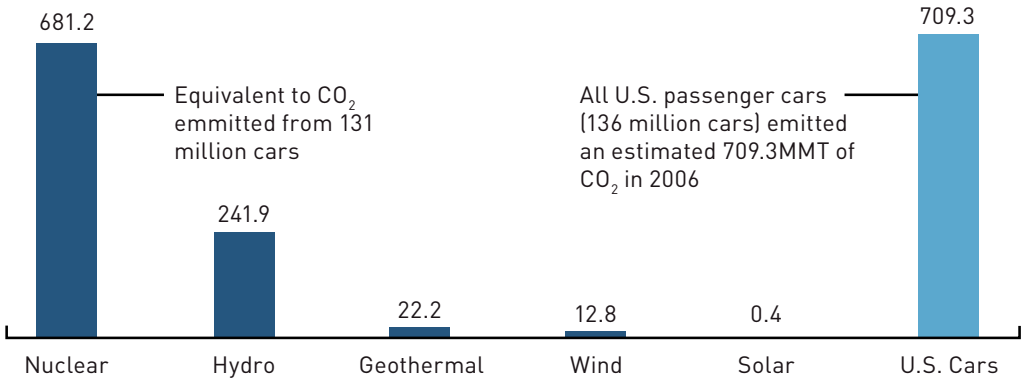
6.3 Air Quality

One of the most important aspects of environmental stewardship is the improvement of air quality. The Clean Air Act of 1970 set standards to improve the nation's air quality by establishing limits on the emission of nitrogen oxides (NOx), a precursor of ground-level ozone and smog; sulfur dioxide, which produces acid rain; particulate matter, such as smoke and dust; and mercury. In 1990, the U.S. Environmental Protection Agency amended the Clean Air Act by developing extensive regulations to reduce nitrogen oxides through creation of the Ozone Transport Commission and the NOx Budget Program to help reduce ground-level ozone in the Northeast and Mid-Atlantic states.

In 2009, the California Air Resources Board (ARB) established California's Global Warming Solutions Act (AB32), setting the goal of reducing GHG emissions to 1990 levels by 2020. Greenhouse gas reporting regulations were enacted, requiring regulated entities such as PG&E to prepare and submit annual greenhouse gas emissions inventories to the California Air Resources Board. December 2010, ARB adopted a cap-and-trade program to place an upper limit on statewide greenhouse gas emissions. This is the first state-level cap and trade program in the U.S. and took effect beginning 2012, with a limit that reduces by 15% over the life of the program (by 2020). It should be noted that the cap levels decrease by 2-3% per year even as the demand for electricity grows. As per AB32 requirements, PG&E began reporting greenhouse gas emissions from some of its facilities and operations to the U.S. EPA in 2011.

Nuclear energy is the world's largest source of nearly emission-free power generation. Nuclear power plants emit absolutely no carbon dioxide, nitrogen oxides or sulphur dioxides. Heat generates from fission rather than burning fuel, therefore producing no greenhouse gases or emissions associated with acid rain or urban smog. Using additional nuclear energy gives states increased flexibility in complying with clean-air requirements. For the year 2006, the Nuclear Energy Institute reported that U.S. nuclear plants prevented the emissions of almost 681.2 million metric tons of carbon dioxide. This is equivalent to removing 131 million U.S. passenger cars from service. In 2005, the 136 million U.S. passenger cars on the road generated an estimated 709.3 million metric tons of CO_2 (See Figure 30). According to the World Nuclear Association (WNA), "For every 22 tons of uranium used, one million tons of CO_2 emissions is averted."

FIGURE 30: U.S. ELECTRICITY POWER INDUSTRY CO_2 AVOIDED MILLION METRIC TONS, 2006



Source: Nuclear Energy Institute (NEI)

Nuclear power plants like DCPP emit virtually no greenhouse gases (GHGs) during the production of electricity. According to testimony by PG&E, DCPP avoids emitting seven to eight million tons of GHGs per year that would otherwise be produced by conventional generation sources, such as fossil fuel plants.[17] PG&E's most recent independently verified CO_2 emissions rate of 575 pounds of CO_2 per MWh is about half the national average among utilities. As a charter member of the California Climate Action Registry, PG&E was the first investor-owned utility in California to complete a third-party-verified inventory of carbon dioxide (CO_2) emissions in 2003. In 2009, PG&E began voluntary reporting to The Climate Registry, a non-profit organization that sets consistent and transparent reporting standards for North American businesses and governments. PG&E is a founding member of The Climate Registry. In addition, PG&E has participated in the Carbon Disclosure Project since 2005. PG&E's annual submission provides additional detail on our actions related to climate change and our greenhouse gas emissions profile.

