

DECOMMISSIONING STUDY FOR ALAMEDA

DRAFT Capital Cost Estimate

B&V PROJECT NO. 193130
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PREPARED FOR

Northern California Power Agency

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Executive Summary

Black & Veatch has evaluated the potential costs to decommission and demolish CT1 Alameda¹ and has defined other associated issues. This study includes the following activities associated with retiring Alameda:

- **Decommissioning** – Analyze the Alameda systems to determine cost effective options for demolition and salvage of materials.
- **Environmental** – Identify potential environmental hazards associated with Alameda.
- **Capital Cost Estimate** – Develop cost estimates for demolition of plant equipment in today's dollars and, using Producer Price indexes, project future project capital costs.

For the purpose of this study, retirement and decommissioning both refer to the formal process of removing an electric generating unit, and other associated equipment, from active service in a manner that it can no longer be used to generate electricity. Demolition is defined as the tearing down and removal of equipment, buildings, and structures (while potentially preserving valuable components and materials for reuse). Demolition does not refer to the process or actions taken to remove a piece of equipment for resale and reuse, which is more involved and typically requires skilled labor.

Black & Veatch has determined that the estimated capital cost to decommission and demolish Alameda is estimated at \$7,700,000.

¹ This retirement, decommissioning, and demolition study is not intended to be, and should not be construed as, advice concerning legal obligations or a recommendation concerning the timing, scope or necessity to conduct any related activity. Black & Veatch has assumed that the limited information, both verbal and written, provided by others is complete and correct; however, Black & Veatch does not guarantee the accuracy of the information, data, or opinions contained herein.

1.0 Introduction

1.1 FACILITY DESCRIPTION

The Alameda facility is located in Alameda, California within Alameda County and owned and operated by Northern California Power Agency (NCPA). The site of this facility is at a previous Navy shipyard industrial facility. This facility is a 2x0 Peaker utilizing Frame 5 gas turbines in a Nuevo Pignone package. The gas turbine is dual fuel fired from either natural gas, supplied by Pacific Gas & Electric at an interconnection approximately 1 mile away, or by diesel fuel stored in an on-site storage tank. It uses water injection and has an evaporative cooler. There is a diesel engine used as a starting motor and the facility uses a FM200 fire protection system. Water and waste water are serviced by the City of Alameda through city interconnections on-site. Alameda has similar equipment models to Lodi CT1 facility.

NCPA owns, operates, and maintains an underground natural gas pipeline from the point of interconnection with the Pacific Gas & Electric (PG&E) pipeline to the site. In addition, there is a groundwater monitoring well on-site.

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2.0 CT1 Alameda Demolition Project Approach

Black & Veatch's project approach was split into several tasks. These include:

- Review of data provided by NCPA.
- Desktop review of demolition of Alameda's equipment².
- Consider environmental hazards associated with the Alameda demolition process.

Black & Veatch's approach to estimate these costs was based on the use of a proprietary estimating spreadsheet developed for previous generating station decommissioning and demolition studies. Where possible, configuration data from Alameda's and Lodi's drawings, and other technical resources provided by the NCPA was used to populate the spreadsheet. When site specific data was not available, typical data was supplemented from Black & Veatch in-house databases and information from previous projects. A general set of decommissioning assumptions was developed to guide the basis of the analysis based on the project kick-off conference call held on July 28, 2016. These discussions focused on safety and security requirements, potential hazardous materials that would be encountered during demolition, equipment to remain in service, and final site condition requirements.

A decommissioning and demolition (D&D) plan, including a constructability analysis, was not completed as part of this estimate. It is recommended for the next phase of this project that a D&D plan is developed as it is a valuable roadmap to the deconstruction, final functionality (as applicable), and appearance of the facility and is recommended as part of any future project. This document can further define the project and enhance the accuracy of the cost estimate.

Based on discussions with NCPA, Alameda facility is breakdown into five groups which are reasonable depictions of facility systems for the purposes of this estimate. The systems for each group include the following and are illustrated in Appendix A:

- Group 1 includes fuel oil tank, fuel oil berm, fuel oil forwarding skid and fuel oil filter skid.
- Group 2 includes natural gas line connection, gas compressors, combustion turbines, oil chillers, other combustion turbine equipment, and switch building.
- Group 3 includes demineralizer buildings, demineralizer tank, other water treatment equipment, admin building and other buildings.
- Group 4 includes natural gas line to the plant.
- Group 5 includes transmission line area.

