BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 20210034-EI
IN RE: TAMPA ELECTRIC COMPANY'S
PETITION FOR AN INCREASE IN BASE RATES
AND MISCELLANEOUS SERVICE CHARGES

DIRECT TESTIMONY AND EXHIBIT
OF
JEFFREY T. KOPP
ON BEHALF OF TAMPA ELECTRIC COMPANY

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

PREPARED DIRECT TESTIMONY

OF

JEFFREY T. KOPP

ON BEHALF OF TAMPA ELECTRIC COMPANY

Q. Please state your name, address, occupation, and employer.

A. My name is Jeffrey (Jeff) T. Kopp, and my business address is 9400 Ward Parkway, Kansas City, Missouri 64114. I am employed by 1898 & Co., which is the consulting group within Burns & McDonnell Engineering Company, Inc. ("1898 & Co."), as the Managing Director of the Utility Consulting Department.

Q. What are the purposes of your direct testimony in this proceeding?

A. The purposes of my prepared direct testimony are to (1) discuss the Fleet Decommissioning Cost Study ("Dismantlement Study" or "the Study") conducted for Tampa Electric Company ("Tampa Electric" or "company") and (2) support the reasonableness of the Dismantlement Study costs included in the company's rate request.

Q. Which Tampa Electric generating units does the Study assume will be dismantled?

A. The Study assumes that all units in Tampa Electric's generation fleet will be dismantled.

Q. Have you prepared an exhibit to support your direct testimony?

A. Yes. Exhibit No. JTK-1 was prepared under my direction and supervision. My exhibit consists of three documents, entitled:

Document No. 1	Fleet Decommissioning Cost Study
Document No. 2	Resume of Jeffrey T. Kopp
Document No. 3	List of Proceedings in Which Jeffrey T. Kopp Has Submitted Testimony

Q. Are there other witnesses submitting direct testimony in this proceeding that addresses dismantlement costs for Tampa Electric, and if so, how does their testimony relate to your testimony?

A. Yes. Tampa Electric witness Davicel Avellan is testifying to and sponsoring the depreciation rate calculations. The dismantlement costs that I prepared were used as an input

for end-of-life costs in the depreciation calculations. Additionally, witness Charles R. Beitel of Sargent & Lundy is testifying on behalf of the company as to the costs for selective demolition of Big Bend Units 1, 2, and 3.

EDUCATION AND BUSINESS EXPERIENCE

Q. Please provide a brief outline of your educational background and business experience.

A. I have a bachelor's degree in Civil Engineering from the University of Missouri – Rolla (now the Missouri University of Science and Technology) and a Master of Business Administration degree from the University of Kansas. I am a professional engineer with more than 19 years of experience consulting to electric utilities. I have been involved in numerous dismantlement studies and served as project manager on the majority of them. I have helped prepare dismantlement studies on all types of power plants utilizing various technologies and fuels.

As the Managing Director of the Utility Consulting Department of 1898 & Co., I oversee a group of more than 110 engineers and consultants who provide consulting services to clients primarily in the electric power generation and electric power transmission industries, but

also to other industrial and commercial clients. The services provided by this group include dismantlement cost studies, independent engineering assessments of existing power generation assets, economic evaluations of capital expenditures, new power generation development and evaluation, electric and water rate analysis, electric transmission planning, generation resource planning, renewable power development, and other related engineering and economic assessments.

In my role as a group manager, project manager, and project engineer, I have worked on and have overseen consulting activities for coal, natural gas, wind, solar, hydroelectric, and biomass power generation facilities.

Q. Do you hold any certifications?

A. Yes, I am a registered professional engineer in the states of Florida, Illinois, Indiana, and Missouri.

Q. Have you previously testified before state or federal regulatory commissions?

A. Yes. I have provided written or oral testimony in various proceedings listed in Document No. 3 of my Exhibit No. JTK-

1.

1898 & CO.

Q. What qualifies 1898 & Co. to prepare accurate estimates of dismantlement costs and why should the Florida Public Service Commission ("Commission") rely on these estimates?

A. Over the years, 1898 & Co. has worked closely with demolition contractors to develop decommissioning cost estimates that accurately estimate the costs for activities that the demolition contractors will perform. 1898 & Co. has prepared numerous decommissioning studies for various clients considering different technologies in different states and has provided services to clients on decommissioning project execution including review and evaluation of bids from demolition contractors. 1898 & Co. has utilized this experience preparing decommissioning estimates and reviewing demolition contractor bids to confirm the reasonableness of the cost estimates prepared by 1898 & Co.

At the time a utility decides to decommission the power plants included in the Study ("the plants"), means and methods will not be dictated to the contractor by 1898 & Co. It will be the contractor's responsibility to determine

means and methods that result in safely decommissioning and dismantling the plants at the lowest possible cost. However, based on 1898 & Co.'s experience with decommissioning projects and discussions with demolition contractors, the costs estimated by 1898 & Co. are reflective of what contractors would bid through a competitive bidding process given the option to select safe and efficient means and methods.

As indicated above, 1898 & Co. has vast experience in preparing decommissioning studies, overseeing demolition projects, and executing construction projects. In order to execute over $2 billion of construction projects on an annual basis, Burns & McDonnell Engineering Company, Inc., of which 1898 & Co. is a division, has to win this work through competitive bidding processes, which requires us to be able to accurately prepare cost estimates. If we routinely estimated costs too high, we would not be successful in winning projects. If we routinely estimated costs too low, we would not be able to execute projects profitably and would no longer be active in this market. Our long history, large market presence, and top industry rankings demonstrate our ability to estimate costs effectively and accurately. In addition, we review competitive bids from demolition contractors for power

plant demolition projects, and we have worked with demolition contractors over the years to refine our estimating process for decommissioning studies to align our costs with theirs.

SELECTIVE VS. FULL DISMANTLEMENT COSTS

Q. Please describe selective demolition and full dismantlement and how the selective demolition costs proffered by Mr. Beitel differ from the dismantlement costs included in your Study.

A. The costs included in my study are based on end-of-life costs for demolishing each power generating unit after all generating units have been taken out of service. This allows the use of explosives to fell boilers and other tall structures and then cutting them up on the ground, with no provisions made to protect operating equipment. This allows demolition contractors to select demolition methodologies that can be safely performed in an efficient and low-cost manner.

Selective demolition assumes that some generating units and related facilities will be demolished at a particular plant site, while others will remain in operation at the plant site where the demolition will take place. Costs for selective demolition at Big Bend Units 1, 2, and 3 were

estimated separately by Sargent & Lundy, assuming that other equipment and facilities at the Big Bend site would remain in operation. This prohibits the use of explosives and limits the ability to drop large structures. In this selective demolition scenario, all demolition activities would need to be performed in a more controlled manner, which results in a higher demolition cost for these units.

1898 & CO. DISMANTLEMENT STUDY

Q. Please describe the purpose of the Dismantlement Study.

A. The company retained 1898 & Co. to provide it with a recommendation regarding the total cost, in 2020 dollars, of dismantlement of each company-owned generation unit at the end of its useful life, as well as the total cost of dismantlement of the common facilities at these generating plants. The total dismantlement cost as determined by 1898 & Co. and reflected in the Dismantlement Study is net of salvage value for scrap materials at each plant. 1898 & Co. had previously prepared a similar study for the company in 2011 in support of the company's depreciation filing. The current Dismantlement Study serves to update the costs presented in the 2011 study for changes to market conditions, physical changes that have occurred at the plants, and incorporating new facilities that have been

constructed or acquired since 2011.

Q. What level of dismantlement and demolition did 1898 & Co. assume was performed at each of the sites?

A. The basis of the 1898 & Co. cost estimates was that all sites will be restored to an industrial condition, suitable for reuse for development of an industrial facility.

Q. What does restoring the sites for industrial use require?

A. The sites will have all above grade buildings and equipment removed, foundations removed to three feet below grade, be rough graded, and seeded. Sites also will have small diameter underground pipes capped and abandoned in place. The sites can remain in this condition in perpetuity, until the site is specifically redeveloped for industrial use.

Q. What process did you follow in preparing the Dismantlement Study?

A. The estimates of dismantlement costs were prepared with the intent of most accurately representing what 1898 & Co. would anticipate contractors bidding to dismantle the equipment, address environmental issues, and restore the site through

a competitive bidding process.

As outlined in the Dismantlement Study, we prepared these cost estimates by estimating quantities and then applying current market pricing for labor rates, equipment costs, scrap, and disposal costs specific to the area in which the work is to be performed. This results in the total cost of dismantlement for each site.

Q. Are there industry-standard methods or inputs used when preparing such a study and what are they?

A. Yes. We reviewed Rule 25-6.04364, Florida Administrative Code, Electric Utilities Dismantlement Studies, as a guide for preparing our study. We also incorporated the methodologies used in prior studies we prepared that have been approved by the Commission and other utility commissions throughout the country. Furthermore, many of the inputs in our estimates come directly from industry standard data sources and publications, including:

- RSMeans Heavy Construction Cost
    - o RSMeans is an industry standard publication of construction cost data that is used throughout North America by engineers to prepare construction and demolition cost estimates. The RSMeans database

includes adjustments to the base costs based on location, to provide a more accurate estimate for the area in which the project will take place. RSMeans includes data for all types of construction and demolition activities, including materials, labor, hauling, and disposal.

- Fastmarkets AMM
    - Fastmarkets AMM has been in business since they began as American Metal Market in 1882. They are the leading publication of metal pricing, including scrap metal pricing. They provide an independent market perspective on metal prices in North America, using data from market transactions.

Q. Did Tampa Electric provide data to you for use in the study?

A. Yes.

Q. What data did the company provide?

A. The company provided numerous drawings and equipment data for each of the sites evaluated in the study.

Q. Please describe the key assumptions of the Dismantlement Study.

A. As I stated earlier, the basis of the estimates was that all sites will be restored to an industrial condition, suitable for reuse for development of an industrial facility. We also assumed that all units at each power station will be dismantled as part of a single demolition project, therefore, no selective demolition was included in the estimates. Additional assumptions are outlined in Sections 4.1 and 4.2 of the Study in Document No. 1 of Exhibit JTK-1.

Q. Please generally explain the types of costs reflected in the study?

A. The cost estimates reflected in the Dismantlement Study are inclusive of direct costs associated with dismantling the plant equipment and facilities and restoring the sites to an industrial-ready condition. The direct costs include environmental remediation costs for asbestos removal and other hazardous material handling and disposal, as well as costs for removing and disposing of contaminated soil around transformers. The Dismantlement Study does not include any estimates of indirect costs to be incurred by the company during dismantlement, nor any contingency costs. Indirect owner’s costs and contingency costs were applied by Tampa Electric separate from the study.

Q. How were the direct costs estimated for purposes of the study?

A. As part of the Dismantlement Study, site-specific cost estimates were developed using a "bottom-up" cost estimating approach, where cost estimates are developed from scratch through the development of site-specific quantity estimates and the application of unit pricing rates to the quantity estimates.

As outlined in the Dismantlement Study, 1898 & Co. prepared these cost estimates by estimating quantities for existing equipment based on visual inspections, review of engineering drawings, review of 1898 & Co.'s in-house database of plant equipment quantities and using 1898 & Co.'s professional judgment. This resulted in an estimate of quantities for the tasks required to be performed for each dismantlement effort. Current market pricing for labor rates and equipment were used to develop unit pricing rates for each task. These unit pricing rates were applied to the quantities for the plants to determine the total direct cost of dismantlement for each site. Additionally, unit pricing for scrap values was applied to the scrap quantities to determine anticipated salvage values, which were subtracted from the gross direct costs to arrive at a net

project cost in 2020 dollars.

Q. Were any costs excluded from your study?

A. As discussed earlier, 1898 & Co. did not include any costs associated with selective demolition, which allows for units at the site to remain in operation during and subsequent to demolition activities. In particular, costs for selective demolition at Big Bend Units 1, 2, and 3 were estimated separately by Sargent & Lundy and are presented by Mr. Beitel. 1898 & Co. prepared costs for full demolition of all units and equipment at the Big Bend site assuming no selective demolition techniques would be required. However, the cost for Big Bend Units 1, 2, and 3 dismantlement included in Tampa Electric's depreciation and dismantlement costs submitted to the Commission in Docket No. 20200264-EI on December 30, 2020 is based on the Sargent & Lundy costs, since selective demolition techniques will be required for those units.

Q. Is it your conclusion that the study results are reasonable estimates?

A. Yes, the study results and cost estimates are reasonable estimates and are useful for planning purposes. It is

appropriate for the company to rely on these estimates for inclusion in their dismantlement reserve needs.

SUMMARY

Q. Please summarize your direct testimony.

A. The company retained 1898 & Co. to provide it with a recommendation regarding the total cost, in 2020 dollars, of dismantlement of each company-owned generation unit at the end of its useful life as well as the total cost of dismantlement of the common facilities at these generating plants. 1898 & Co. is qualified to prepare dismantlement cost estimates and has vast experience in preparing decommissioning studies, overseeing demolition projects, and executing construction projects. The estimates of dismantlement costs were prepared with the intent of most accurately representing what 1898 & Co. would anticipate contractors bidding through a competitive bidding process to dismantle the equipment, address environmental issues, and restore the site. The dismantlement study is consistent with Rule 25-6.04364, Florida Administrative Code, Electric Utilities Dismantlement Studies, incorporates the methodologies used in prior studies we prepared that have been approved by the Commission and other utility commissions throughout the country, and incorporates

industry standard data. The study results and cost estimates are reasonable estimates and appropriate for the company to rely on for their dismantlement reserve needs.

Q. Does this conclude your direct testimony?

A. Yes.

DOCKET NO. 20210034-EI
WITNESS: KOPP

EXHIBIT

OF

JEFFREY T. KOPP

ON BEHALF OF TAMPA ELECTRIC COMPANY

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1898 & Co.
PART OF BURNS McDONNELL

Fleet Decommissioning Cost Study

TECO
TAMPA ELECTRIC
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Tampa Electric Company

Fleet Decommissioning Cost Study
Project No. 122880

7/23/2020

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
BOP	Balance of Plant
C&D	Construction and Demolition
CT	Combustion Turbine
GSU	Generator Step Up
HDPE	High Density Polyethlene
HRSG	Heat Recovery Steam Generator
IGCC	Integrated Gasification Combined Cycle
MW	Megawatt
PCB	Polychlorinated Biphenyl
Plants	Tampa Electric's fleet of power generation assets
ST	Steam Turbine
Study	Decommissioning Cost Study
Tampa Electric	Tampa Electric Company

1.0 EXECUTIVE SUMMARY

1.1 Introduction

Tampa Electric Company ("Tampa Electric") retained 1898 & Co., part of Burns & McDonnell Engineering Company, Inc. of Kansas City, Missouri to conduct a Decommissioning Cost Study ("Study") for power generation assets ("Plants") in Florida. The assets include natural gas-fired, coal-fired, and solar facilities. The purpose of the Study was to review the facilities and to make a recommendation to Tampa Electric regarding the total cost to decommission the facilities at the end of their useful lives. The decommissioning costs were developed by 1898 & Co. using information provided by Tampa Electric and in-house data available to 1898 & Co.

1.2 Results

1898 & Co. has prepared cost estimates in 2020 dollars for the decommissioning of the Plants. These cost estimates are summarized in Table 1-1. When Tampa Electric determines that the Plants should be retired, the above grade equipment and steel structures are assumed to have sufficient scrap value to a scrap contractor to offset a portion of the decommissioning costs. Tampa Electric will incur costs in the demolition and restoration of the sites less the scrap value of equipment and bulk steel.