[17] Pacific Gas & Electric Company 2014 General Rate Case Prepared Testimony Exhibit (PG&E-6) Energy Supply, November 15, 2012

6.4 Emergency Planning and Preparedness

Diablo Canyon Power Plant is one of the safest and most secure industrial work environments in the country. Multiple layers of physical security, together with high levels of operations performance, protect plant workers, the public, and the environment. However, natural and man made disasters can strike, leaving devastation in their wake, such as the tsunami that hit Japan in March 2011. The timing and location of disaster events cannot accurately be predicated, but preparations can help mitigate their consequences.

PG&E strives to ensure DCPP's local counties have the resources they need to discharge the serious responsibility of emergency preparedness, planning and response in the event of radiological incident and/or the many other types of emergencies that could occur. PG&E has gone well beyond the scope of what is required by then Assemblyman Sam Blakeslee's AB 292: "Nuclear Emergency Preparedness Funding, San Luis Obispo County" regulation. The law requires that local governments located near operating nuclear power plants develop and maintain emergency response plans with the utility, with all associated costs of plans reimbursed by the utility to the local government.

PG&E's 2012 budget forecast of expenses related to DCPP's offsite emergency preparedness exceeds $4 million. The State of California Nuclear Power Preparedness Fund, which supports State, County and local emergency response organizations, receives approximately $2.9 million dollars. Approximately $628,000 goes to support the Federal Emergency Management Agency (FEMA) exercise evaluation and program at DCPP.

Nearly $330,000 is spent annually on a number of programs meant to educate the public on emergency preparedness: PG&E places full-page advertisements in local telephone directories as the primary means for providing updated emergency preparedness information to the public; PG&E produced an emergency preparedness information calendar distributed throughout the DCPP Emergency Planning Zone (EPZ) as a handbook for planning special needs and protective actions; PG&E distributes siren information stickers for local businesses, parks and recreational areas within the DCPP EPZ; and PG&E assists in the funding of "No Assistance Required," a San Luis Obispo County Office of Emergency Services program that focuses on special needs population. This program helps special needs individuals to notify emergency responders that they have safely evacuated following an emergency.

Other Offsite Emergency Expenses:

Evacuation Time Estimate (funded under EP Rulemaking Project) - $250K

Offsite meteorological equipment maintenance support contract - $250K

Radiological monitoring equipment calibrations and dosimetry replacements - $45K

American Red Cross, local hospital and EMS support agreements - $30K

Contractor / staff augmentation for offsite exercise development - $20K

Joint Information Center video, mock media and spokesperson training - $20K

Annual siren test volunteer support agreement - $10K

State of CA / National Radiological Emergency Preparedness conference support - $7.5K

According to Victor Dricks, senior public affairs officer for NRC Region IV, the Commission conducted a nationwide review of nuclear power plants for their capacity to respond to earthquakes, power outages and other catastrophic events, and Diablo was found to have "a high level of preparedness and strong capability in terms of equipment and procedures to respond to severe events."[18]

Aside from the strong financial relationship between DCPP and the local emergency service offices, PG&E champions public education of emergency preparedness by sponsoring fun and exciting events for the community, such as a recent Preparedness Expo with the American Red Cross (ARC).

PG&E provided the ARC with $2.5 million to support their Ready Neighborhoods program, which improves disaster readiness throughout the utility's territory.

On March 20, 2012, more than 1,000 people received information on how to prepare for a natural disaster at the San Luis Obispo Veterans Hall, which provided a one-stop, public forum that touched on everything from CPR to seismic safety. About 20 local businesses, public safety agencies and service organizations also participated, including The Listos Program.

The Listos Program is a Spanish language disaster preparedness curriculum based in CERT (Community Emergency Response Team). PG&E is a proud supporter of Listos, which means "ready" in Spanish, and is a series of emergency preparedness courses that encourages the Spanish-speaking community to prepare for disasters and prepares residents to develop family communication plans, build specialized emergency kits, and teaches use of fire extinguishers and home utilities shut off in case of a disaster. In 2012, PG&E helped to expand the Listos Program beyond Santa Barbara County into San Luis Obispo with a $25,000 charitable grant.

[18] Dricks, Victor. *The Santa Barbara Independent* "The Eyes on Diablo." Independent.com.

6.5 Housing Values

DCPP is an economic mainstay of San Luis Obispo and Santa Barbara counties, providing more than 1,483 high-paying head-of-household jobs, well above the average county wage. Unitary taxes paid by DCPP fund a large part of local school districts budgets and provide levels of public and educational services that are far above those in surrounding counties. Dispite the positive indicators of the economic benefits of DCPP, some opponents believe nuclear facilities have a negative impact on real estate and property values and public and social services. However, a study published in 2006 by Roger H. Bezdek and Robert M. Wendling concluded that in areas close to nuclear power plants, total property values, assessed valuations and median housing prices were often increased at rates above the national and state averages.[19] The study found that in each of its seven study regions, housing prices were several times higher than prior to the opening of the nuclear facilities. Furthermore, the study concluded that the presence of a nuclear facility actually protected property values during periods of relative economic decline by providing stability and steady employment. It is impossible to quantify housing price increases resulting from DCPP due to the complexity of factors affecting prices.