The following sections describe the assumptions and observations based on review of the available information and the site visit conducted on August 26, 2016 to support this cost estimate.

² Per conference call conducted with NCPA on June 29, 2016, it was understood that the Lodi and Alameda sites have identical equipment with the exception of the Alameda site having an additional turbine and slightly larger switchyard. Black & Veatch also reviewed and used the Lodi facility data in assessing demolition of equipment at the Alameda facility.

2.1 SCENARIO SPECIFIC ASSUMPTIONS

For purposes of the cost estimate, Black & Veatch's general assumptions include the following:

- The cost estimate has an accuracy level equivalent to AACE Class 4.
- The availability of supporting information for the decommissioning study was limited. This includes quantities and weights of equipment and materials, Engineering Data Manuals, and construction contractor "close-out" manuals or reports. Wherever specific quantities were not readily available, Black & Veatch used estimates and typical quantities based on our experience and previous projects to populate the cost development spreadsheets.
- The Alameda equipment to be decommissioned and demolished will be modified and put into in a safe and secure condition by NCPA with no effort to preserve the equipment for later return to service or sale of equipment on the grey market.
- All equipment and materials are considered for scrap value only; no equipment salvage values were utilized. No resale or reuse of the plant components was included as part of the costs.
- Nonessential equipment and systems will be prepared by NCPA for permanent shutdown and removal.
- The substation and switchyard will be demolished.
- Where possible, nonhazardous (non-salvageable) materials from the decommissioning and demolition activities will be disposed off-site in a nearby landfill. Costs have been included to haul materials up to a distance of 50 miles.
- It has been assumed that hazardous materials are not present on the facility equipment and hazardous materials will not need disposal. However, NCPA has indicated that the soils at this previous Navy shipyard industrial facility are contaminated. Therefore, remediation and removal of these soils will be required both for the site, switchyard, and along the natural gas pipeline route.
- Concrete and asphalt materials will not be used as on-site backfill material, but rather will be hauled to a landfill.
- The estimate assumes that all concrete and rebar will be taken off site by the demolition contractor and none will be pulverized and recycled on-site.
- All materials and equipment used to operate the CT1 Alameda equipment will be removed by NCPA and associated costs or revenue are not included in the estimate. These include:
 - Plant operating fuels (i.e., fuel oil).
 - Chemicals.
 - Fluids in tanks, pipes, barrels, storage areas, and other container and media.
 - Spare parts, tools, etc.
 - Any equipment that is not tied down by anchor to the foundation.
 - All mobile equipment and vehicles (as applicable).
 - Disposal of office furniture, office equipment, and spare parts inventory were not considered.
- The estimate assumes that all the identified plant systems for decommissioned equipment will be de-energized, drained and tagged-out of service by NCPA.

- Construction power and potable and non-potable water is assumed to be available at the facility for decommissioning activities.
- The facility's current security fence will be used during construction to control access to the decommissioned area during demolition activities and will be removed for soil remediation and final site grading.
- Plant insurance, legal fees, permits, and property tax adjustments, other administrative fees, and other potential community engagement costs are not included.
- The duration of this decommissioning scenario is 12 months.

2.1.1 Civil/Structural Observations

2.1.1.1 Scenario Specific Assumptions

- Remove foundations to a depth of 4 feet.
- Foundations such as the oil/water separator will be removed to a depth of 4 feet. The existing bottom slab shall be broken up to allow for water drainage (as applicable).
- Excavation of soil within the property lines to a depth of 4 feet. Installation of a clay and geotextile liner then backfill with clean soil. For this analysis, the excavated soils were considered hazardous waste and were assumed to be disposed of at an appropriately permitted facility.
- Natural gas line will be excavated to PG&E's interconnection point. The excavation trench will be assumed to be 5 feet wide (the width of the easement) and 5 feet deep. The trench will then be backfilled with clean soil and brought back to existing conditions such as grass, asphalt, or sidewalk. Excavated soils were considered hazardous waste and were assumed to be disposed of at an appropriately permitted facility. A clay and geotextile liner was not installed.
- Black & Veatch assumed that the whole switchyard is being decommissioned and the soils will also require remediation and excavation like the main plant and the natural gas line. Installation of a clay and geotextile liner then backfill with clean soil. However, as the City of Alameda will need the breakers as these are part of their ring bus, these will be left intact. Excavated soils were considered hazardous waste and were assumed to be disposed of at an appropriately permitted facility.
- Site will be seeded with native grass or vegetation. However, it should be noted that the area surrounding this site is an industrial facility with a gravel surface.
- Solid waste line will be terminated at the plants property line located at the North East corner of the lot (near the natural gas line).
- Potable water line will be removed and terminated at the city's connection point located at the South West corner of the lot just outside the fence line.
- Potential cost to acquire associated permits and approvals to excavate, transport, and dispose of soils considered hazardous material were not considered. Additionally, no costs associated with any potential liability or future risk for the site or the disposal of hazardous materials in another location have been considered.