Table 1-1: Decommissioning Cost Summary

Asset	Fuel Type	Decommissioning Costs	Salvage Credits	Net Project Cost
Bayside	Natural Gas	$ 22,699,000	$ (11,528,000)	$ 11,171,000
Big Bend	Coal/ Natural Gas	$ 104,724,000	$ (16,748,000)	$ 87,976,000
Polk	Natural Gas	$ 21,143,000	$ (9,085,000)	$ 12,058,000
Balm Solar	Solar	$ 15,355,500	$ (5,067,900)	$ 10,287,600
Big Bend Solar	Solar	$ 3,634,500	$ (553,500)	$ 3,081,000
Bonnie Mine Solar	Solar	$ 5,958,300	$ (1,632,500)	$ 4,325,800
Grange Hall Solar	Solar	$ 8,860,000	$ (2,465,900)	$ 6,394,100
Lake Hancock Solar	Solar	$ 6,958,900	$ (1,957,800)	$ 5,001,100
Legoland Solar	Solar	$ 131,700	$ (17,900)	$ 113,800
Lithia Solar	Solar	$ 10,712,000	$ (2,878,400)	$ 7,833,600
Little Manatee River	Solar	$ 11,314,200	$ (3,107,700)	$ 8,206,500
Payne Creek Solar	Solar	$ 10,635,900	$ (2,869,600)	$ 7,766,300
Peace Creek Solar	Solar	$ 7,767,600	$ (2,238,800)	$ 5,528,800
Tampa Int Solar	Solar	$ 676,900	$ (198,500)	$ 478,400
Wimauma Solar	Solar	$ 11,477,800	$ (2,731,100)	$ 8,746,700
TOTAL DECOMMISSIONING COST		$ 242,049,300	$ (63,080,600)	$ 178,968,700

The total net project costs presented above include the costs to return the sites to an industrial condition suitable for reuse for development of an industrial facility. Included are the costs to dismantle the power generating equipment owned by Tampa Electric as well as the costs to dismantle the Tampa Electric-owned Balance of Plant facilities ("BOP") and environmental site restoration activities. Contingency and owner's indirect costs have been excluded from the cost estimates as requested by Tampa Electric. However, it is 1898 & Co.'s typical practice and recommendation that 20 percent contingency be included on the direct costs in the estimates prepared as part of this study and that owner indirect costs be included as 5 percent of the direct costs.

2.0 INTRODUCTION

2.1 Background

1898 & Co. was retained by Tampa Electric to conduct a Study for Plants in Florida to estimate the decommissioning costs. The assets include natural gas-fired, coal-fired, and solar generating facilities. The purpose of the Study was to review the facilities and to make a recommendation to Tampa Electric regarding the total cost to decommission the facilities at the end of their useful lives. Individuals from 1898 & Co. visited 5 of the sites evaluated within the Study in August of 2017 as part of a prior Study.

1898 & Co. has prepared decommissioning studies for over 200 facilities on various types of fossil fuel and renewables power plants using a proven approach to developing these estimates. In addition to preparing decommissioning estimates, 1898 & Co. has supported demolition projects as the owner's engineer, to evaluate demolition bids and oversee demolition activities. This has provided 1898 & Co. with insight into the range of competitive demolition bids, which also assists in confirming the reasonableness of the decommissioning estimates developed by 1898 & Co.

2.2 Study Methodology

The site decommissioning costs were developed using information provided by Tampa Electric and in-house data 1898 & Co. has collected from previous project experience. 1898 & Co. estimated quantities for equipment based on a visual inspection of the facilities performed during a prior Study, review of engineering drawings, 1898 & Co.'s in-house database of plant equipment quantities, and 1898 & Co.'s professional judgment. This resulted in an estimate of quantities for the tasks required to be performed for each decommissioning effort. Current market pricing for labor rates, equipment, and unit pricing were then developed for each task. The unit pricing was developed for each site based on local labor rates, equipment costs, and disposal costs specific to the area in which the work is to be performed. These rates were applied to the quantities for the Plants to determine the total cost of decommissioning for each site.

The decommissioning costs include the cost to return each site to an industrial condition, suitable for reuse for development of an industrial facility, commonly referred to as a brownfield site. Included are the costs to decommission all of the assets owned by Tampa Electric at the site, including power generating equipment and BOP facilities.

2.3 Site Visits

Site visits were not conducted in 2020, because of travel restrictions at the time the Study was performed. However, as part of a prior Study, individuals from 1898 & Co. visited the sites listed in Table 2-1, accompanied by representatives from Tampa Electric. The site visits consisted of a tour of each facility listed, with Plant personnel, to review the equipment installed at each site.

Table 2-1: 2017 Site Visit Dates

Site	Date Visited
Bayside	August 8, 2017
Big Bend	August 8, 2017
Big Bend Solar	August 8, 2017
Tampa International Solar	August 8, 2017
Legoland Solar	August 9, 2017
Polk	August 9, 2017

Mr. Kevin Payne, from Tampa Electric, served as the representative throughout the site visits, along with plant personnel at each of the sites. The following 1898 & Co. representatives comprised the site visit team:

- Mr. Jeff Kopp, Project Manager
- Mr. Tommy Bertken, Project Consultant
- Mr. Sean Troupe, Project Consultant

Tampa Electric personnel reported that since the time of the initial site visits there have been no material changes to Tampa International Solar, Bayside, Big Bend Solar, Legoland Solar, or Polk. Since the prior site visits the gasifier at Polk has been laid up; however, it is still onsite and at the time of the Study, there were no plans to remove it. As such, 1898 & Co. additionally relied on information obtained during the site walkdowns conducted in 2017.

3.0 PLANT DESCRIPTIONS

Below are plant descriptions for all of the Plants considered for the purposes of this Study.

3.1 Bayside

Bayside is located just north of Gibsonton, Florida on Port Sutton Road near Tampa Bay. The plant consists of two combined cycle gas turbine powerblocks and four simple cycle units. The facility consists of seven GE 7FA CTs, with associated Heat Recovery Steam Generators ("HRSG"). Three of the combustion turbines ("CT") and HRSG sets, Bayside 1A, 1B, and 1C, were utilized to repower the steam turbine ("ST") from Gannon Unit 5. Bayside 1A, 1B, and 1C came online in 2003. Four of the CT and HRSG sets, Bayside 2A, 2B, 2C, and 2D, were utilized to repower the steam turbine from Gannon Unit 6. Bayside 2A, 2B, 2C, and 2D came online in 2004. The facility also includes four Pratt & Whitney TwinPac Units. The remaining facilities at the site, including the common administrative, warehouse and maintenance buildings, water storage tanks, and ponds, are all now considered part of the Bayside Power Station, since the Gannon Power Station has been taken out of service. Additionally, the steam turbines from Gannon Unit 5 and Gannon Unit 6 are now considered part of the Bayside facility along with the entire steam turbine building, now that these steam turbine units have been repowered as part of the Bayside Power Station.

3.2 Big Bend

Big bend is a coal fired power plant located north of Apollo Beach, Florida and is surrounded by a seawall. The site is roughly 1,500 acres and has a total station capacity of approximately 1,700 Megawatts ("MW"). A barge unloading facility for coal and a limestone unloading, handling, and storage area are both located on-site. There are several ponds on the premises, including bottom ash ponds and storm water settling ponds, along with slag handling and gypsum handling and storage locations. The first coal unit came online in 1970, followed by Unit 2 in 1973, Unit 3 in 1976, and Unit 4 in 1985. The units have natural gas firing capabilities and natural gas fueled burners which replaced the prior oil fueled ignitors. The units all include selective catalytic reduction systems, air quality control systems, electrostatic precipitators and flue gas desulfurizers. In 2009, a 60 MW Pratt & Whitney TwinPac natural gas peaking unit was added to the plant. Unit 1 is now offline due to a modernization effort. Units 2 and 3 run on only natural gas and Unit 4 is the only unit still dual fueled. As part of the modernization effort, two new CTs 5 and 6 will be installed at the north end of the site and Unit 1 ST will be converted to operate with CT 5 and CT 6 as a 2 on 1 natural gas combined cycle. The combined cycle will have a summer capacity of 1,055 MW.

3.3 Polk

Polk is located south of Pine Island on roughly 4,300 acres south of Lakeland, Florida. The site consists of an integrated gasification combined cycle ("IGCC") plant (Unit 1) and four CTs (CTs 2–5) and one ST. Combustion turbines 2 – 5 and the steam turbine operate in combined cycle mode and are collectively known as "Polk 2." Unit 1 includes a coal gasifier, a GE 7FA CT, a Vogt HRSG and a GE ST. Unit 1 has dual fuel capabilities and can utilize natural gas or syngas from coal or a petcoke and coal blend. The IGCC went into commercial operation in 1996. Polk 2 includes 4 GE 7FA combustion turbines that originally installed as simple cycle units. Unit 1 went into commercial operation in 1996. CT 2 achieved commercial operation in 2000, CT 3 in 2002, and CTs 4 and 5 in 2007. CT 2 and CT 3 are dual fueled, capable of utilizing natural gas or oil. CTs 2–5 were later converted to combined cycle operation with the addition of the HRSGs and an ST. CTs 2–5 each have a nameplate capacity of 165 MW and the ST has a capacity of 460 MW. The facility includes common administrative, warehouse and maintenance buildings. A water treatment plant and cooling tower was also added as part of the combined cycle conversion project.

3.4 Balm Solar

Balm Solar is a solar farm located in Hillsborough County in Florida. The project has a total capacity of 74,400 kW-AC and includes 736,200 solar panels assumed to be arranged in a 60x3 configuration.

3.5 Big Bend Solar

Big Bend Solar is a solar farm located in Apollo Beach, Florida near the Big Bend Power Plant. The solar farm reached commercial operation in February 2017 and has a total capacity of 19,800 kW-AC. The solar site has 200,000 photovoltaic solar panels on a single axis tracking array. The Big Bend solar farm additionally includes batteries for energy storage.

3.6 Bonnie Mine Solar

Bonnie Mine is a solar farm located in Polk County in Florida. The project has a total capacity of 37,500 kW-AC and includes 349,440 solar panels assumed to be arranged on a single axis tracking array.

3.7 Grange Hall Solar

Grange Hall is a solar farm located in Wimauma, Florida. The project has a total capacity of 61,090 KW-AC and includes 595,260 solar panels assumed to be arranged in a 60x3 configuration.

3.8 Lake Hancock Solar

Lake Hancock is a solar farm located in Polk County in Florida. The project has a total capacity of 49,600 kW-AC and includes 467,820 solar panels assumed to be arranged in a 60x3 configuration.

3.9 Legoland Solar

Legoland Solar is a solar farm located on the east side of Lake Eloise in Eloise, Florida. There are twelve rows of solar panels that cover the preferred parking lot at the Winter Haven resort and can provide partial shade to approximately 600 vehicles. The solar farm has a total capacity of 1,398 kW-AC and can produce electricity for roughly 200 houses. The project includes 5,218 solar panels.

3.10 Lithia Solar

Lithia is a solar farm located in Lithia, Florida. The project has a total capacity of 74,500 kW-AC and includes 741,720 solar panels assumed to be arranged in a 120x4 configuration.

3.11 Little Manatee River

Little Manatee River is a solar farm located in Hillsborough County, Florida. The project has a total capacity of 74,500 kW-DC and includes 732,600 solar panels assumed to be arranged in a 66x3 configuration.

3.12 Payne Creek Solar

Payne Creek is a solar farm located in Polk County in Florida. The project has a total capacity of 70,300 kW-AC and includes 3707,940 solar panels assumed to be arranged in a 60x3 configuration.

3.13 Peace Creek Solar

Peace Creek is a solar farm located in Polk County in Florida. The project has a total capacity of 56,600 kW-AC and includes 545,000 solar panels assumed to be arranged in a 60x3 configuration.

3.14 Tampa International Solar

Tampa International Solar is a solar farm located at Tampa International Airport. The panels are positioned on top of the South Economy Parking Garage and can provide partial shade to approximately 800 vehicles. The project has a total capacity of 2,000 kW-AC. The rooftop array consists of 6,175 panels and covers 175,000 feet. The solar farm can produce electricity for roughly 250 homes.

3.15 Wimauma Solar

Wimauma is a solar farm located in Wimauma, Florida. The project has a total capacity of 74,800 kW-AC and includes 732,420 solar panels assumed to be arranged in a 72x3 configuration.

4.0 DECOMMISSIONING COSTS

1898 & Co. has prepared decommissioning cost estimates for the Plants. When Tampa Electric determines that each site should be retired, the above grade equipment and steel structures are assumed to have scrap value to a scrap contractor which will offset a portion of the site decommissioning costs. However, Tampa Electric will incur costs of decommissioning of the Plants and restoration of the sites to the extent that those costs exceed the scrap value of equipment and bulk steel.

The decommissioning costs for each site include the cost to return each site to an industrial condition, suitable for reuse for development of an industrial facility. Included are the costs to dismantle all the assets at the sites, including power generating equipment and BOP facilities, as well as the costs to perform environmental site restoration activities.

For purposes of this study, 1898 & Co. assumed that each site will be decommissioned as a single project, allowing the most cost-effective demolition methods to be utilized. A summary of several of the means and methods that could be employed is summarized in the following paragraphs; however, means and methods will not be dictated to the contractor by 1898 & Co. It will be the contractor's responsibility to determine means and methods that result in safely decommissioning the Plants at the lowest possible cost.

Asbestos remediation, as required, would take place prior to commencement of any other demolition activities. Abatement would need to be performed in compliance with all state and federal regulations, including, but not limited to requirements for sealing off work areas and maintaining negative pressure throughout the removal process. Final clearances and approvals would need to be achieved prior to performing further demolition activities.

High grade assets would then be removed from the site, to the extent possible. This would include items such as transformers, transformer coils, circuit breakers, electrical wire, condenser plates and tubes, and heater tubes. High grade assets include precious alloys such as copper, aluminum-brass tubes, stainless steel tubes, and other high value metals occurring in plant systems. High grade asset removal would occur up-front in the schedule to reduce the potential for vandalism, to increase cash flow, and for separation of recyclable materials to increase scrap recovery. Methods of removal vary with the location and nature of the asset. Small transformers, small equipment, and wire would likely be removed and shipped as-is for processing at a scrap yard. Large transformers, combustion turbines, steam turbine

generators, and condensers would likely require some on-site disassembly prior to being shipped to a scrap yard.

Construction and Demolition ("C&D") waste includes items such as non-asbestos insulation, roofing, wood, drywall, plastics, and other non-metallic materials. C&D waste would typically be segregated from scrap and concrete to avoid cross-contaminating of waste streams or recycle streams. C&D demolition crews could remove these materials with equipment such as excavators equipped with material handling attachments, skid steers, etc. This material would be consolidated and loaded into bulk containers for disposal.

In general, boilers and HRSGs could be felled and cut into manageable sized pieces on the ground. First the structures around the boilers would need to be removed using excavators equipped with shears and grapples. Stairs, grating, elevators, and other high structures would be removed using an "ultra-high reach" excavator, equipped with shears. Following removal of these structures, the boilers or HRSGs would be felled, using explosive blasts. The boilers would then be dismantled using equipment such as excavators equipped with shears and grapples, and the scrap metal loaded onto trailers for recycling.

After the surrounding structures and ductwork have been removed, the stacks would be imploded, using controlled blasts. Following implosion, the stack liners and concrete would be reduced in size to allow for handling and removal.

BOP structures and foundations would likely be demolished using excavators equipped with hydraulic shears, hydraulic grapples, and impact breakers, along with workers utilizing open flame cutting torches. Steel components would be separated, reduced in size, and loaded onto trailers for recycling. Concrete would be broken into manageable sized pieces and stockpiled for crushing on site. Concrete pieces would ultimately be loaded in a hopper and fed through a crusher to be sized for on-site disposal.

4.1 General Assumptions Applicable to All Sites

The following assumptions were made as the basis of all of the cost estimates.

1. The estimates are inclusive of all cost necessary to properly demolish all structures, equipment, boilers, tanks, conveying and ancillary buildings, and any other associated equipment and buildings to grade level. For purposes of this Study and the included cost estimates, the sites will be restored to a condition suitable for industrial use.
2. Pricing for all estimates is in 2020 dollars.