Currently, the median house price in San Luis Obispo County is $365,000. An increase in new home inventory increases the prospect of owning a home (as opposed to renting), encouraging buyers to enter the housing market and creating the opportunity for the market to correct itself. The average rent for a three bedroom house is $1,456, whereas the payment for the median house is $1,455 (3.5% for 30 years). With an average salary of $136,500 and a current interest rate of 3.5 percent, a DCPP employee could qualify for a loan in excess of $736,000. The question of whether someone would purchase a home versus rent is personal, and doesn't always follow the ability to afford. Therefore, it is inconclusive whether the presence of DCPP actually increases home prices or not.

[19] Bezdek, Roger H., Wendling, Rober M. "The impacts of nuclear facilities on property values and other factors in the surrounding communities", *Int. J. Nuclear Governance, Economy and Ecology*, Vol. 1, No. 1, 2006.

Section 7: Conclusion

As an integral part of San Luis Obispo and Northern Santa Barbara counties, the economic impacts of Diablo Canyon Power Plant are real. Expenditures, jobs, tax revenues, economic impact, labor income, and contributions to the local economy make DCPP one of the most valued economic assets on the Central Coast of California.

Capturing all the economic activity generated by DCPP is difficult. This study does manage to capture the majority of it, although because of our anaylsis methodology, it does tend to produce conservative results. To more closely estimate the impacts, future studies could be performed for a detailed look at the economics of plant upgrades/modifications and unit refuelings. During these events, many out-of-town contractors descend on the local area, spending money in local hotels/motels, rentals, retail goods, food services and gasoline. Although there is generally a reduction in electricity generated during these activities, local economic activity increases dramatically.

Depending on outcome of future re-licensing activites, the opportunity costs for the local area are great. Non-license renewal will not only affect 2024 and beyond, it will also affect the near future, as plant modifications/upgrades to extend the life of the plant will no longer be necessary. Quantifying and understanding the economic impacts of DCPP is an important piece of the puzzle for the future of DCPP and the local area.

Glossary

AB292: Assembly Bill 292-Nuclear Emergency Preparedness Funding, San Luis Obispo County

Assembly Bill 32-California Global Warming Solutions Act (AB32): Specified greenhouse gas reduction goals for the State of California. Passed in 2006

ARB: California Air Resources Board

BLS: Bureau of Labor Statistics

BOE: State Board of Equalization

Capacity Factor: Output proportion of nomial full-power capacity

Diablo Canyon Power Plant Emergency Planning Zone (DCPP EPZ): An approximate 10 mile area around a nuclear power plant determined by the Nuclear Regulatory Commission and Environmental Protection Agency

Direct Impact: Total value of the good or service generated by the business or activity being analyzed (value of electricity generated at DCPP)

FEMA: Federal Emergency Management Agency

GDP: Gross Domestic Product

Greenhouse Gases (GHG): Atmospheric gases that contribute to the greenhouse effect. Greenhouse gases absorb and emit infared radiation and include: water vapor, carbon dioxide, methane, nitrous oxide and ozone

GRP: Gross Regional Product

GWh: Gigawatt hours

ICE: Intercontinental Exchange

IMPLAN: Economic modeling software developed at the University of Minnesota and was later spun off as a private firm, the MIG

Indirect Impact: Revenue generated by other firms

Induced Impact: Change in household expenditures

Institute of Nuclear Power Operations (INPO): Formalized group to provide safety and reliability assistance to the nuclear power industry. Services include: plant evaluations, training and accredidation, events and analysis information exchange and operations assistance

IRA Value: Imputed Rental Activity

ISAR: Industrial Safety Accident Rate

ISFSI: Independent Spent Fuel Storage Installation

KV: Kilovolt

MIG: Minnesota IMPLAN Group

MW: Megawatt

MWh: Megawatt hours

NAICS: Northern American Industry Classification System

NEI: Nuclear Energy Institute

NoX: Nitrogen oxides

NRC: Nuclear Regulatory Commission

NREP: National Radiological Emergency Preparedness

San Luis Obispo OES: San Luis Obispo County Office of Emergency Services

OSHA: Occupational Safety and Health Administration

O&M: Operating and Maintenance

Proposition 13: Passed in California in 1978 and established a fixed property tax rate of 1% of assessed value (plus amounts required to repay any assessment bonds approved by the voters)

PWR: Pressurized water reactors

RCLD: Replacement Cost New Less Depreciation

ROP: Reactor Oversight Process

Unitary Taxes: State corporate taxes on a corporation's global income

U.S. EPA: United States Environmental Protection Agency

Watt-Hour (Wh): Unit of measurement for electrical energy used in a circuit by a load of one watt of power for one hour

WANO: World Association of Nuclear Operators

WNA: World Nuclear Association

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