2.1.1.2 Civil/Structural Observations

The demolition of the Alameda facility will consist of complete removal of all buildings, foundations and utilities to a depth of four feet below grade and returning the site to natural conditions. Soil within the property lines will also be excavated to a depth of four feet and disposed of offsite in a hazardous waste disposal location because of intrusion of oil from the local area. A geosynthetic clay liner will be installed and backfilled with clean soil to prevent any additional oil intrusion. The area will be replanted with native vegetation.

All demolitions activities could not be contained within the NCPA lease area due to size constraints. It has been assumed that normal demolition activities should be able to be contained inside the existing NCPA boundaries but additional land for laydown area, contractor trailers will be required. To help facilitate the removal of the equipment the area to the north of the turbine should be evaluated to see if it can be used as a laydown area for waste material and for a crane.

The natural gas supply line should be evaluated by NCPA to see if backfilling, capping, and abandoning in place is an option. Due to the relatively long run of pipe the cost to remove the pipe and return the area to natural conditions is considerably expensive due to the soil being considered hazardous waste.

2.1.2 Mechanical Observations

Alameda is a simple cycle facility with very little complication for demolition regarding mechanical items.

The following CT1 Alameda major equipment will be removed during the demolition process:

- Combustion Turbines
- Gas Compressors including Fuel Gas Receivers, Fuel Gas Filters
- Fuel Gas Metering Station
- Fuel Oil Storage Tank
- Fuel Transfer Pumps
- Fuel Oil Filter Skid
- Fuel Forwarding Pumps
- Fuel Oil Head Tank
- Air Compressor Skids including Compressors, Dryers and Receivers.
- Lube Oil Coolers
- Demineralizer Water Storage Tank
- Demineralizer Water Chemical Skid
- Water Injection Skids

2.1.3 Electrical Observations

Electrical and Control scope at Alameda includes removal of all the electrical generation and unit distribution systems. The removal includes all the associated cable, raceway and miscellaneous components connected to these equipment. The plant lighting and grounding system has also been identified for removal.

Please note the following:

- The whole switchyard is assumed as being decommissioned. However, City of Alameda might want the breakers to be left in since it is part of their ring bus. Appendix B contains an illustration of this system separation.
- Sulfuric Acid Batteries at the CTs will be disconnected and disposed by NCPA prior to the demolition and is not included in the estimate.

2.1.3.1 Removal of Alameda Equipment

The following is a list of major electrical equipment that has been identified for removal:

- Aux Motor Control Center 4, 480V, 600A, Vertical Sections - Manufacture SIEMENS-ALLIS 115.
- Station service Motor Control Center 4, 480V, 600A, Vertical Sections - Manufacture SIEMENS-ALLIS 115.
- (2) Motor Control Centers 4, 480V, 800A, Vertical Sections - Furnished by Owner & Installed by GE.
- 4.16kV Gas Compressor switchgear.
- (2) Main Transformers 32MVA 13.5kV-115kV.
- (3) Station Service Transformer 300kVA, 13.8kV-480V.
- (2) Station Service Transformer, 1500kVA, 13.8kV-4.16V.
- (4) 480-220V, Transformer.
- Metering Panel Back feed.
- (5) Relay Control Panels.
- (2) AC Power Panels.
- (2) DC Power Panels.
- (9) Distribution Panels.

2.2 HAZARDOUS MATERIAL SCOPE ASSUMPTIONS³

The retiring and disposing of a power plant can require close coordination with the regulatory agencies. There are several groups which administer regulations associated with air quality, surface water quality, ground water quality, solid waste management, hazardous waste, and petroleum storage tanks. There are no regulations which relate specifically to the dismantling of electric generating plants. The existing permits may contain limited closure guidelines or specific conditions. However, as more power generating facilities are retired these requirements could evolve in future years. Black & Veatch did not consult with or seek clarification from government agencies to confirm current or future anticipated decommissioning permitting requirements and processes. Therefore, during the next phase of the study, it is recommended that NCPA work closely with the various agencies during the planning stage to identify and negotiate specific closure requirements.