3. For purposes of this Study it is assumed that all units at the power station will be dismantled as part of a single demolition project.
4. Units will be decommissioned to zero generating output. Existing utilities will remain in place for use by the contractor for the duration of the demolition activities.
5. All work will take place in the most cost-efficient method.
6. Labor costs are based on non-Union labor rates for a 40-hour workweek.
7. Soil testing and any other on-site testing has not been conducted for this Study. Any environmental clean-up or removal costs are based on previous testing or assumed levels of contamination.
8. The only environmental costs that have been included to address cleanup of contaminated soils, hazardous materials, or other conditions present on-site having a negative environmental impact, are specifically listed under assumptions. No allowances are included for unforeseen environmental remediation activities.
9. Tampa Electric will remove or consume all fuel oil and chemicals to the reasonable extent possible prior to commencement of demolition activities. Costs for these activities are not included in the estimate. Costs are included in the estimates for cleaning and flushing fuel oil tanks and lines. Costs have also been included to remove one foot of soil directly below each of the fuel oil tanks to account for the potential for this soil to be contaminated during normal operations.
10. Soil around the GSU and other large transformers will be excavated to a depth of three feet and transported off-site for disposal. It is assumed that the polychlorinated biphenyl ("PCB") concentrations are below 50 ppm and will not be required to be disposed in a Toxic Substances and Control Act permitted landfill.
11. All burnable coal will be consumed by the plant prior to commencing decommissioning activities. Tampa Electric will remove fuel oil, limestone piles, and chemicals prior to commencement of demolition activities. The area underneath the coal piles will be excavated to a depth of two feet below grade to remove any residual coal, this coal soil mix will be disposed of offsite and this area will be covered with eighteen inches of soil and six inches of topsoil.
12. Costs are included in the estimates for draining and disposing of transformer oils.
13. Hazardous material abatement is included for asbestos and mercury. Lead paint coated materials will be handled by trained personnel as necessary but will not be removed prior to demolition.
14. In general, abatement of asbestos will precede any other work. After final air quality clearances have been reached, demolition can proceed. However, some abatement, including the removal of non-friable gaskets and packings will commence in

conjunction with the demolition. If asbestos containing materials are found within the interior of boilers, stacks, ductwork or other equipment (including refractory), abatement will be coordinated closely with demolition.

15. All demolition and abatement activities, including removal of asbestos, will be done in accordance with all applicable Federal, State and Local laws, rules and regulations.
16. Transmission switchyards and substations within the boundaries of the plant are not part of the demolition scope. For purposes of this Study, the division between generation assets and transmission assets is at the high side of the generator step-up transformers. Costs are included for removal of generation leads from the disconnect at the switchyard connection back to the generator step-up ("GSU") transformers and for the reserve power leads from the switchyard to the reserve power transformers.
17. Step-up transformers, auxiliary transformers, and spare transformers are included for demolition and scrap.
18. All above-grade structures will be demolished. All below-grade structures, including foundations, will be removed to three feet below existing grade, unless otherwise noted in the site-specific assumptions.
19. Foundations greater than three feet below grade will be abandoned in place.
20. Underground structures with cavities will be permanently sealed three feet below grade. Examples include cable tunnels and vaults, coal reclaim conveyor tunnels, and rotary car dumper structures.
21. Cooling towers and basin walls will be removed, and the basin floors will be broken to allow for drainage and then backfilled with on-site soil.
22. All roads, paving, crushed rock surfacing, and rail lines will remain.
23. Major equipment, structural steel, turbines, generators, transformers, electrical equipment, cabling, wiring, pump skids, above ground piping, and equipment enclosures for the above equipment are sold for scrap and removed from the site by the demolition contractor.
24. To the extent possible, concrete will be crushed and disposed of on-site. All other material that is not sold as scrap will be disposed of at an off-site landfill.
25. Except for the circulating water systems, underground piping will be capped at each end with concrete and abandoned in place. Concrete circulating water piping will be filled with flowable fill material.
26. Storm sewers, catch basins and ducts will be collapsed to two feet below grade, filled and sealed on the upstream side. Horizontal runs will be abandoned in place after being closed.

27. Ponds will have liners removed and disposed of, pond berms will be graded, and the ponds will be backfilled with crushed concrete or berm material. Ponds, former spray field areas, and dredging areas will be covered with topsoil, graded, and seeded.
28. All production wells will be closed as per state regulations. Production wells will be filled with grout to approximately five feet below surface grade. The top five feet will be over-drilled and filled with soil backfill to grade on top of the grout. Monitoring wells will remain intact.
29. Tampa Electric will remove all rolling stock (rail cars, vehicles, cranes, forklift trucks, etc.) and temporary vehicle fuel tanks prior to commencement of demolition activities.
30. Tampa Electric will remove any spare parts, tools, inventory, or equipment in the buildings prior to commencement of demolition activities
31. Site areas will be graded to achieve suitable site drainage to natural drainage patterns and seeded but grading will be minimized to the extent possible.
32. Valuation and sale of land and all replacement generation costs are excluded from this scope.
33. For purposes of this Study, it is assumed that none of the equipment will have a salvage value in excess of the scrap value of the materials in the equipment at the time of decommissioning. The decommissioning cost estimate is based on the end of useful life of the facility. All equipment, steel, copper, and other metals will be sold as scrap. Credits for salvage value are based on scrap value alone. Resale of equipment and materials is not included.
34. Contingency and owner's indirect costs have been excluded from the cost estimates under direction from Tampa Electric. Typically, 1898 & Co. would recommend and include a 20 percent contingency on the direct costs in the estimates and 5 percent owner's indirect costs on the direct costs.
35. Market conditions may result in cost variations at the time of contract execution.
36. Scrap values used in the decommissioning estimates for each site are provided in Table 4-1. The scrap values are based upon an average of monthly American Metal Market prices for April 2019 through March 2020 (i.e., one calendar year). These values include the cost to haul the scrap via truck and/or rail to the major market which provides the best price.

Table 4-1: Site Specific Scrap Values

Site	Aluminum ($/pound)	Brass ($/pound)	Copper ($/pound)	Stainless Steel ($/net ton)	Steel ($/net ton)
Bayside	$ (0.23)	$ (1.24)	$ (1.89)	$ (561.69)	$ (162.80)
Big Bend	$ (0.23)	$ (1.24)	$ (1.89)	$ (559.24)	$ (160.35)
Polk	$ (0.23)	$ (1.24)	$ (1.89)	$ (559.94)	$ (161.05)
Balm Solar	$ (0.23)	$ (1.24)	$ (1.89)	$ (557.49)	$ (158.60)
Big Bend Solar	$ (0.23)	$ (1.24)	$ (1.89)	$ (559.24)	$ (160.35)
Bonnie Mine Solar	$ (0.23)	$ (1.24)	$ (1.89)	$ (562.74)	$ (163.85)
Grange Hall Solar	$ (0.23)	$ (1.24)	$ (1.89)	$ (560.99)	$ (162.10)
Lake Hancock Solar	$ (0.23)	$ (1.24)	$ (1.89)	$ (563.44)	$ (164.55)
Legoland Solar	$ (0.23)	$ (1.24)	$ (1.89)	$ (555.50)	$ (156.61)
Lithia Solar	$ (0.23)	$ (1.24)	$ (1.89)	$ (555.74)	$ (156.85)
Little Manatee River	$ (0.23)	$ (1.24)	$ (1.89)	$ (555.74)	$ (156.85)
Payne Creek Solar	$ (0.23)	$ (1.24)	$ (1.89)	$ (557.49)	$ (158.60)
Peace Creek Solar	$ (0.23)	$ (1.24)	$ (1.89)	$ (563.44)	$ (164.55)
Tampa International Solar	$ (0.23)	$ (1.24)	$ (1.89)	$ (562.74)	$ (163.85)
Wimauma Solar	$ (0.23)	$ (1.24)	$ (1.89)	$ (560.99)	$ (162.10)

4.2 Site Specific Assumptions

In addition to the generic assumptions, the following site-specific assumptions also served as the basis of evaluation for each of the generating facilities.

4.2.1 Bayside

1. It has been assumed that no contamination is present in the abandoned spray areas. No remediation costs have been included for these areas.
2. Asbestos abatement has already occurred as part of the Gannon decommissioning project and the turbine building transite paneling was replaced with steel.
3. Bayside used to have fuel oil tanks but these tanks have since been removed and it is assumed that there is no soil contamination present and therefore this has been excluded from the estimate.
4. Condenser tubes are comprised of stainless steel.

4.2.2 Big Bend

1. The coal unloading facility across Wyandotte Road is included in the estimate and it is assumed that the rail loop will also be removed.
2. It is assumed that approximately 145,800 tons of gypsum will be removed from site and disposed of as part of the gypsum storage remediation cost.
3. The bottom ash ponds, settling pond, south recycle pond, and north recycle pond will have all material removed by Tampa Electric prior to decommissioning. The berms will be graded into the ponds and the area seeded.

4. The bottom ash storage pond, former spray field areas, stormwater ponds, and dredging spoil areas will be capped with 24 inches of soil and seeded.
5. The slag storage pond will be capped in place with a High Density Polyethlene ("HDPE) liner over six inches of fill soil. The HDPE cap will be covered by 24 inches of topsoil and seeded.
6. Circulating water intake and discharge canals will be left as is, except for the free-standing thermal dilution sheet pile barrier along the discharge canal, which will be removed.
7. It is assumed that each stack has a brick liner and there is a 4-foot difference in diameter between the stack and the liner.
8. The stacks will be felled to the east as one of the last demolition activities on site using implosions. Barriers will be set in place to prevent debris from entering the surrounding canals and wetlands.
9. Condenser tubes are titanium
10. Estimates for asbestos abatement are based on the remaining asbestos volume estimates provided by Tampa Electric.

4.2.3 Polk

1. Cooling water recirculation ponds will be left in place as is.
2. The storm water pond located on the north side will be left in place as-is.
3. Scrap values include 433,000 lbs of Inconel from the Syngas Cooler.
4. The slag storage area will be closed with a cap constructed of a High-Density Polyethylene liner over 6 inches of soil. The HDPE liner will be covered by 24-inches of topsoil and seeded.
5. It is assumed that no asbestos is present at this site.
6. Condenser tubes are comprised of stainless steel.

4.2.4 Legoland Solar

1. All materials and support systems will be removed to grade.

4.2.5 Tampa International Solar

1. It is assumed that all concrete support systems will be removed to the floor elevation of the rooftop parking structure on which they sit.

5.0 RESULTS

1898 & Co. has prepared a planning level cost estimate in 2020 dollars for the decommissioning of the Plants. These costs are summarized in Table 5-1. When Tampa Electric determines that the Plants should be removed, the above grade equipment and steel structures are assumed to have sufficient scrap value to a salvage contractor to offset a portion of the decommissioning costs. Tampa Electric will incur costs in the demolition and restoration of the sites less the salvage value of equipment and bulk steel.

Table 5-1: Decommissioning Cost Summary

Asset	Fuel Type	Decommissioning Costs	Salvage Credits	Net Project Cost
Bayside	Natural Gas	$ 22,699,000	$ (11,528,000)	$ 11,171,000
Big Bend	Coal/ Natural Gas	$ 104,724,000	$ (16,748,000)	$ 87,976,000
Polk	Natural Gas	$ 21,143,000	$ (9,085,000)	$ 12,058,000
Balm Solar	Solar	$ 15,355,500	$ (5,067,900)	$ 10,287,600
Big Bend Solar	Solar	$ 3,634,500	$ (553,500)	$ 3,081,000
Bonnie Mine Solar	Solar	$ 5,958,300	$ (1,632,500)	$ 4,325,800
Grange Hall Solar	Solar	$ 8,860,000	$ (2,465,900)	$ 6,394,100
Lake Hancock Solar	Solar	$ 6,958,900	$ (1,957,800)	$ 5,001,100
Legoland Solar	Solar	$ 131,700	$ (17,900)	$ 113,800
Lithia Solar	Solar	$ 10,712,000	$ (2,878,400)	$ 7,833,600
Little Manatee River	Solar	$ 11,314,200	$ (3,107,700)	$ 8,206,500
Payne Creek Solar	Solar	$ 10,635,900	$ (2,869,600)	$ 7,766,300
Peace Creek Solar	Solar	$ 7,767,600	$ (2,238,800)	$ 5,528,800
Tampa Int Solar	Solar	$ 676,900	$ (198,500)	$ 478,400
Wimauma Solar	Solar	$ 11,477,800	$ (2,731,100)	$ 8,746,700
TOTAL DECOMMISSIONING COST		$ 242,049,300	$ (63,080,600)	$ 178,968,700

The total project costs presented above include the costs to return the sites to an industrial condition suitable for reuse for development as an industrial facility. Included are the costs to dismantle all power generating equipment and balance of plant facilities and, where applicable, to perform environmental site restoration activities. Further details including estimates for the major cost categories of each plant estimate are provided in Appendix A. Contingency and owner's indirect costs have been excluded from these estimates as requested by Tampa Electric. However, it is 1898 & Co.'s recommendation that 20 percent contingency be included on the direct costs in the estimates and that owner indirect costs be included as 5 percent of the direct costs.

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APPENDIX A – COST ESTIMATE SUMMARIES

Table A-1
Bayside
Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Bayside						
Unit 1						
Aux Boiler	$ 7,000	$ 7,000	$ -	$ -	$ 14,000	$ -
CTGs and HRSGs	$ 1,939,000	$ 1,895,000	$ -	$ -	$ 3,834,000	$ -
Steam Turbine & Building	$ 872,000	$ 852,000	$ -	$ -	$ 1,724,000	$ -
SCR	$ 82,000	$ 80,000	$ -	$ -	$ 162,000	$ -
Stacks	$ 91,000	$ 89,000	$ -	$ -	$ 180,000	$ -
GSU & Foundation	$ 120,000	$ 117,000	$ -	$ -	$ 237,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 50,000	$ -	$ 50,000	$ -
Debris	$ -	$ -	$ 27,000	$ -	$ 27,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (4,312,000)
Subtotal	**$ 3,111,000**	**$ 3,040,000**	**$ 77,000**	**$ -**	**$ 6,228,000**	**$ (4,312,000)**
Unit 2						
Aux Boiler	$ 10,000	$ 9,000	$ -	$ -	$ 19,000	$ -
CTGs and HRSGs	$ 2,767,000	$ 2,704,000	$ -	$ -	$ 5,471,000	$ -
Steam Turbine & Building	$ 883,000	$ 863,000	$ -	$ -	$ 1,746,000	$ -
SCR	$ 109,000	$ 106,000	$ -	$ -	$ 215,000	$ -
Stacks	$ 122,000	$ 119,000	$ -	$ -	$ 241,000	$ -
GSU & Foundation	$ 153,000	$ 149,000	$ -	$ -	$ 302,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 50,000	$ -	$ 50,000	$ -
Debris	$ -	$ -	$ 22,000	$ -	$ 22,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (5,558,000)
Subtotal	**$ 4,044,000**	**$ 3,950,000**	**$ 72,000**	**$ -**	**$ 8,066,000**	**$ (5,558,000)**
Units 3-6						
CTGs and HRSGs	$ 555,000	$ 543,000	$ -	$ -	$ 1,098,000	$ -
Stacks	$ 18,000	$ 18,000	$ -	$ -	$ 36,000	$ -
GSU & Foundation	$ 16,000	$ 16,000	$ -	$ -	$ 32,000	$ -
Debris	$ -	$ -	$ 9,000	$ -	$ 9,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (1,259,000)
Subtotal	**$ 589,000**	**$ 577,000**	**$ 9,000**	**$ -**	**$ 1,175,000**	**$ (1,259,000)**
Common						
Cooling Water Intakes and Circulating Water Pumps	$ 41,000	$ 40,000	$ -	$ 68,000	$ 149,000	$ -
Roads	$ 215,000	$ 210,000	$ -	$ -	$ 425,000	$ -
All BOP Buildings	$ 139,000	$ 136,000	$ -	$ -	$ 275,000	$ -
Fuel Equipment	$ 6,000	$ 6,000	$ -	$ -	$ 12,000	$ -
All Other Tanks	$ 851,000	$ 832,000	$ -	$ -	$ 1,683,000	$ -
Transformers & Foundation	$ -	$ -	$ -	$ 404,000	$ 404,000	$ -
Mercury & Universal Waste Disposal	$ -	$ -	$ -	$ 30,000	$ 30,000	$ -
Pond Closure	$ -	$ -	$ -	$ 2,229,000	$ 2,229,000	$ -
Concrete Removal, Crushing, & Disposal	$ -	$ -	$ 55,000	$ -	$ 55,000	$ -
Grading & Seeding	$ -	$ -	$ -	$ 1,957,000	$ 1,957,000	$ -
Debris	$ -	$ -	$ 11,000	$ -	$ 11,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (399,000)
Subtotal	**$ 1,252,000**	**$ 1,224,000**	**$ 66,000**	**$ 4,688,000**	**$ 7,230,000**	**$ (399,000)**
Bayside Subtotal	**$ 8,996,000**	**$ 8,791,000**	**$ 224,000**	**$ 4,688,000**	**$ 22,699,000**	**$ (11,528,000)**
TOTAL DECOM COST (CREDIT)					**$ 22,699,000**	**$ (11,528,000)**
PROJECT INDIRECTS (0%)					**$ -**	
CONTINGENGY (0%)					**$ -**	
TOTAL PROJECT COST (CREDIT)					**$ 22,699,000**	**$ (11,528,000)**
TOTAL NET PROJECT COST (CREDIT)					**$ 11,171,000**	

Table A-2
Big Bend
Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Big Bend						
Unit 1						
Asbestos Removal	$ -	$ -	$ -	$ 767,000	$ 767,000	$ -
Boiler	$ 1,243,000	$ 1,215,000	$ -	$ -	$ 2,458,000	$ -
Steam Turbine & Building	$ 740,000	$ 723,000	$ -	$ -	$ 1,463,000	$ -
Precipitators	$ 168,000	$ 164,000	$ -	$ -	$ 332,000	$ -
SCR	$ 473,000	$ 463,000	$ -	$ -	$ 936,000	$ -
Scrubber / FGD	$ 245,000	$ 240,000	$ -	$ -	$ 485,000	$ -
Stacks	$ 347,000	$ 339,000	$ -	$ -	$ 686,000	$ -
Cooling Water Intakes and Circulating Water Pumps	$ -	$ -	$ -	$ 108,000	$ 108,000	$ -
GSU, Electrical & Foundation	$ 50,000	$ 49,000	$ -	$ -	$ 99,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 93,000	$ -	$ 93,000	$ -
Debris	$ -	$ -	$ 421,000	$ -	$ 421,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (2,899,000)
Subtotal	**$ 3,266,000**	**$ 3,193,000**	**$ 514,000**	**$ 875,000**	**$ 7,848,000**	**$ (2,899,000)**
Unit 2						
Asbestos Removal	$ -	$ -	$ -	$ 767,000	$ 767,000	$ -
Boiler	$ 2,224,000	$ 2,173,000	$ -	$ -	$ 4,397,000	$ -
Steam Turbine & Building	$ 740,000	$ 723,000	$ -	$ -	$ 1,463,000	$ -
Precipitator	$ 131,000	$ 128,000	$ -	$ -	$ 259,000	$ -
SCR	$ 473,000	$ 463,000	$ -	$ -	$ 936,000	$ -
Scrubber / FGD	$ 245,000	$ 240,000	$ -	$ -	$ 485,000	$ -
Stacks	$ 347,000	$ 339,000	$ -	$ -	$ 686,000	$ -
Cooling Water Intakes and Circulating Water Pumps	$ -	$ -	$ -	$ 99,000	$ 99,000	$ -
GSU, Electrical & Foundation	$ 47,000	$ 46,000	$ -	$ -	$ 93,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 172,000	$ -	$ 172,000	$ -
Debris	$ -	$ -	$ 421,000	$ -	$ 421,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (2,877,000)
Subtotal	**$ 4,207,000**	**$ 4,112,000**	**$ 593,000**	**$ 866,000**	**$ 9,778,000**	**$ (2,877,000)**
Unit 3						
Asbestos Removal	$ -	$ -	$ -	$ 767,000	$ 767,000	$ -
Boiler	$ 2,224,000	$ 2,173,000	$ -	$ -	$ 4,397,000	$ -
Steam Turbine & Building	$ 740,000	$ 723,000	$ -	$ -	$ 1,463,000	$ -
Precipitator	$ 124,000	$ 121,000	$ -	$ -	$ 245,000	$ -
SCR	$ 477,000	$ 466,000	$ -	$ -	$ 943,000	$ -
Scrubber / FGD	$ 245,000	$ 240,000	$ -	$ -	$ 485,000	$ -
Stacks	$ 376,000	$ 367,000	$ -	$ -	$ 743,000	$ -
Cooling Water Intakes and Circulating Water Pumps	$ -	$ -	$ -	$ 97,000	$ 97,000	$ -
GSU, Electrical & Foundation	$ 55,000	$ 54,000	$ -	$ -	$ 109,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 191,000	$ -	$ 191,000	$ -
Debris	$ -	$ -	$ 421,000	$ -	$ 421,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (2,922,000)
Subtotal	**$ 4,241,000**	**$ 4,144,000**	**$ 612,000**	**$ 864,000**	**$ 9,861,000**	**$ (2,922,000)**
Unit 4						
Asbestos Removal	$ -	$ -	$ -	$ 837,000	$ 837,000	$ -
Boiler	$ 1,366,000	$ 1,335,000	$ -	$ -	$ 2,701,000	$ -
Steam Turbine & Building	$ 763,000	$ 746,000	$ -	$ -	$ 1,509,000	$ -
Precipitator	$ 217,000	$ 212,000	$ -	$ -	$ 429,000	$ -
SCR	$ 501,000	$ 490,000	$ -	$ -	$ 991,000	$ -
Scrubber / FGD	$ 258,000	$ 253,000	$ -	$ -	$ 511,000	$ -
Stacks	$ 376,000	$ 367,000	$ -	$ -	$ 743,000	$ -
Cooling Water Intakes and Circulating Water Pumps	$ -	$ -	$ -	$ 96,000	$ 96,000	$ -
GSU, Electrical & Foundation	$ 52,000	$ 51,000	$ -	$ -	$ 103,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 122,000	$ -	$ 122,000	$ -
Debris	$ -	$ -	$ 428,000	$ -	$ 428,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (3,014,000)
Subtotal	**$ 3,533,000**	**$ 3,454,000**	**$ 550,000**	**$ 933,000**	**$ 8,470,000**	**$ (3,014,000)**
GT 4						
CTGs and HRSGs	$ 73,000	$ 71,000	$ -	$ -	$ 144,000	$ -
Flood Wall	$ 52,000	$ 51,000	$ -	$ -	$ 103,000	$ -
Stacks	$ 3,000	$ 3,000	$ -	$ -	$ 6,000	$ -
GSU, Electrical & Foundation	$ 14,000	$ 14,000	$ -	$ -	$ 28,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 5,000	$ -	$ 5,000	$ -
Debris	$ -	$ -	$ 2,000	$ -	$ 2,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (244,000)
Subtotal	**$ 142,000**	**$ 139,000**	**$ 7,000**	**$ -**	**$ 288,000**	**$ (244,000)**
GT 5-6						
CTGs and HRSGs	$ 2,872,000	$ 2,807,000	$ -	$ -	$ 5,679,000	$ -
Steam Turbine & Building	$ 17,000	$ 17,000	$ -	$ -	$ 34,000	$ -
SCR	$ 67,000	$ 66,000	$ -	$ -	$ 133,000	$ -
Flood Wall	$ 228,000	$ 223,000	$ -	$ -	$ 451,000	$ -
Cooling Towers & Basin	$ 238,000	$ 232,000	$ -	$ -	$ 470,000	$ -
GSU, Electrical & Foundation	$ 75,000	$ 73,000	$ -	$ -	$ 148,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 73,000	$ -	$ 73,000	$ -
Debris	$ -	$ -	$ 10,000	$ -	$ 10,000	$ -

Scrap	$	-	$	-	$	-	$	-	$	-	$	(4,186,000)				
Subtotal	**$**	**3,497,000**	**$**	**3,418,000**	**$**	**83,000**	**$**	**-**	**$**	**6,998,000**	**$**	**(4,186,000)**				
Handling																
Coal Handling Facilites	$	331,000	$	324,000	$	-	$	-	$	655,000	$	-				
Coal Storage Area Restoration	$	-	$	-	$	-	$	9,492,000	$	9,492,000	$	-				
Limestone Handling Facilities	$	26,000	$	25,000	$	-	$	-	$	51,000	$	-				
On-site Concrete Crushing & Disposal	$	-	$	-	$	12,000	$	-	$	12,000	$	-				
Debris	$	-	$	-	$	33,000	$	-	$	33,000	$	-				
Scrap	$	-	$	-	$	-	$	-	$	-	$	(187,000)				
Subtotal	**$**	**357,000**	**$**	**349,000**	**$**	**45,000**	**$**	**9,492,000**	**$**	**10,243,000**	**$**	**(187,000)**				
Common																
Cooling Water Intakes and Circulating Water Pumps	$	181,000	$	177,000	$	-	$	-	$	358,000	$	-				
BOP Misc.	$	75,000	$	73,000	$	-	$	-	$	148,000	$	-				
Roads	$	144,000	$	141,000	$	-	$	-	$	285,000	$	-				
All BOP Buildings	$	288,000	$	282,000	$	-	$	-	$	570,000	$	-				
Fuel Equipment	$	413,000	$	404,000	$	-	$	-	$	817,000	$	-				
All Other Tanks	$	495,000	$	484,000	$	-	$	-	$	979,000	$	-				
Transformer Area Remediation	$	-	$	-	$	-	$	345,000	$	345,000	$	-				
Refractory Disposal	$	-	$	-	$	-	$	26,000	$	26,000	$	-				
Mercury & Universal Waste Disposal	$	-	$	-	$	-	$	11,000	$	11,000	$	-				
Fuel Oil Tank Area Remediation	$	-	$	-	$	-	$	336,000	$	336,000	$	-				
Fuel Oil Line Flushing/Cleaning	$	-	$	-	$	-	$	52,000	$	52,000	$	-				
Pond Closure	$	-	$	-	$	-	$	24,589,000	$	24,589,000	$	-				
Gypsum Area	$	-	$	-	$	-	$	17,380,000	$	17,380,000	$	-				
Plant Washdown & Materials Disposal	$	-	$	-	$	-	$	58,000	$	58,000	$	-				
Concrete Removal, Crushing, & Disposal	$	-	$	-	$	85,000	$	-	$	85,000	$	-				
Grading & Seeding	$	-	$	-	$	-	$	5,185,000	$	5,185,000	$	-				
Debris	$	-	$	-	$	14,000	$	-	$	14,000	$	-				
Scrap	$	-	$	-	$	-	$	-	$	-	$	(419,000)				
Subtotal	**$**	**1,596,000**	**$**	**1,561,000**	**$**	**99,000**	**$**	**47,982,000**	**$**	**51,238,000**	**$**	**(419,000)**				
Big Bend Subtotal	**$**	**20,839,000**	**$**	**20,370,000**	**$**	**2,503,000**	**$**	**61,012,000**	**$**	**104,724,000**	**$**	**(16,748,000)**				
TOTAL DECOM COST (CREDIT)									**$**	**104,724,000**	**$**	**(16,748,000)**				
PROJECT INDIRECTS (0%)									**$**	**-**						
CONTINGENGY (0%)									**$**	**-**						
TOTAL PROJECT COST (CREDIT)									**$**	**104,724,000**	**$**	**(16,748,000)**				
TOTAL NET PROJECT COST (CREDIT)									**$**	**87,976,000**						

Table A-3
Polk
Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Polk						
Unit 1CA						
CTGs and HRSGs	$ 687,000	$ 671,000	$ -	$ -	$ 1,358,000	$ -
Steam Turbine & Building	$ 384,000	$ 375,000	$ -	$ -	$ 759,000	$ -
SCR	$ 29,000	$ 28,000	$ -	$ -	$ 57,000	$ -
H2SO4 Plant	$ 275,000	$ 269,000	$ -	$ -	$ 544,000	$ -
Gassifier	$ 743,000	$ 726,000	$ -	$ -	$ 1,469,000	$ -
Stacks	$ 30,000	$ 30,000	$ -	$ -	$ 60,000	$ -
GSU & Foundation	$ 53,000	$ 52,000	$ -	$ -	$ 105,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 43,000	$ -	$ 43,000	$ -
Debris	$ -	$ -	$ 7,000	$ -	$ 7,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (3,325,000)
Subtotal	**$ 2,201,000**	**$ 2,151,000**	**$ 50,000**	**$ -**	**$ 4,402,000**	**$ (3,325,000)**
Unit 2-5 CC						
CTGs and HRSGs	$ 2,481,000	$ 2,424,000	$ -	$ -	$ 4,905,000	$ -
Steam Turbine & Building	$ 300,000	$ 293,000	$ -	$ -	$ 593,000	$ -
SCR	$ 101,000	$ 99,000	$ -	$ -	$ 200,000	$ -
Cooling Towers & Basin	$ 185,000	$ 181,000	$ -	$ -	$ 366,000	$ -
Stacks	$ 121,000	$ 118,000	$ -	$ -	$ 239,000	$ -
GSU & Foundation	$ 168,000	$ 164,000	$ -	$ -	$ 332,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 3,000	$ -	$ 3,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (5,433,000)
Subtotal	**$ 3,356,000**	**$ 3,279,000**	**$ 3,000**	**$ -**	**$ 6,638,000**	**$ (5,433,000)**
Handling						
Coal Handling Facilites	$ 317,000	$ 310,000	$ -	$ -	$ 627,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 14,000	$ -	$ 14,000	$ -
Debris	$ -	$ -	$ 38,000	$ -	$ 38,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (121,000)
Subtotal	**$ 317,000**	**$ 310,000**	**$ 52,000**	**$ -**	**$ 679,000**	**$ (121,000)**
Common						
Cooling Water Intakes and Circulating Water Pumps	$ 35,000	$ 35,000	$ -	$ 275,000	$ 345,000	$ -
BOP Misc.	$ 543,000	$ 531,000	$ -	$ -	$ 1,074,000	$ -
Roads	$ 144,000	$ 141,000	$ 717,000	$ -	$ 1,002,000	$ -
All BOP Buildings	$ 3,000	$ 3,000	$ -	$ -	$ 6,000	$ -
Fuel Equipment	$ 140,000	$ 137,000	$ -	$ -	$ 277,000	$ -
All Other Tanks	$ 222,000	$ 217,000	$ -	$ -	$ 439,000	$ -
Transformers & Foundation	$ -	$ -	$ -	$ 313,000	$ 313,000	$ -
Mercury & Universal Waste Disposal	$ -	$ -	$ -	$ 112,000	$ 112,000	$ -
Pond Closure	$ -	$ -	$ -	$ 1,101,000	$ 1,101,000	$ -
Fuel Oil Tank Area Remediation	$ -	$ -	$ -	$ 325,000	$ 325,000	$ -
Concrete Removal, Crushing, & Disposal	$ -	$ -	$ 63,000	$ -	$ 63,000	$ -
Grading & Seeding	$ -	$ -	$ -	$ 4,362,000	$ 4,362,000	$ -
Debris	$ -	$ -	$ 5,000	$ -	$ 5,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (206,000)
Subtotal	**$ 1,087,000**	**$ 1,064,000**	**$ 785,000**	**$ 6,488,000**	**$ 9,424,000**	**$ (206,000)**
Polk Subtotal	**$ 6,961,000**	**$ 6,804,000**	**$ 890,000**	**$ 6,488,000**	**$ 21,143,000**	**$ (9,085,000)**
TOTAL DECOM COST (CREDIT)					**$ 21,143,000**	**$ (9,085,000)**
PROJECT INDIRECTS (0%)					**$ -**	
CONTINGENGY (0%)					**$ -**	
TOTAL PROJECT COST (CREDIT)					**$ 21,143,000**	**$ (9,085,000)**
TOTAL NET PROJECT COST (CREDIT)					**$ 12,058,000**	

Table A-4
Balm Solar
Solar Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Balm Solar						
Solar Farm						
Solar Panel Removal/Recycling	$ 1,769,500	$ 1,729,100	$ 589,000	$ -	$ 4,087,600	$ -
Panel Supports/Rack	$ 4,766,900	$ 4,658,000	$ -	$ -	$ 9,424,900	$ -
Electrical & Wiring	$ 60,500	$ 59,100	$ -	$ -	$ 119,600	$ -
Site Restoration	$ 103,300	$ 100,900	$ -	$ 1,511,500	$ 1,715,700	$ -
On-site Concrete Crushing and Removal	$ -	$ -	$ 1,100	$ -	$ 1,100	$ -
Debris	$ -	$ -	$ 6,600	$ -	$ 6,600	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$(5,067,900)
Subtotal	**$ 6,700,200**	**$ 6,547,100**	**$ 596,700**	**$ 1,511,500**	**$ 15,355,500**	**$(5,067,900)**
Balm Solar Subtotal	**$ 6,700,200**	**$ 6,547,100**	**$ 596,700**	**$ 1,511,500**	**$ 15,355,500**	**$(5,067,900)**
TOTAL DECOM COST (CREDIT)					**$ 15,355,500**	**$(5,067,900)**
PROJECT INDIRECTS (0%)					**$ -**	
CONTINGENGY (0%)					**$ -**	
TOTAL PROJECT COST (CREDIT)					**$ 15,355,500**	**$(5,067,900)**
TOTAL NET PROJECT COST (CREDIT)					**$ 10,287,600**	