Based on discussion with plant staff, there is minimal history of chemical and oil product spills and leaks at Alameda and no documentation regarding surface or subsurface contamination. Therefore, it has been assumed that no surface remediation will be required. However, as previously noted Black & Veatch has assumed subsurface contamination. Additionally, based on conversations with NCPA staff the equipment does not contain hazardous materials such as asbestos or lead paint.

2.3 COST ESTIMATE

2.3.1 Estimate Description

The decommissioning and demolition costs provided in Table 2-1 were prepared based on the assumptions and observations defined in this report. The estimate is expressed as overnight costs and excludes any forward escalation. The estimates are considered to have an AACE Class 4 accuracy level.

2.3.2 General Cost Estimate Assumptions/Clarifications

- The cost estimate is primarily based on a dismantling method that utilizes torches, shears, and other heavy equipment rather than generally utilizing explosives.
- The plant does not have sufficient lay down areas for staging demolition equipment, contractors' trailers, and temporary storage and breakdown of demolished materials. Additional space has assumed be available and leased by the owner of the adjacent area for the period of the project.
- Credits for the resale of scrap metals is included for structural steel, tank metals, compressors, pumps, piping & valves, cable and conduit and electrical equipment.
- The estimate assumes that all scrap metal, such as: structural steel, miscellaneous steel, conduit, cable, piping, valves and equipment, will be cut to size on site for transporting in roll-off containers and 40' trailers for transporting to the nearest landfill and/or recycling centers (assumed within 50 miles of the plant). Costs for transportation are included in the scrap unit pricing in 2016 dollars.

³ This this information is a descriptive narrative only and does not constitute an opinion regarding the means and methods of hazardous materials identification or removal. An analysis has not been performed and this is not intended to review and evaluate the regulatory or legal requirements for identification, abatement, or remediation of hazardous materials. It is Black & Veatch's intent that these requirements will be evaluated by the qualified contractors through the solicitation of services during various stages of the project.

- Scrap prices for materials can be estimated when detailed material quantities are available from historical data from previous demolition study estimates, vendor estimates, or industry internet sites like Iron Mike’s Scrap Metal Services. Due to the limited detail material quantity information scrap value pricing was based on a combination of current internet pricing and 5 percent to 25 percent of the demolition costs were assumed for various equipment and materials. It should be noted that scrap values are subject to change based on daily market conditions. Each combustion turbine equipment scrap value is assumed to be approximately \$4.5 Million.
- All costs are expressed in current day December 2016 U.S. dollars. Escalation is not included in this cost but is addressed in the next section.
- Wage rates are based on the state of California’s Department of Industrial Relations labor rates⁴. A labor study was not performed.
- Direct costs include the costs associated with equipment rental, demolition and all contractor services.
- Demolition costs for the estimate include all contractor overhead, staff, indirect costs, and profit.
- The decommissioning cost estimates are based on an EPC contracting approach.
- The cost for hazardous soils material abatement/removal is an allowance and is not based on any analysis, vendor quotation, or quantification of the actual plant soils or analysis data. The costs do include hauling materials approximately 75 miles to a permitted facility such as the Foothill Sanitary Landfill⁵.
- Contingency of 15 percent is included as an allowance for site unknowns. Time constraints and limited plant-specific information are the primary drivers of this level of contingency. This added contingency value is independent of the project costs estimate, confidence level for estimate accuracy, and goes beyond the noted project assumptions. This value has been included to capture those unforeseen project costs not identified within the scope of the project.

The estimates are based on limited information provided and supplemented with Black & Veatch estimate data for similar type and size units. Salvage value estimates are based on typical salable materials and estimate quantities. Decommissioning costs and salvage values are presented in 2016 dollars. Table 2-1 summarizes the estimated decommissioning and demolition costs for the Phases.

2.3.3 Special Considerations

Several special considerations could alter these estimated decommissioning costs, including on-site investigation, identification of actual equipment and material weights, changes in environmental legislation, changes in economic considerations such as labor rates, demolition costs, or scrap values, changes disposal regulations/methods, costs for hazardous materials abatement (if found to be applicable), changes in contracting methodology, allocations for engineering and construction management, project contingency costs, changes to the location demolition materials are disposed, or a change in the future use of the site.