Table A-5
Big Bend Solar
Solar Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Big Bend Solar						
Solar Farm						
Battery Removal and Disposal	$ -	$ -	$ 238,800	$ -	$ 238,800	$ -
Solar Panel Removal/Recycling	$ 822,200	$ 803,500	$ 262,400	$ -	$ 1,888,100	$ -
Panel Supports/Rack	$ 452,700	$ 442,300	$ -	$ -	$ 895,000	$ -
Electrical & Wiring	$ 90,700	$ 88,600	$ -	$ -	$ 179,300	$ -
Site Restoration	$ -	$ -	$ -	$ 426,300	$ 426,300	$ -
On-site Concrete Crushing and Remova	$ -	$ -	$ 4,900	$ -	$ 4,900	$ -
Debris	$ -	$ -	$ 2,100	$ -	$ 2,100	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (553,500)
Subtotal	**$ 1,365,600**	**$ 1,334,400**	**$ 508,200**	**$ 426,300**	**$ 3,634,500**	**$ (553,500)**
Big Bend Solar Subtotal	**$ 1,365,600**	**$ 1,334,400**	**$ 508,200**	**$ 426,300**	**$ 3,634,500**	**$ (553,500)**
TOTAL DECOM COST (CREDIT)					**$ 3,634,500**	**$ (553,500)**
PROJECT INDIRECTS (0%)					**$ -**	
CONTINGENGY (0%)					**$ -**	
TOTAL PROJECT COST (CREDIT)					**$ 3,634,500**	**$ (553,500)**
TOTAL NET PROJECT COST (CREDIT)					**$ 3,081,000**	

Table A-6
Bonnie Mine Solar
Solar Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Bonnie Mine Solar						
Solar Farm						
Solar Panel Removal/Recycling	$ 833,600	$ 814,600	$ 232,500	$ -	$ 1,880,700	$ -
Panel Supports/Rack	$ 1,432,600	$ 1,399,900	$ -	$ -	$ 2,832,500	$ -
Electrical & Wiring	$ 29,100	$ 28,500	$ -	$ -	$ 57,600	$ -
Site Restoration	$ -	$ -	$ -	$ 1,184,100	$ 1,184,100	$ -
On-site Concrete Crushing and Removal	$ -	$ -	$ 300	$ -	$ 300	$ -
Debris	$ -	$ -	$ 3,100	$ -	$ 3,100	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$(1,632,500)
Subtotal	**$ 2,295,300**	**$ 2,243,000**	**$ 235,900**	**$ 1,184,100**	**$ 5,958,300**	**$(1,632,500)**
Bonnie Mine Solar Subtotal	**$ 2,295,300**	**$ 2,243,000**	**$ 235,900**	**$ 1,184,100**	**$ 5,958,300**	**$(1,632,500)**
TOTAL DECOM COST (CREDIT)					**$ 5,958,300**	**$(1,632,500)**
PROJECT INDIRECTS (0%)					**$ -**	
CONTINGENGY (0%)					**$ -**	
TOTAL PROJECT COST (CREDIT)					**$ 5,958,300**	**$(1,632,500)**
TOTAL NET PROJECT COST (CREDIT)					**$ 4,325,800**	

Table A-7
Grange Hall Solar
Solar Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Grange Hall Solar						
Solar Farm						
Solar Panel Removal/Recycling	$ 1,430,700	$ 1,398,000	$ 476,300	$ -	$ 3,305,000	$ -
Panel Supports/Rack	$ 2,209,000	$ 2,158,500	$ -	$ -	$ 4,367,500	$ -
Electrical & Wiring	$ 28,400	$ 27,700	$ -	$ -	$ 56,100	$ -
Site Restoration	$ 67,200	$ 65,700	$ -	$ 995,200	$ 1,128,100	$ -
On-site Concrete Crushing and Removal	$ -	$ -	$ 400	$ -	$ 400	$ -
Debris	$ -	$ -	$ 2,900	$ -	$ 2,900	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$(2,465,900)
Subtotal	**$ 3,735,300**	**$ 3,649,900**	**$ 479,600**	**$ 995,200**	**$ 8,860,000**	**$(2,465,900)**
Grange Hall Solar Subtotal	**$ 3,735,300**	**$ 3,649,900**	**$ 479,600**	**$ 995,200**	**$ 8,860,000**	**$(2,465,900)**
TOTAL DECOM COST (CREDIT)					**$ 8,860,000**	**$(2,465,900)**
PROJECT INDIRECTS (0%)					**$ -**	
CONTINGENGY (0%)					**$ -**	
TOTAL PROJECT COST (CREDIT)					**$ 8,860,000**	**$(2,465,900)**
TOTAL NET PROJECT COST (CREDIT)					**$ 6,394,100**	

Table A-8
Lake Hancock Solar
Solar Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Lake Hancock Solar						
Solar Farm						
Solar Panel Removal/Recycling	$ 1,116,000	$ 1,090,500	$ 315,500	$ -	$ 2,522,000	$ -
Panel Supports/Rack	$ 1,724,100	$ 1,684,700	$ -	$ -	$ 3,408,800	$ -
Electrical & Wiring	$ 22,200	$ 21,700	$ -	$ -	$ 43,900	$ -
Site Restoration	$ 38,400	$ 37,600	$ -	$ 905,900	$ 981,900	$ -
On-site Concrete Crushing and Removal	$ -	$ -	$ 200	$ -	$ 200	$ -
Debris	$ -	$ -	$ 2,100	$ -	$ 2,100	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$(1,957,800)
Subtotal	**$ 2,900,700**	**$ 2,834,500**	**$ 317,800**	**$ 905,900**	**$ 6,958,900**	**$(1,957,800)**
Lake Hancock Solar Subtotal	**$ 2,900,700**	**$ 2,834,500**	**$ 317,800**	**$ 905,900**	**$ 6,958,900**	**$(1,957,800)**
TOTAL DECOM COST (CREDIT)					**$ 6,958,900**	**$(1,957,800)**
PROJECT INDIRECTS (0%)					**$ -**	
CONTINGENGY (0%)					**$ -**	
TOTAL PROJECT COST (CREDIT)					**$ 6,958,900**	**$(1,957,800)**
TOTAL NET PROJECT COST (CREDIT)					**$ 5,001,100**	

Table A-9
Legoland Solar
Solar Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Legoland Solar						
Solar Farm						
Solar Panel Removal/Recycling	$ 22,400	$ 21,900	$ 6,900	$ -	$ 51,200	$ -
Panel Supports/Rack	$ 11,500	$ 11,200	$ -	$ -	$ 22,700	$ -
Electrical & Wiring	$ 21,700	$ 21,200	$ -	$ -	$ 42,900	$ -
Site Restoration	$ -	$ -	$ -	$ 13,000	$ 13,000	$ -
On-site Concrete Crushing and Removal	$ -	$ -	$ 1,700	$ -	$ 1,700	$ -
Debris	$ -	$ -	$ 200	$ -	$ 200	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (17,900)
Subtotal	**$ 55,600**	**$ 54,300**	**$ 8,800**	**$ 13,000**	**$ 131,700**	**$ (17,900)**
Legoland Solar Subtotal	**$ 55,600**	**$ 54,300**	**$ 8,800**	**$ 13,000**	**$ 131,700**	**$ (17,900)**
TOTAL DECOM COST (CREDIT)					**$ 131,700**	**$ (17,900)**
PROJECT INDIRECTS (0%)					**$ -**	
CONTINGENGY (0%)					**$ -**	
TOTAL PROJECT COST (CREDIT)					**$ 131,700**	**$ (17,900)**
TOTAL NET PROJECT COST (CREDIT)					**$ 113,800**	

Table A-10
Lithia Solar
Solar Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Lithia Solar						
Solar Farm						
Solar Panel Removal/Recycling	$ 1,782,800	$ 1,742,000	$ 586,600	$ -	$ 4,111,400	$ -
Panel Supports/Rack	$ 2,275,600	$ 2,223,700	$ -	$ -	$ 4,499,300	$ -
Electrical & Wiring	$ 89,300	$ 87,200	$ -	$ -	$ 176,500	$ -
Site Restoration	$ 69,300	$ 67,700	$ -	$ 1,775,900	$ 1,912,900	$ -
On-site Concrete Crushing and Removal	$ -	$ -	$ 500	$ -	$ 500	$ -
Debris	$ -	$ -	$ 11,400	$ -	$ 11,400	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$(2,878,400)
Subtotal	**$ 4,217,000**	**$ 4,120,600**	**$ 598,500**	**$ 1,775,900**	**$ 10,712,000**	**$(2,878,400)**
Lithia Solar Subtotal	**$ 4,217,000**	**$ 4,120,600**	**$ 598,500**	**$ 1,775,900**	**$ 10,712,000**	**$(2,878,400)**
TOTAL DECOM COST (CREDIT)					**$ 10,712,000**	**$(2,878,400)**
PROJECT INDIRECTS (0%)					**$ -**	
CONTINGENGY (0%)					**$ -**	
TOTAL PROJECT COST (CREDIT)					**$ 10,712,000**	**$(2,878,400)**
TOTAL NET PROJECT COST (CREDIT)					**$ 7,833,600**	

Table A-11
Little Manatee River
Solar Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Little Manatee River						
Solar Farm						
Solar Panel Removal/Recycling	$ 1,760,800	$ 1,720,600	$ 633,600	$ -	$ 4,115,000	$ -
Panel Supports/Rack	$ 2,544,800	$ 2,486,600	$ -	$ -	$ 5,031,400	$ -
Electrical & Wiring	$ 91,600	$ 89,600	$ -	$ -	$ 181,200	$ -
Site Restoration	$ 90,200	$ 88,100	$ -	$ 1,795,900	$ 1,974,200	$ -
On-site Concrete Crushing and Removal	$ -	$ -	$ 1,500	$ -	$ 1,500	$ -
Debris	$ -	$ -	$ 10,900	$ -	$ 10,900	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$(3,107,700)
Subtotal	**$ 4,487,400**	**$ 4,384,900**	**$ 646,000**	**$ 1,795,900**	**$ 11,314,200**	**$(3,107,700)**
Little Manatee River Subtotal	**$ 4,487,400**	**$ 4,384,900**	**$ 646,000**	**$ 1,795,900**	**$ 11,314,200**	**$(3,107,700)**
TOTAL DECOM COST (CREDIT)					**$ 11,314,200**	**$(3,107,700)**
PROJECT INDIRECTS (0%)					**$ -**	
CONTINGENGY (0%)					**$ -**	
TOTAL PROJECT COST (CREDIT)					**$ 11,314,200**	**$(3,107,700)**
TOTAL NET PROJECT COST (CREDIT)					**$ 8,206,500**	

Table A-12
Payne Creek Solar
Solar Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Payne Creek Solar						
Solar Farm						
Solar Panel Removal/Recycling	$ 1,688,900	$ 1,650,300	$ 527,100	$ -	$ 3,866,300	$ -
Panel Supports/Rack	$ 2,390,900	$ 2,336,300	$ -	$ -	$ 4,727,200	$ -
Electrical & Wiring	$ 95,500	$ 93,200	$ -	$ -	$ 188,700	$ -
Site Restoration	$ 103,100	$ 100,700	$ -	$ 1,640,400	$ 1,844,200	$ -
On-site Concrete Crushing and Removal	$ -	$ -	$ 4,000	$ -	$ 4,000	$ -
Debris	$ -	$ -	$ 5,500	$ -	$ 5,500	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$(2,869,600)
Subtotal	**$ 4,278,400**	**$ 4,180,500**	**$ 536,600**	**$ 1,640,400**	**$ 10,635,900**	**$(2,869,600)**
Payne Creek Solar Subtotal	**$ 4,278,400**	**$ 4,180,500**	**$ 536,600**	**$ 1,640,400**	**$ 10,635,900**	**$(2,869,600)**
TOTAL DECOM COST (CREDIT)					**$ 10,635,900**	**$(2,869,600)**
PROJECT INDIRECTS (0%)					**$ -**	
CONTINGENGY (0%)					**$ -**	
TOTAL PROJECT COST (CREDIT)					**$ 10,635,900**	**$(2,869,600)**
TOTAL NET PROJECT COST (CREDIT)					**$ 7,766,300**	

Table A-13
Peace Creek Solar
Solar Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Peace Creek Solar						
Solar Farm						
Solar Panel Removal/Recycling	$ 1,300,200	$ 1,270,500	$ 370,100	$ -	$ 2,940,800	$ -
Panel Supports/Rack	$ 1,796,300	$ 1,755,300	$ -	$ -	$ 3,551,600	$ -
Electrical & Wiring	$ 78,700	$ 76,900	$ -	$ -	$ 155,600	$ -
Site Restoration	$ 71,600	$ 70,000	$ -	$ 970,500	$ 1,112,100	$ -
On-site Concrete Crushing and Removal	$ -	$ -	$ 3,400	$ -	$ 3,400	$ -
Debris	$ -	$ -	$ 4,100	$ -	$ 4,100	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$(2,238,800)
Subtotal	**$ 3,246,800**	**$ 3,172,700**	**$ 377,600**	**$ 970,500**	**$ 7,767,600**	**$(2,238,800)**
Peace Creek Solar Subtotal	**$ 3,246,800**	**$ 3,172,700**	**$ 377,600**	**$ 970,500**	**$ 7,767,600**	**$(2,238,800)**
TOTAL DECOM COST (CREDIT)					**$ 7,767,600**	**$(2,238,800)**
PROJECT INDIRECTS (0%)					**$ -**	
CONTINGENGY (0%)					**$ -**	
TOTAL PROJECT COST (CREDIT)					**$ 7,767,600**	**$(2,238,800)**
TOTAL NET PROJECT COST (CREDIT)					**$ 5,528,800**	

Table A-14
Tampa International
Solar Decommissioning Cost Summary

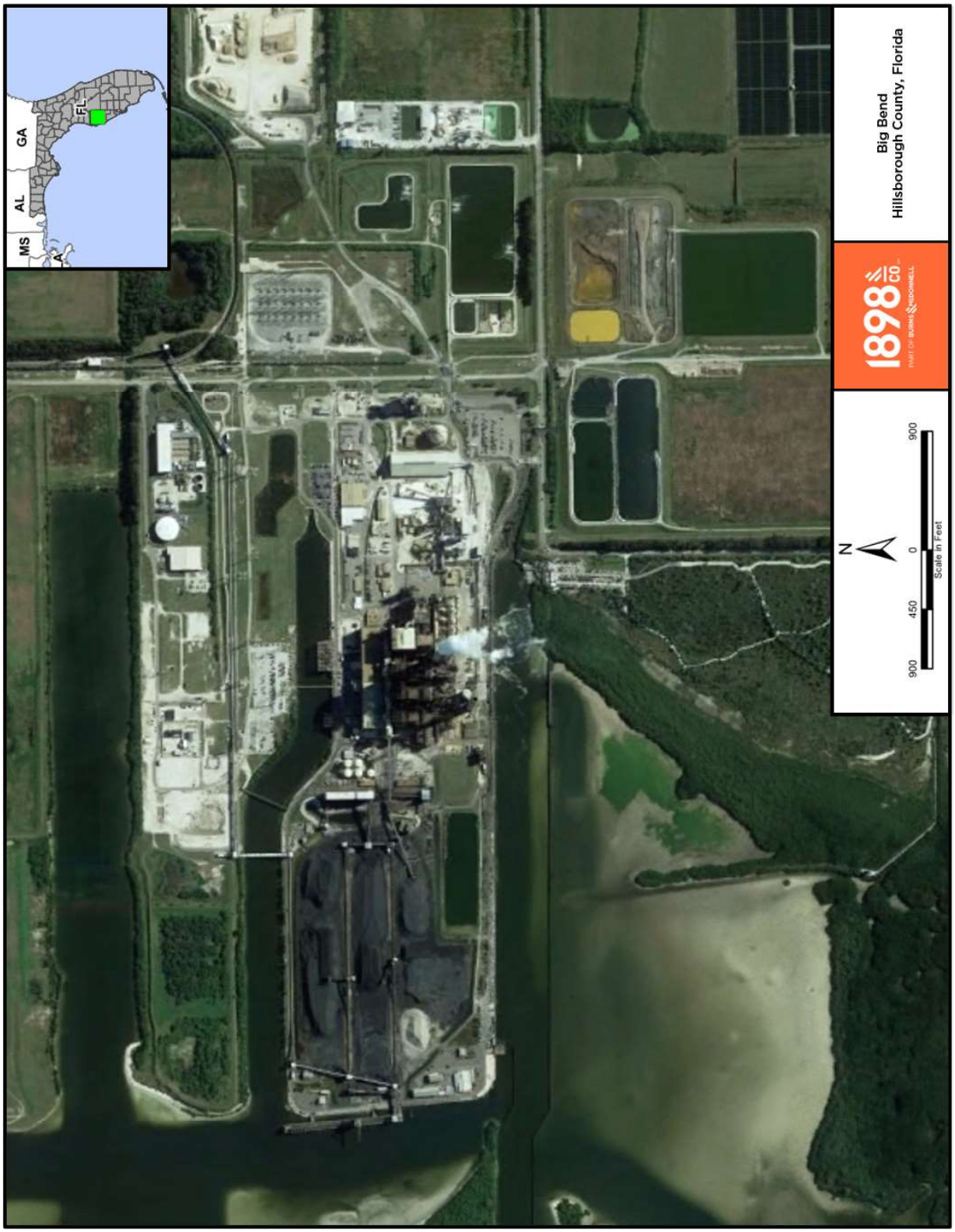
	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Tampa International						
Solar Farm						
Solar Panel Removal/Recycling	$ 28,100	$ 27,500	$ 8,000	$ -	$ 63,600	$ -
Panel Supports/Rack	$ 282,600	$ 276,200	$ -	$ -	$ 558,800	$ -
Electrical & Wiring	$ 3,000	$ 2,900	$ -	$ -	$ 5,900	$ -
Site Restoration	$ -	$ -	$ -	$ 28,500	$ 28,500	$ -
On-site Concrete Crushing and Removal	$ -	$ -	$ 19,800	$ -	$ 19,800	$ -
Debris	$ -	$ -	$ 300	$ -	$ 300	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (198,500)
Subtotal	**$ 313,700**	**$ 306,600**	**$ 28,100**	**$ 28,500**	**$ 676,900**	**$ (198,500)**
Tampa International Subtotal	**$ 313,700**	**$ 306,600**	**$ 28,100**	**$ 28,500**	**$ 676,900**	**$ (198,500)**
TOTAL DECOM COST (CREDIT)					**$ 676,900**	**$ (198,500)**
PROJECT INDIRECTS (0%)					**$ -**	
CONTINGENGY (0%)					**$ -**	
TOTAL PROJECT COST (CREDIT)					**$ 676,900**	**$ (198,500)**
TOTAL NET PROJECT COST (CREDIT)					**$ 478,400**	

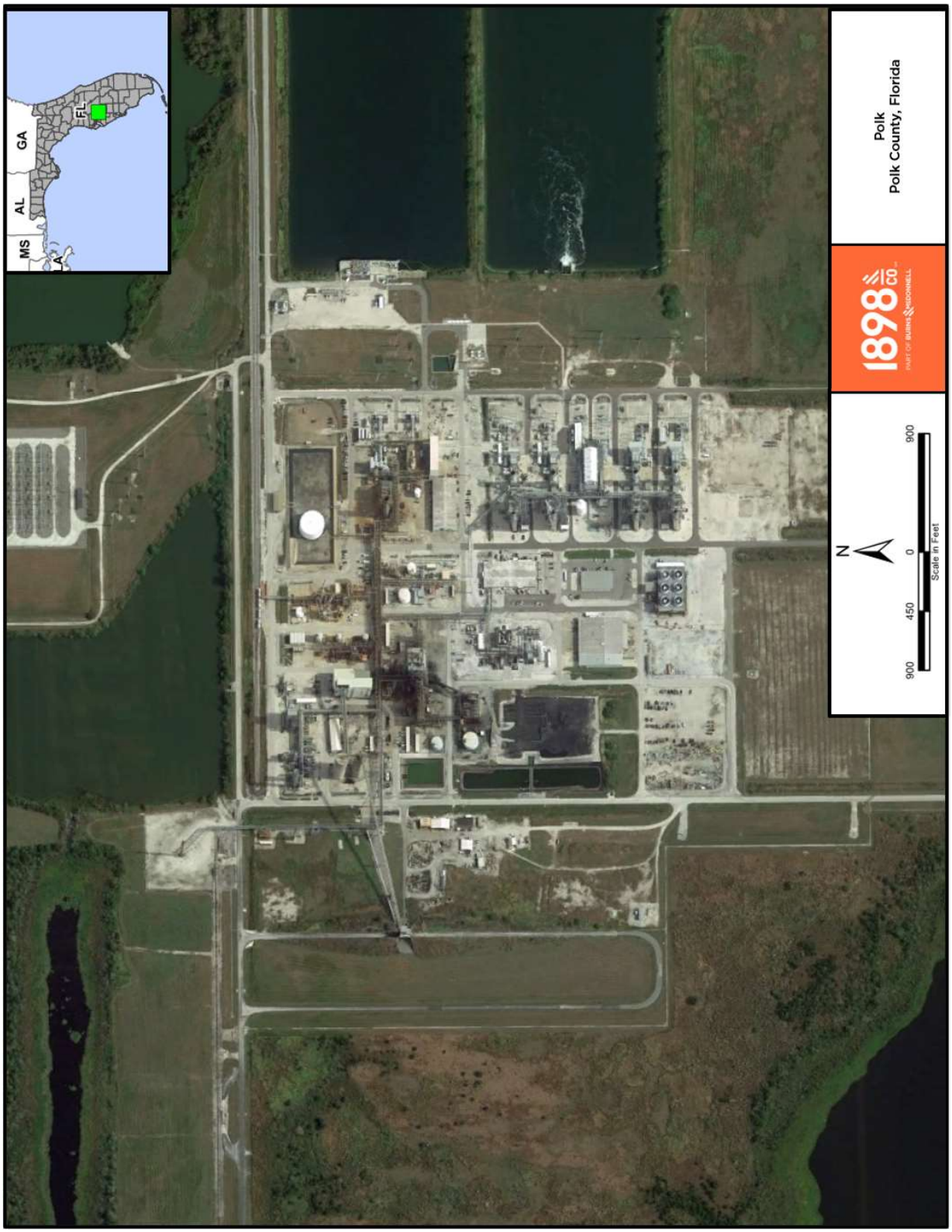
Table A-15
Wimauma Solar
Solar Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Wimauma Solar						
Solar Farm						
Solar Panel Removal/Recycling	$ 1,760,400	$ 1,720,200	$ 603,000	$ -	$ 4,083,600	$ -
Panel Supports/Rack	$ 2,336,500	$ 2,283,100	$ -	$ -	$ 4,619,600	$ -
Electrical & Wiring	$ 51,200	$ 50,100	$ -	$ -	$ 101,300	$ -
Site Restoration	$ 82,900	$ 81,000	$ -	$ 2,503,400	$ 2,667,300	$ -
On-site Concrete Crushing and Removal	$ -	$ -	$ -	$ -	$ -	$ -
Debris	$ -	$ -	$ 6,000	$ -	$ 6,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$(2,731,100)
Subtotal	**$ 4,231,000**	**$ 4,134,400**	**$ 609,000**	**$ 2,503,400**	**$ 11,477,800**	**$(2,731,100)**
Wimauma Solar Subtotal	**$ 4,231,000**	**$ 4,134,400**	**$ 609,000**	**$ 2,503,400**	**$ 11,477,800**	**$(2,731,100)**
TOTAL DECOM COST (CREDIT)					**$ 11,477,800**	**$(2,731,100)**
PROJECT INDIRECTS (0%)					**$ -**	
CONTINGENGY (0%)					**$ -**	
TOTAL PROJECT COST (CREDIT)					**$ 11,477,800**	**$(2,731,100)**
TOTAL NET PROJECT COST (CREDIT)					**$ 8,746,700**	

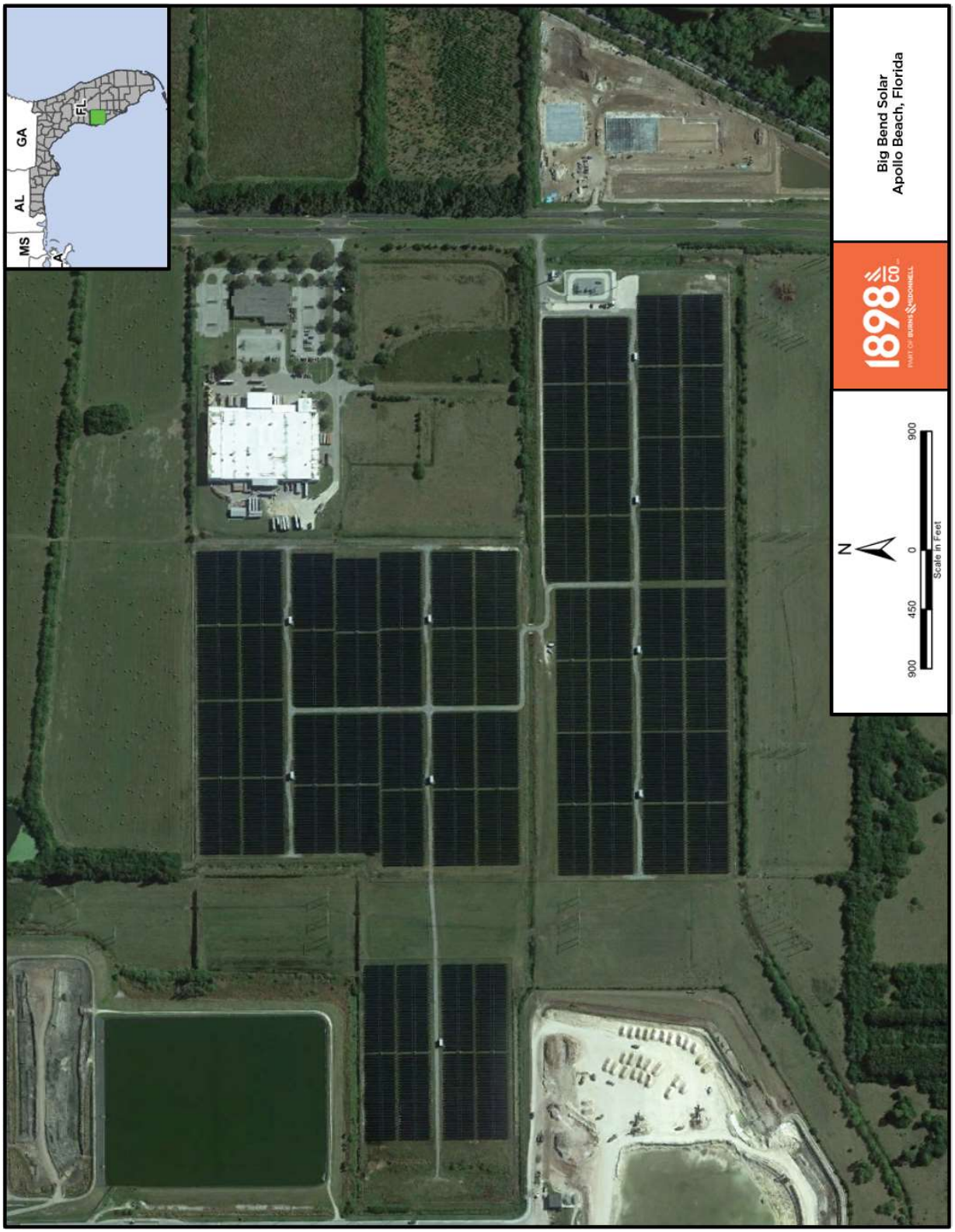
APPENDIX B – SITE AERIALS


FL
GA
AL
MS
LA
Bayside
Hillsborough County, Florida
1898 & CO.
PART OF BURNS & MCDONNELL
N
900
0
450
900
Scale in Feet


FL
GA
AL
MS
Big Bend
Hillsborough County, Florida
1898 & CO.
N
900
0
450
900
Scale in Feet


FL
GA
AL
MS
LA
Polk
Polk County, Florida
1898 & CO.
PART OF BURNS & MCDONNELL
N
900
0
450
900
Scale in Feet

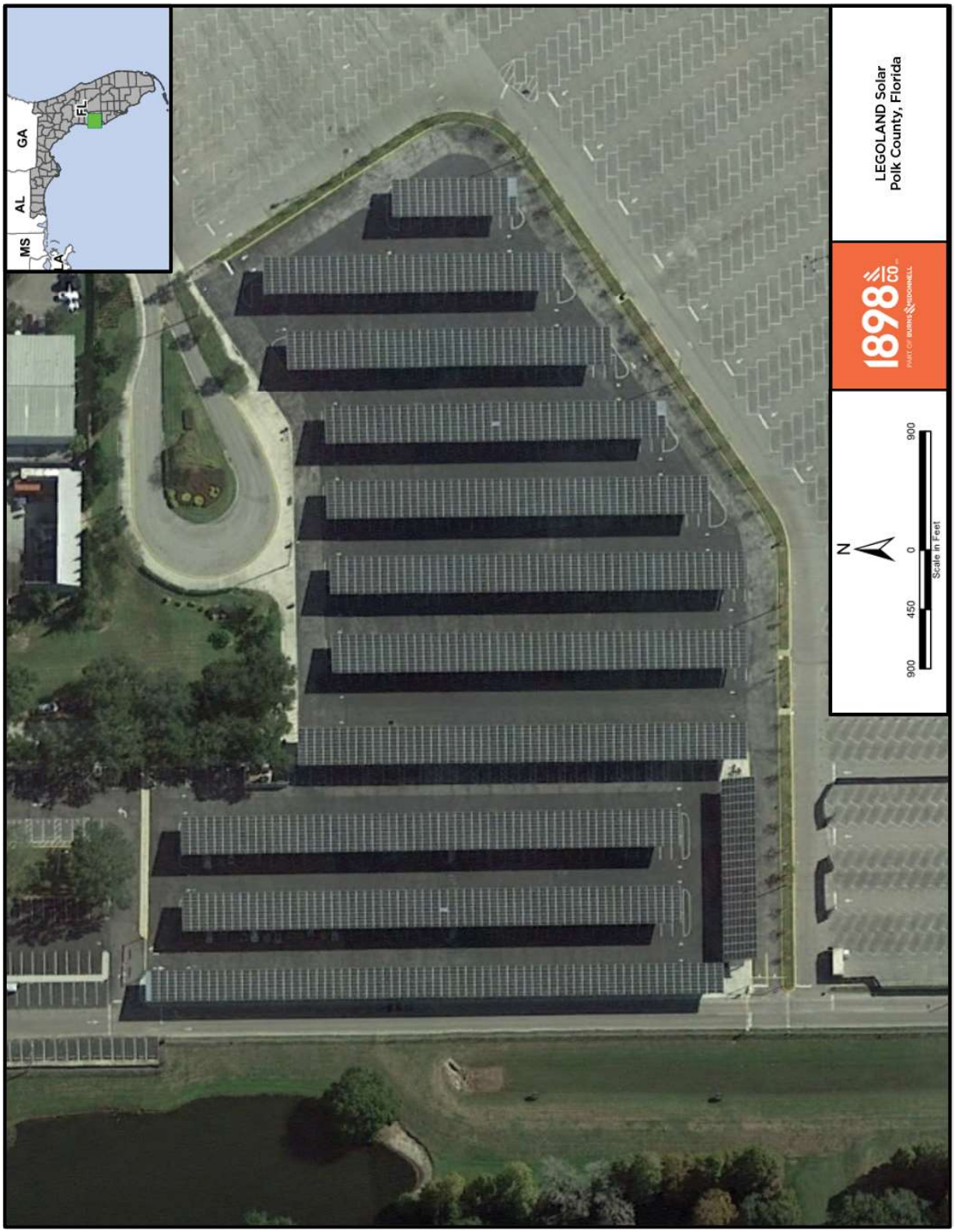

FL
GA
AL
MS
Balm Solar
Hillsborough County, Florida
1898 & CO.
N
900
0
450
900
Scale in Feet