⁴ <http://www.dir.ca.gov/OPRL/2016-2/PWD/index.htm>

⁵ 2015 tipping fees were approximately \$35. No additional costs were included to for long-term risk of disposing of hazardous materials at this location to mitigate future risks.

Table 2-1 Decommissioning and Demolition Capital Cost Estimate Summary

	LABOR COST	SUBCONTRACTOR COST	SALVAGE COST	TOTAL
Group 1	\$419,000	\$230,000	-\$24,000	\$625,000
Group 2	\$6,626,000	\$312,000	-\$9,879,000	-\$2,941,000
Group 3	\$658,000	\$372,000	-\$104,000	\$926,000
Group 4	\$822,000	\$181,000	-\$25,000	\$978,000
Group 5	\$492,000	\$85,000	-\$41,000	\$536,000
Demo Subtotal				
Demo Subtotal	\$9,017,000	\$1,180,000	-\$10,073,000	\$124,000
Construction Indirects				
Construction Indirects	--	--	--	\$3,843,000
Construction Equipment				
Construction Equipment	--	--	--	\$1,803,000
Engineering and Construction Management (10%)				
Engineering and Construction Management (10%)	--	--	--	\$902,000
Contingency (15%)				
Contingency (15%)	--	--	--	\$1,001,000
Demo Total				
Demo Total	\$9,017,000	\$1,180,000	-\$10,073,000	\$7,673,000

3.0 Cost Model Updating

3.1 INTRODUCTION

Black & Veatch understands that NCPA would like to utilize Black & Veatch's Cost Model at a future point in time without the need to fully re-perform the cost estimation exercise. Black & Veatch believes that the estimated amounts as shown in the Cost Model should remain materially accurate for a period of five to seven years, subject to adjustment for inflation. In order to allow the Cost Model to refresh the cost estimates as needed in the future, Black & Veatch has developed an escalation tool to estimate the future value of the cost estimates.

3.2 METHODOLOGY

Black & Veatch has built an escalation mechanism to adjust the 2016 Cost Model estimates to a desired future year using the U.S. Bureau of Labor Statistics (BLS) Producer Price Index (PPI). PPI measures the average change over time in the selling prices received by domestic producers for their output, and is reported on a monthly basis by the BLS for hundreds of categories of domestic producers. In order to allow for the update of the Cost Model, Black & Veatch has selected the four indices shown below in Table 3-1.

Table 3-1 Summary of PPI Assumptions

COST MODEL ITEM	PPI	SERIES ID
Indirect Costs	Engineering Services	PCU54133-5413
Direct Costs	Municipal utility and power generation and distribution engineering projects	PCU541330541330202
Construction Equipment	Construction equipment rental and leasing	PCU5324125324121
Scrap Value	Carbon Steel Scrap	PCU42993042993011

Black & Veatch has built two optional methods for updating the Cost Model using the above PPI, as summarized below:

- **Extrapolation:** The historical average annual percent change for an index (adjusted to exclude outlier years) is assumed to reasonably represent escalation for that cost category over the near term future, and the cost category is escalated at a fixed annual growth rate from the base year to the escalation year. The annual average was adjusted to omit any outlier years, defined as years in which the year-over-year growth fell outside of two standard deviations from the mean (excluding the 5 percent most extreme data).
- **Actual Value:** Because PPI is reported as an absolute index value and not a relative percentage growth rate, if a PPA values is known for both the base year and the escalation year, a cost category may be escalated proportional to the ratio of the escalation year's PPI value to the base year's PPI value. Black & Veatch has documented the latest September 2016 PPI value for each cost category, than may be compared to the actual future PPI value when the Cost Model is refreshed to reflect actual escalation.

The rationale for choosing each PPI, as well as the resulting fixed annual growth rate, is discussed in the following subsections.

3.2.1 Direct Costs

Black & Veatch has chosen the PPI “Municipal utility and power generation and distribution engineering projects” to represent escalation for estimated Direct Costs. Per the Cost Model methodology, Direct Costs are calculated as the value of contract or subcontracted labor and consumables to be utilized on the Project site. The chosen PPI reports the blended value of both services and goods typically required to construct utility or municipality scale power projects, which should utilize materially similar resources to the studied decommission scope.

The Municipal utility and power generation and distribution engineering projects index is a relatively new PPI, which has only been reported by the BLS since 2009. However, it has historically shown relatively consistent annual growth. A summary of this PPI, including actual annual percentage growth, average annual percentage growth, and adjusted annual average percentage growth is shown in Figure 3-1 below.

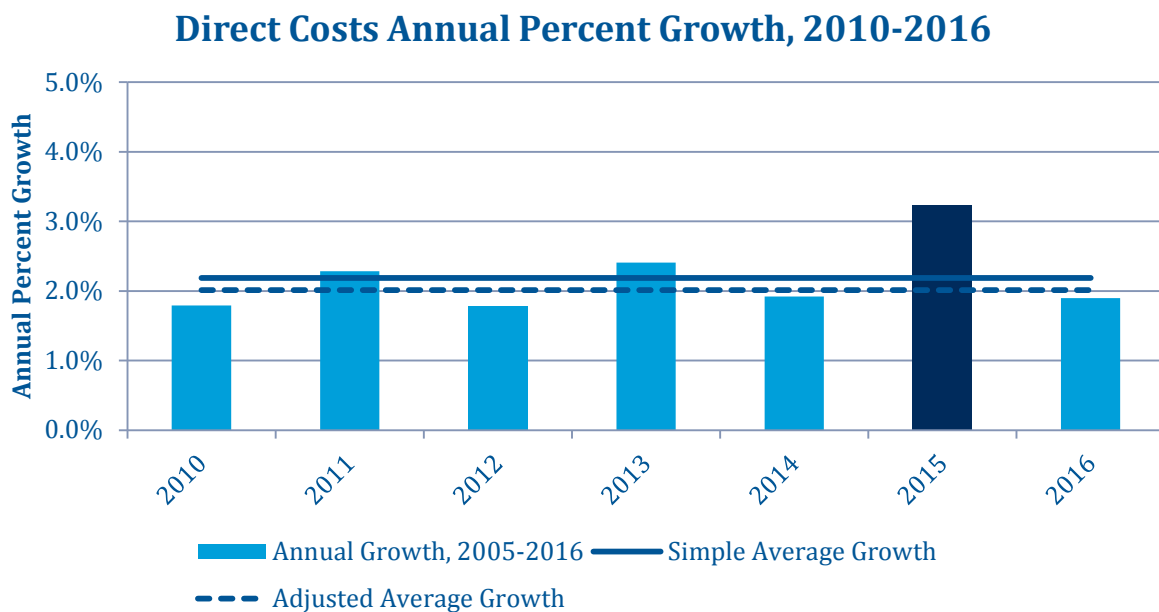


Figure 3-1 Direct Costs Annual Percent Growth, 2010-2016

As shown in Figure 3-1, Black & Veatch has calculated a simple historical average annual growth rate of 2.2 percent and an adjusted average annual growth rate of 2.0 percent when 2010 is omitted.

3.2.2 Indirect Costs

Black & Veatch has chosen the PPI “Engineering Services” to represent escalation for estimated Indirect Costs. Per the Cost Model methodology, Indirect Costs are calculated as the value of offsite labor, predominately engineering and project management. The chosen PPI reports the value of diversified engineering services.

The Engineering Services index has been reported by the BLS since 2004. A summary of this PPI, including actual annual percentage growth, average annual percentage growth, and adjusted annual average percentage growth is shown in Figure 3-2 below.