FL
GA
AL
MS
Big Bend Solar
Apollo Beach, Florida
1898 & CO.
PART OF BURNS & MCDONNELL
N
900
0
450
900
Scale in Feet

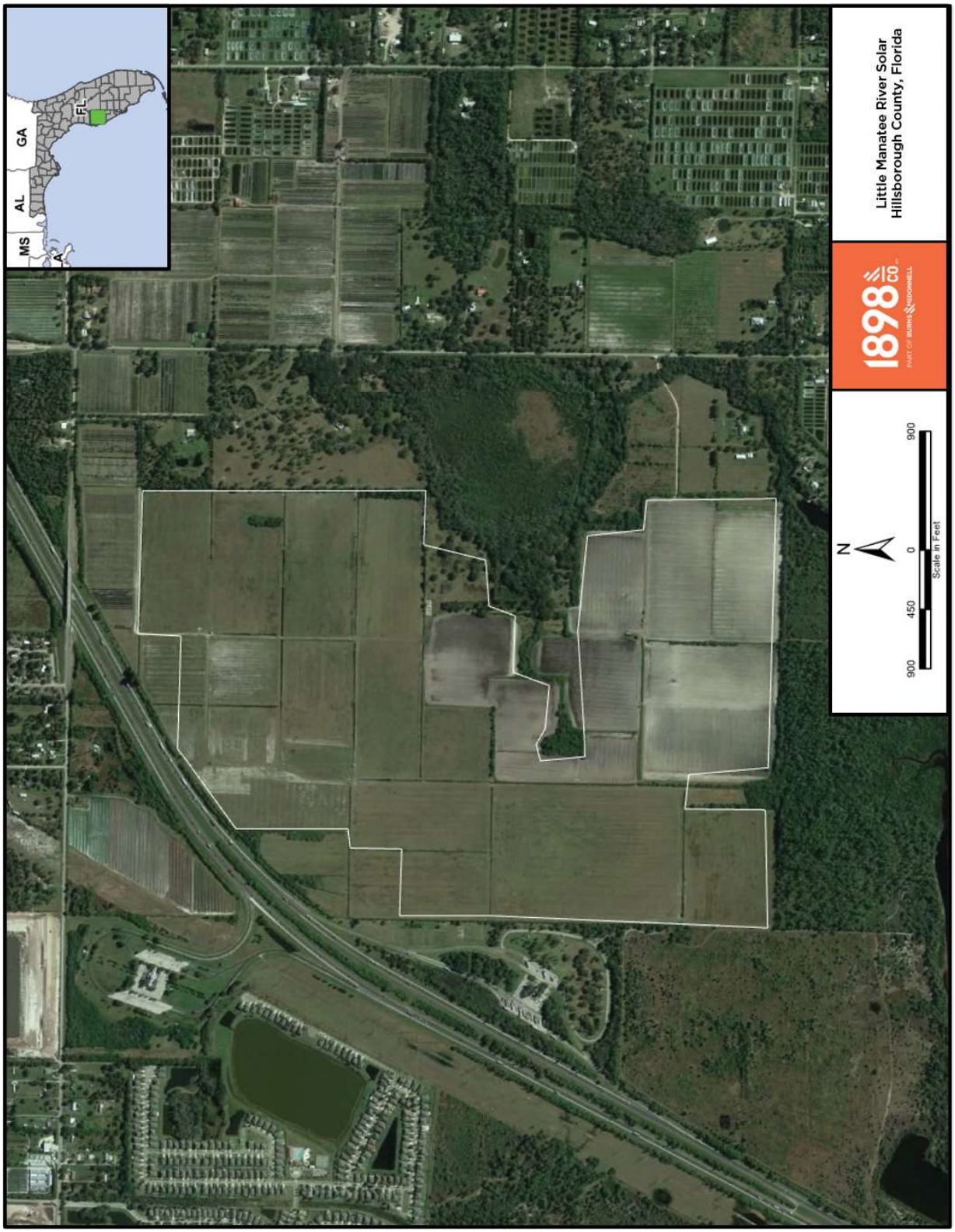

FL
GA
AL
MS
LA
Bonnie Mine Solar
Polk County, Florida
1898 & CO.
PART OF BURNS & MCDONNELL
N
900
0
450
900
Scale in Feet


FL
GA
AL
MS
Grange Hall Solar
Wimauma, Florida
1898 & CO.
PART OF BURNS & MCDONNELL
N
900
0
450
900
Scale in Feet


FL
GA
AL
MS
LA
Lake Hancock Solar
Polk County, Florida
1898 & CO.
PART OF BURNS & MCDONNELL
N
900
0
450
900
Scale in Feet

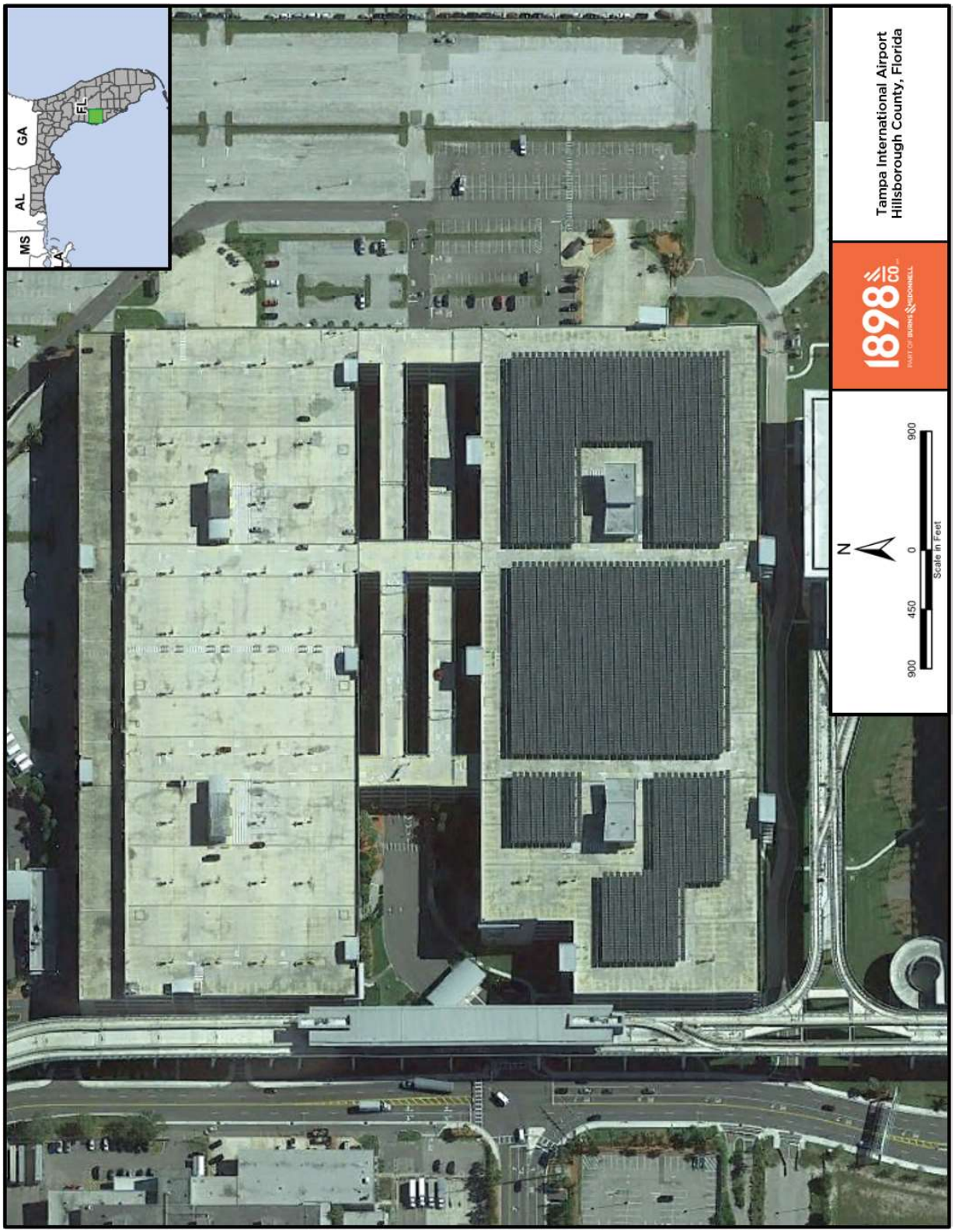

FL
GA
AL
MS
LA
LEGOLAND Solar
Polk County, Florida
1898 & CO.
PART OF BURNS & MCDONNELL
N
900
0
450
900
Scale in Feet


FL
GA
AL
MS
Lithia Solar
Lithia, Florida
1898 & CO.
PART OF BURNS & MCDONNELL
N
900
0
450
900
Scale in Feet


FL
GA
AL
MS
Little Manatee River Solar
Hillsborough County, Florida
1898 & CO.
PART OF BURNS & MCDONNELL
N
900
0
450
900
Scale in Feet


FL
GA
AL
MS
Payne Creek Solar
Polk County, Florida
1898 & CO.
PART OF BURNS & MCDONNELL
N
900
0
450
900
Scale in Feet


FL
GA
AL
MS
LA
Peace Creek Solar
Polk County, Florida
1898 & Co.
PART OF BURNS & MCDONNELL
N
900
0
450
900
Scale in Feet


FL
GA
AL
MS
LA
Tampa International Airport
Hillsborough County, Florida
1898
N
900
0
450
900
Scale in Feet


FL
GA
AL
MS
Wimauma Solar
Wimauma, Florida
1898 & CO.
PART OF BURNS & MCDONNELL
N
900
0
450
900
Scale in Feet

9400 Ward Parkway
Kansas City, MO
816-605-7800
1898andCo.com

Project Manager

Jeff Kopp, PE

Managing Director – Utility Consulting

Education
B.S. / Civil Engineering
MBA / Business Administration

Registrations
- Professional Engineer (FL, IL, IN, MO)

19 years with 1898 & Co.
21 years of experience

Visit my LinkedIn profile.

Jeff is the Managing Director of Utility Consulting at 1898 & Co., part of Burns & McDonnell. He and his team specialize in consulting services for power generation and transmission and distribution projects. This includes power plant decommissioning studies, energy project development, due diligence reviews, resource planning, renewable project development, rate studies and analysis, transmission planning, distribution planning, and grid modernization.

PROJECT EXPERIENCE

Decommissioning Study / Tampa Electric
Florida / 2020

Project manager on a decommissioning study for the entire fleet of power generating facilities owned by Tampa Electric Company in the State of Florida. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives to support regulatory filings. The evaluation included a coal-fired plant, natural gas-fired simple and combined cycle units, an integrated gasification combined cycle plant, and several solar generating facilities. Subsequent to the study, Jeff is provide written testimony and available to provide and oral testimony in Tampa Electric's hearing regarding the study findings.

Decommissioning Study / FPL Energy
Florida, Georgia / 2020

Project manager on a decommissioning study for the entire fleet of power generating facilities owned by FPL Energy and Gulf Power in the States of Florida and Georgia. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives to support regulatory filings. The evaluation included several coal-fired plants, natural gas-fired simple and combined cycle units, and solar generating facilities. Subsequent to the study, Jeff is providing written testimony and available to provide oral testimony in FPL Energy's rate case hearing regarding the study findings.

Decommissioning Study / Xcel Energy
Colorado / 2020

Project manager on a decommissioning study for the entire fleet of power generating facilities owned by Xcel Energy in the State of Colorado. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives to support regulatory filings. The evaluation included several coal-fired plants, natural gas-fired simple and combined cycle units, and hydroelectric plants. Subsequent to the study, Jeff is available to provide written and oral testimony in Xcel Energy's rate hearing regarding the study findings.

Decommissioning Study / Apex Clean Energy
New York / 2019

Project manager on a decommissioning study for a wind farm being developed in New York. The evaluation was performed to determine the costs to demolish the units and restore the site at the end of its useful life to support Calpine's application to construct a major electric generating facility under Article 10 of the New York Public Service Law. Subsequent to the study, Jeff will be available to provide written testimony in the Article 10 public hearings regarding the study findings.

Decommissioning Study / Calpine
New York / 2019

Project manager on a decommissioning study for a wind farm being developed in New York. The evaluation was performed to determine the costs to demolish the units and restore the site at the end of its useful life to support Calpine's application to construct a major electric generating facility under Article 10 of the New York Public Service Law. Subsequent to the study, Jeff provided written testimony in the Article 10 public hearings regarding the study findings.

Decommissioning Study / Southwestern Public Service
Texas, New Mexico / 2018

Project manager on a decommissioning study for the entire fleet of power generating facilities owned by Southwestern Public Service. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives to support regulatory filings. The evaluation included coal-fired plants, natural gas-fired simple cycle units, and gas fired boiler projects. The report and results are being used in support of depreciation rates as part of the rate case filing. Jeff provided support through the regulatory process with written testimony and discovery responses in Southwestern Public Service Company's rate hearing regarding the study findings, leading up to a settlement agreement being reached in both Texas and New Mexico.

Decommissioning Study / Duke Energy
Indiana / 2018

Project manager on a decommissioning study for the entire fleet of power generating facilities owned by Duke Energy Indiana. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives to support regulatory filings. The evaluation included coal-fired plants, natural gas-fired simple and combined cycle units, solar projects, and a hydro-electric plant. Jeff provided support through the regulatory process with written testimony and discovery responses in Duke Energy Indiana's rate hearing regarding the study findings, leading up to a settlement agreement being reached.

Decommissioning Study / Golden Valley Electric Association
Alaska / 2018

Project manager on a decommissioning study for the entire fleet of power generating facilities owned by Golden Valley Electric Association. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives to support regulatory filings. The evaluation included a coal-fired plant, diesel and naphtha fired combustion turbine units, a battery energy storage facility, and a wind farm. Jeff provided written testimony in Golden Valley's Compliance Hearing regarding the retirement of their Healy Unit 1 project. Jeff also will be available to provide written and oral testimony in Golden Valley's rate hearing regarding the study findings.

Decommissioning Study / Owensboro Municipal Utilities
Kentucky / 2018

Project manager on a decommissioning study for coal fired generating facility owned by Owensboro Municipal Utilities. The evaluation was performed to determine the options for retiring the plant and associated costs. Options evaluated included placing one of the units into layup with the potential to restart at a later date, retirement in place, or full demolition and site restoration.

Decommissioning Study / Duke Energy
Florida / 2018

Project manager on a decommissioning study for the entire fleet of power generating facilities owned by Duke Energy Florida. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives to support regulatory filings. The evaluation included a coal-fired plant, natural gas-fired simple and combined cycle units, and solar projects. Subsequent to the study, Jeff will be available to provide

written and oral testimony in Duke Energy Florida's rate hearing regarding the study findings.

Decommissioning Study / Tucson Electric Power
Arizona / 2018

Project manager on a decommissioning study for the entire fleet of power generating facilities owned by Tucson Electric Power. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives to support regulatory filings. The evaluation included a coal-fired plant, natural gas-fired simple and combined cycle units, and solar projects. Subsequent to the study, Jeff will be available to provide written and oral testimony in Tucson Electric Powers's rate hearing regarding the study findings.

Decommissioning Study / Public Service of New Mexico
New Mexico / 2018

Project manager on a decommissioning study for the entire fleet of power generating facilities owned by Duke Energy Florida. The evaluation is being performed to determine the costs to demolish the units and restore the sites at the end of their useful lives to support regulatory filings. The evaluation includes a coal-fired plant, natural gas-fired simple and combined cycle units, and solar projects.

Decommissioning Study / Capital Power
Illinois / 2018

Project manager on a decommissioning study for a wind farm being developed in Illinois. The evaluation was performed to determine the costs to demolish the units and restore the site at the end of its useful life to support the county zoning application. Subsequent to the study, Jeff will be available to provide written and oral testimony in the county zoning hearings regarding the study findings.