Indirect Costs Annual Percent Growth, 2005-2016

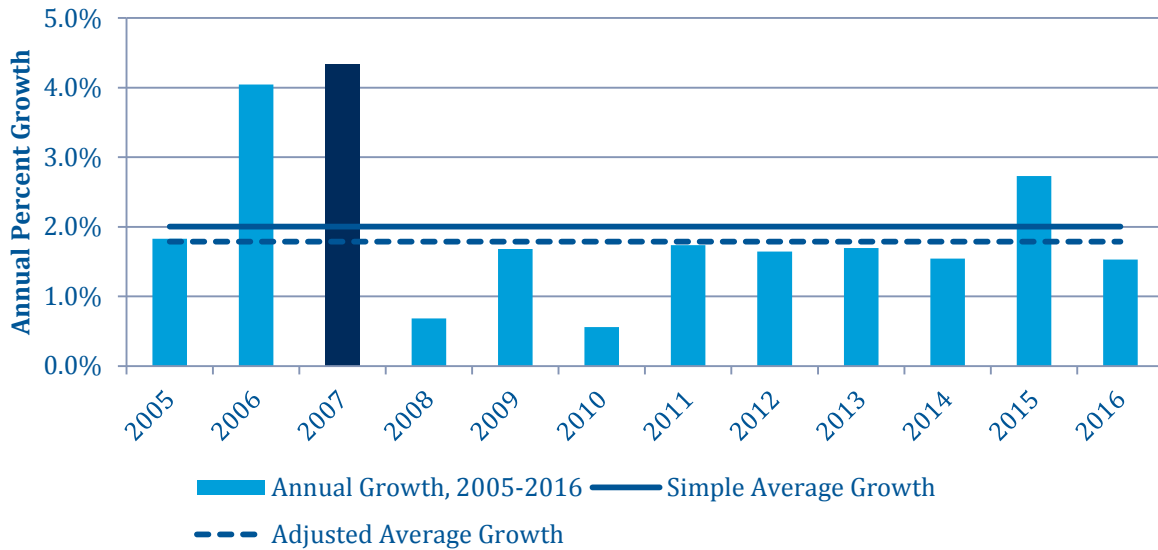


Figure 3-2 Indirect Costs Annual Percent Growth, 2005-2016

As shown in Figure 3-2, Black & Veatch has calculated a simple historical average annual growth rate of 2.0 percent and an adjusted average annual growth rate of 1.8 percent when 2007 is omitted.

3.2.3 Construction Equipment

Black & Veatch has chosen the PPI “Construction equipment rental and leasing” to represent escalation for estimated Construction Equipment Costs. Per the Cost Model methodology, Construction Equipment Costs are calculated as the value of the non-consumables equipment that is required to execute the demolition scope. The chosen PPI reports the value of construction equipment rental. Black & Veatch notes that the contractor performing the decommissioning work may choose to utilize owned equipment instead of rental; however, while the absolute value of renting versus owning equipment will vary, the overall market value trends should be linked and for relative annual growth assumptions, the chosen PPI should be applicable to both scenarios.

The Construction equipment rental and leasing index has been reported by the BLS since 2004. A summary of this PPI, including actual annual percentage growth, average annual percentage growth, and adjusted annual average percentage growth is shown in Figure 3-3 below.

Construction Equipment Annual Percent Growth, 2005-2016

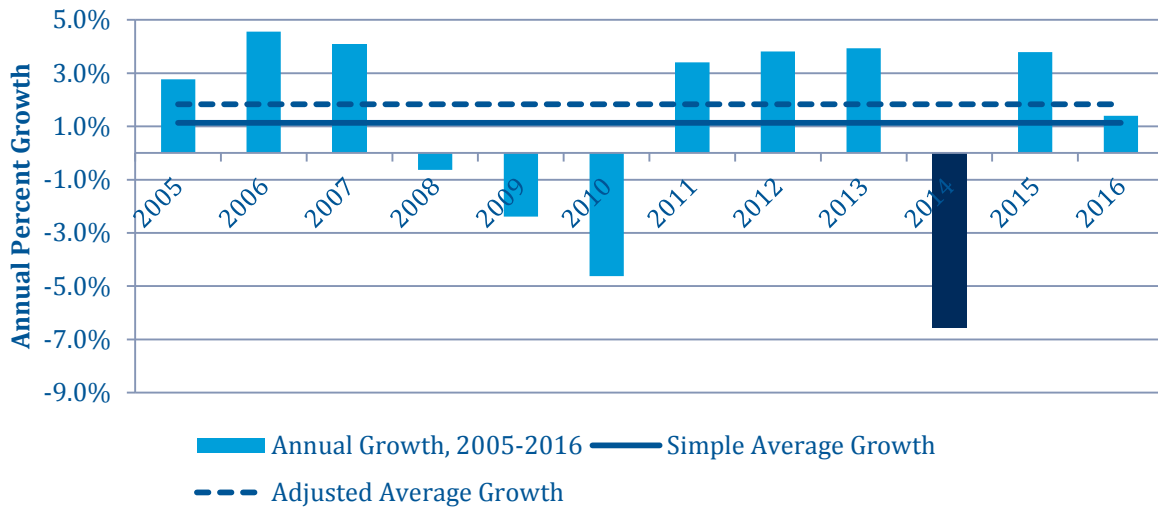


Figure 3-3 Construction Equipment Annual Percent Growth, 2005-2016

As shown in Figure 3-3, Black & Veatch has calculated a simple historical average annual growth rate of 1.1 percent and an adjusted average annual growth rate of 1.8 percent when 2014 is omitted.

3.2.4 Scrap Value

Black & Veatch has chosen the PPI “Carbon Steel Scrap” to represent escalation for estimated salvage value of materials recovered from the Project site. The chosen PPI reflects the value of high quality steel like that which is typically utilized in construction for the utility industry. Black & Veatch notes that other materials such as copper and precious metals will contribute to the actual salvage value of the Project; however, steel should represent the largest portion of salvageable material by value, and has accordingly been chosen as the representative index.

The Carbon Scrap Steel index has been reported by the BLS since 1987. A summary of this PPI, including actual annual percentage growth, average annual percentage growth, and adjusted annual average percentage growth is shown in Figure 3-4 below.

Steel Scrap Annual Percent Growth, 1988-2016

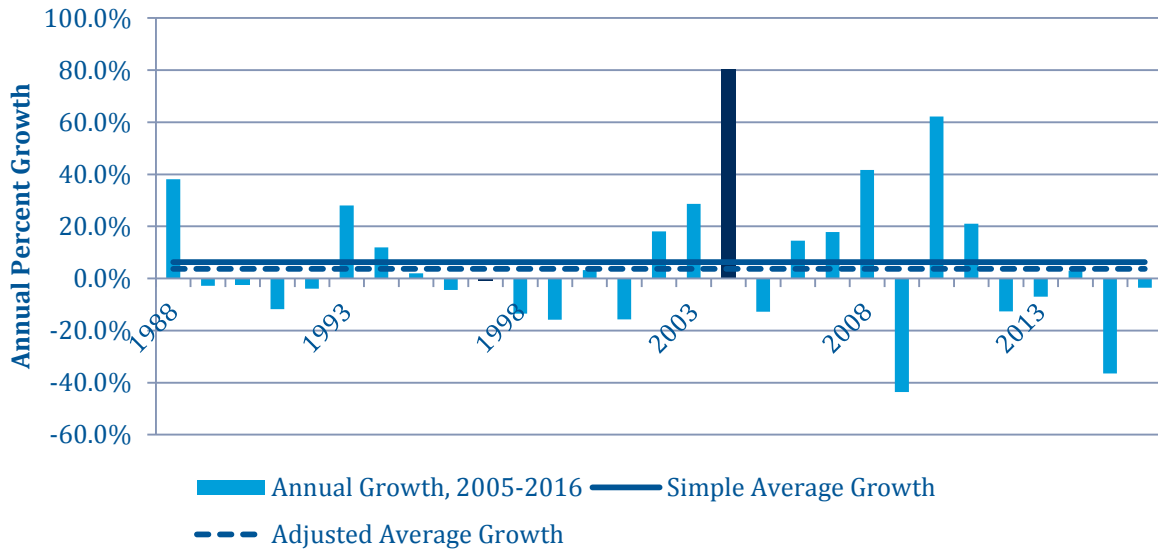


Figure 3-4 Steel Scrap Annual Percent Growth, 1988-2016

As shown in Figure 3-4, Black & Veatch has calculated a simple historical average annual growth rate of 6.3 percent and an adjusted average annual growth rate of 3.7 percent when 2004 is omitted.

Table 3-2 summarizes the estimated decommissioning and demolition costs for the project considering the future. For this example, the information in this table is based on 2016 as the Base Year, 2020 as the Escalation Year utilization of the Extrapolation Escalation Methodology.

Table 3-2 Decommissioning and Demolition Indexed Capital Cost Estimate Summary

COST ESTIMATE	2016 INDEX	2020 INDEX	2016 VALUE	2020 VALUE
Direct Costs	116.4	130.0	\$10,197,000	\$11,032,000
Less Salvage Value	297.5	300.0	-\$10,073,000	-\$11,642,000
Indirect Costs	128.7	130.0	\$3,842,800	\$4,125,000
Construction Equipment	115.4	130.0	\$1,803,400	\$1,939,000
Engineering & Construction Management	10% of Direct Labor		\$901,700	\$977,000
Contingency	15% of Subtotal		\$1,001,000	\$965,000
Total Cost	--		\$7,673,000	\$7,396,000
<p>The information in this table is based on 2016 as the Base Year, 2020 as the Escalation Year using Extrapolation Escalation Methodology.</p>				

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Appendix A. System Grouping

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Alameda - CT1

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Group 4

Alameda - CT1

Google earth



1000 ft

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Appendix B. Electrical Drawing

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