Decommissioning Study / Calpine
New York / 2018

Project manager on a decommissioning study for a wind farm being developed in New York. The evaluation was performed to determine the costs to demolish the units and restore the site at the end of its useful life to support Calpine's application to construct a major electric generating facility under Article 10 of the New York Public Service Law. Subsequent to the study, Jeff will be available to provide written and oral testimony in the Article 10 public hearings regarding the study findings.

Decommissioning Study / Tradewind Energy
Illionois / 2018

Project manager on a decommissioning study for a wind being developed in Illinois. The evaluation was performed to determine the costs to demolish the units and restore the site at the end of its useful life to support the county zoning application. Subsequent to the study, Jeff will be available to provide written and oral testimony in the county zoning hearings regarding the study findings.

Decommissioning Study / Hawaii Electric Company
Hawaii / 2018

Project manager on a decommissioning study for a reciprocating engine plant that was under construction for Hawaii Electric Company. The evaluation was performed to determine the costs to demolish the units and restore the site at the end of its useful life.

Decommissioning Study / EDP Renewables
Indiana / 2018

Project manager on a decommissioning study for a wind farm being developed in Indiana. The evaluation was performed to determine the costs to demolish the units and restore the site at the end of its useful life to support the county zoning application. Subsequent to the study, Jeff will be available to provide written and oral testimony in the county zoning hearings regarding the study findings.

Decommissioning Study / EDP Renewables
Illinois / 2018

Project manager on a decommissioning study for a wind farm being developed in Illinois. The evaluation was performed to determine the costs to demolish the units and restore the site at the end of its useful life to support the county zoning application. Subsequent to the study, Jeff provided oral testimony in the county zoning hearings regarding the study findings.

Due Diligence / Centerpoint Energy
Indiana / 2017

Project manager for a due diligence evaluation of Vectren's fleet of power plants being considered as part of a potential full acquisition of Vectren by Centerpoint. The evaluation included a technical, environmental, and contractual review of the coal, simple cycle, and wind farm facilities. As part of the project, Jeff presented the results of the study to CenterPoint's board of directors to support their decision making process for the acquisition.

Due Diligence / PKA AIP
Michigan / 2017

Project manager for a due diligence evaluation of a combined cycle power plant being considered for potential equity investment by PKA AIP. The evaluation included a technical, environmental, and contractual review of the plant.

Decommissioning Study / Tampa Electric Company
Florida / 2017

Project manager on a decommissioning study for the entire fleet of power generating facilities owned by Tampa Electric. The evaluation is being performed to determine the costs to demolish the units and restore the sites at the end of their useful lives to support regulatory filings. The evaluation includes a coal-fired plant, natural gas-fired simple and combined cycle units, and solar projects. Subsequent to the study, Jeff will be available to provide written and oral testimony in Tampa Electric's rate hearing regarding the study findings.

Decommissioning Asset Retirement Obligation Study / NRG Energy & Clearway Energy
Various US Locations / 2017 - 2020

Project manager on a decommissioning study to evaluate the asset retirement obligation costs for numerous renewable energy facilities owned by NRG Energy throughout the United States. The evaluation was performed to determine the costs for any obligations to remove and/or demolish the facilities and equipment and perform environmental remediation and site restoration activities. The study was performed to support compliance with FAS 143 requirements.

Due Diligence / Confidential Client
Northwest / 2017

Project manager for a due diligence evaluation of three natural gas fired combine cycle power plants being considered for potential acquisition. The evaluation included a technical, environmental, and contractual review of the facilities.

Decommissioning Study / Confidential Client
Illinois / 2017

Project manager for a site retirement evaluation to help determine the cost to retire a 600 MW coal-fired project in Illinois at the end of its useful life. Estimates for demolition and site restoration were included in the evaluation. Jeff previously prepared decommissioning study estimates for this plant with the updated study being performed to reflect current pricing and changes in regulations.

Decommissioning Study / AEP
Ohio, Indiana / 2017

Project manager on a decommissioning study for two coal fired power plants owned by Ohio Valley Electric Company and Indiana Kentucky Electric Company, both of which AEP is the largest shareholder. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives for purposes of accruing the costs over the life of the plants.

Decommissioning Study / OGE Energy Corp.
Oklahoma / 2017

Project manager on a decommissioning study for the entire fleet of power generating facilities owned by OGE Energy in Oklahoma. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives to support depreciation rates. The evaluation included several coal-fired plants, natural gas fired boilers, natural gas-fired simple and combined cycle units, and a wind farm. Subsequent to the study, Jeff provided written testimony, and is currently providing support in replying to discovery requests. Jeff will be available to provide oral testimony in OGE Energy's rate hearing regarding the study findings.

Decommissioning Study / Duke Energy
North Carolina, South Carolina, Kentucky / 2017

Project manager on a decommissioning study for a wind farm being developed in New York. The evaluation was performed to determine the costs to demolish the units and restore the site at the end of its useful life to support Calpine's application to construct a major electric generating facility under Article 10 of the New York Public Service Law. Subsequent to the study, Jeff will be available to provide written testimony in the Article 10 public hearings regarding the study findings.

Useful Life Assessment / Confidential Client
Southeast / 2017

Project manager on a useful life assessment for a combined cycle power plant for a confidential client. The evaluation was performed to determine the anticipated life of the facility and associated costs to achieve that life. The study supported financial modeling of the facility as part of the utility's portfolio of assets.

Useful Life Assessment / Confidential Client
Southeast / 2017

Project manager on a useful life assessment for a combined cycle power plant for a confidential client. The evaluation was performed to determine the anticipated life of the facility and associated costs to achieve that life. The study supported financial modeling of the facility as part of the utility's portfolio of assets.

Decommissioning Study / FPL Energy
Florida / 2015

Project manager on a decommissioning study for the entire fleet of power generating facilities owned by FPL Energy in the State of Florida. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives to support regulatory filings. The evaluation included several coal-fired plants, natural gas-fired simple and combined cycle units, solar generating facilities. Subsequent to the study, Jeff provided written and oral testimony in FPL Energy's rate case hearing regarding the study findings.

Decommissioning Study / Xcel Energy
Colorado / 2014

Project manager on a decommissioning study for the entire fleet of power generating facilities owned by Xcel Energy in the State of Colorado. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives to support regulatory filings. The evaluation included several coal-fired plants, natural gas-fired simple and combined cycle units, hydroelectric plants, and a wind farm. Subsequent to the study, Jeff is provided written and oral testimony in Xcel Energy's rate hearing regarding the study findings.

Decommissioning Cost Evaluation / Progress Energy Florida
Florida / 2008-2009

Project manager on a site retirement cost evaluation for all the fossil fuel-fired power generating facilities owned by Progress Energy in the state of Florida. The evaluation was performed to determine the costs to demolish the units and restore the sites and included a natural gas-fired steam plants, fuel oil-fired steam plants, natural gas-fired combustion turbines, coal-fired facilities, and combined cycle generating facilities. Subsequent to the study, Jeff provided direct testimony in Progress Energy Florida's rate case regarding the study findings.

Decommissioning Asset Retirement Obligation Study / NRG Energy
California / 2016

Project manager on a decommissioning study to evaluate the asset retirement obligation costs for all the fossil fuel-fired power generating facilities owned by NRG Energy in the state of California. The evaluation was performed to determine the costs for any legally obligations to demolish facilities and equipment and perform environmental remediation and site restoration activities. The facilities included a natural gas and fuel oil fired plants consisting of boilers, combustion turbines, and combined cycle generating facilities.

Due Diligence / Confidential Client
Northeast / 2016

Project manager for a due diligence evaluation of a portfolio of power generation assets. The assets included gas and oil fired boilers, combined cycle combustion turbines, and simple cycle combustion turbines. The client

was considering acquiring an equity stake in the facilities. The evaluation included a technical, environmental, and contractual review of the facilities. The review primarily focused on evaluation of recent repairs to the facilities, remaining life of the equipment, and potential large capital cost requirements to identify key risks or fatal flaws.

Due Diligence / Confidential Client
Northeast / 2016

Project manager for a due diligence evaluation of a coal fired power generating facility that was being offered for sale. The client was considering acquiring an equity stake in the facility. The evaluation included a technical, environmental, and contractual review of the facilities. The review primarily focused on evaluation of the condition of the equipment and facilities, upgrades required to comply with environmental regulations, and other major capital or O&M projects to identify key risks or fatal flaws.

Due Diligence / Confidential Client
Northeast / 2016

Project manager for a due diligence evaluation of a combined cycle generating facility under development. The client was considering acquiring an equity stake in the facility. The evaluation included a technical, environmental, and contractual review of the natural gas fired generation facility. The review primarily focused on evaluation of the project costs, schedule, permitting, and other development activities to determine any development risks or fatal flaws.

Decommissioning Study / PacifiCorp
Oregon, Washington, Wyoming / 2016

Project manager on a decommissioning study for three wind farms owned by PacifiCorp. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives in support of determining depreciation rates.

Due Diligence / Confidential Client
Northeast / 2016

Project manager for a due diligence evaluation of a combined cycle generating facility under development. The client was considering acquiring an equity stake in the facility. The evaluation included a technical, environmental, and contractual review of the natural gas fired generation facility. The review primarily focused on evaluation of the project costs, schedule, permitting, EPC contract, equipment contracts, and other development activities to determine any development risks or fatal flaws.

Due Diligence / Confidential Client
Southeast / 2016

Project manager for a due diligence evaluation of a natural gas fired combined cycle power generating facility that was being offered for sale. The client was considering acquiring an equity stake in the facility. The evaluation included a technical, environmental, and contractual review of the facility. The review primarily focused on evaluation of the condition of the equipment, sufficiency of contractual arrangements, and environmental compliance to identify key risks or fatal flaws

Decommissioning Study / Big Rivers Electric Cooperative
Kentucky / 2016

Project manager on a decommissioning study for two coal-fired power generating facilities owned by Big Rivers Electric Cooperative. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives.

Due Diligence / Confidential Client
Northeast / 2016

Project manager for a due diligence evaluation of a natural gas fired combined cycle power generating facility that was being offered for sale. The client was considering acquiring an equity stake in the facility. The evaluation included a technical, environmental, and contractual review of the facility. The review primarily focused on evaluation of the condition of the equipment, sufficiency of contractual arrangements, design issues surrounding recent plant performance challenges, and environmental compliance to identify key risks or fatal flaws.

Useful Life Assessment / Confidential Client
Southeast / 2015

Project manager on a useful life assessment for a combined cycle power plant for a confidential client. The evaluation was performed to determine the anticipated life of the facility to support financing of the project associated with acquisition of the facility.

Decommissioning Study / Nebraska Public Power District
Nebraska / 2015

Project manager on a decommissioning study for five power generating facilities owned by Nebraska Public Power District. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives. The evaluation included two coal-fired plants, a natural gas-fired boiler plant, a combined cycle plant, and a wind farm.

Decommissioning Study / Lafayette Utilities System
Louisiana / 2015

Project manager on a decommissioning study for a coal fired generating facility in the state of Louisiana. The evaluation was performed to determine the costs for options to retire the units in place or demolish the units and restore the site now that the units are no longer operating. The costs are being used for planning purposes by the client, to determine the preferred decommissioning plan for the plant.

Decommissioning Study / Colstrip Energy
Montana / 2015

Project manager on a decommissioning study for a coal fired generating facility in the state of Montana. The evaluation was performed to determine the costs to demolish the unit and restore the site at the end of its useful life. The costs were used for planning purposes by the client, to determine the decommissioning funds that need to be accrued throughout the operating life of the facility.

Due Diligence / Confidential Client
Northeast / 2015

Project manager for a due diligence evaluation of a combined cycle generating facility under development. The client was considering acquiring an equity stake in the facility. The evaluation included a technical, environmental, and contractual review of the natural gas fired generation facility. The review primarily focused on evaluation of the project costs, schedule, permitting, and other development activities to determine whether the project was economically attractive and determine any development risks or fatal flaws.

Decommissioning Study / Apex Clean Energy
Various Locations / 2015

Project manager for a site retirement cost evaluation for three proposed wind energy facilities under development. The evaluation was performed to support permitting activities on the facilities.

Decommissioning Study / Oklahoma Gas & Electric
Oklahoma / 2014

Project manager on a decommissioning study for a power generating facility in the Midwest. The evaluation was performed to determine the costs to demolish the units and restore the site at the end of its useful life. The plant was expected to retire within a year or two of the study, and the costs were used for planning purposes by the client.

Decommissioning Study / Basin Electric Cooperative
North Dakota & Wyoming / 2014

Project manager on a decommissioning study for five power generating facilities in the North Dakota and Wyoming. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful life. The costs are being used for planning purposes by the client.

Coal Plant Layup / Hoosier Energy
Indiana / 2014

Project manager on the preparation of a plan to place a coal fired generating facility in long term layup reserve status. The project included preparation of three manuals for the implementation of the layup plan, maintaining the plant during the layup period, and reactivating the plant at the end of the layup period. .

Decommissioning Study / Apex Clean Energy
Illinois / 2014

Project manager for a site retirement cost evaluation for a proposed wind energy facility under development. The evaluation was performed to support permitting activities on the facility.

Decommissioning Study / Confidential Client
Midwest / 2014

Project manager for a due diligence evaluation of a combined cycle generating facility under development. The client was considering acquiring an equity stake in the facility. The evaluation included a technical, environmental, and contractual review of the natural gas fired generation facility. The review primarily focused on evaluation of the project costs, schedule, permitting, and other development activities to determine whether the project was economically attractive and determine any development risks or fatal flaws.

Due Diligence / Duke Energy
Florida / 2014

Project manager for a due diligence evaluation of the Osprey Energy Center combined cycle generating facility being offered for sale. Duke Energy was considering acquiring the facility from the current owner. The evaluation included a technical, environmental, and contractual review of the natural gas fired generation facility. Duke successfully acquired the facility and utilized the Independent Engineer's Report prepared by 1898 & Co. to support the regulatory process through acquisition of the facility.

Due Diligence / Confidential Client
Southeast / 2014

Project manager for a due diligence evaluation of a cogeneration facility being offered for sale. The client was considering acquiring the facility from the current owner. The evaluation included a technical, environmental, and contractual review of the natural gas fired generation facility, including a review of potential modifications to the facility due to the loss of the steam host and associated costs.

Due Diligence / Indiana Municipal Power Agency
Indiana / 2014

Project manager for a due diligence evaluation of a coal-fired generating facility being offered for sale. The client was considering acquiring the assets from the current owner. The evaluation includes a technical, environmental, and contractual review of the coal fired generation facility. .

Due Diligence / Kansas Municipal Power Agency
Missouri / 2014

Project manager for a due diligence evaluation of a combined cycle generating facility being offered for sale. The client was considering acquiring an equity stake in the facility. The evaluation included a technical, environmental, and contractual review of the natural gas fired generation facility.

Strategic Site Selection Study / Confidential Client
Midwest / 2013

Lead on site selection study for a new natural gas fired combined cycle generating resource in the Midwest. The study included evaluating greenfield and brownfield sites to determine the most attractive sites and the limiting factors to development at each site.

Strategic Site Selection Study / Confidential Client
Northeast / 2013

Lead on site selection study for a new gas processing facility in the northeast. The study included evaluating potential greenfield locations for a cryogenic gas processing plant to handle wet and dry gas from the Utica and Marcellus Shale areas.

Site Evaluations / Confidential Client
Southeast / 2013

Lead on the evaluation of three potential sites for a new natural gas fired combined cycle generating facility in the Southeast. The study included reviewing three sites previously selected by the client and ranking those sites relative to one another to determine their suitability for the natural gas-fired generation options under consideration. .

Decommissioning Study / Arizona Public Service
Arizona / 2013

Project manager on a decommissioning study for a four-steam electric generating facilities in the southwest. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives. The evaluation included two coal-fired plants, and two natural gas and fuel oil fired boilers.

Decommissioning Study / Confidential Client
Texas / 2013

Lead on a decommissioning study for a coal fired generating facility in Texas. The study included evaluating options to place the plant in reserve shutdown status or completely retire the plant and perform full plant demolition.

Decommissioning Study / Confidential Client
Upper Midwest / 2013

Project manager on a decommissioning study for a coal fired generating facility in the upper Midwest. The study included phasing the retirement dates of portions of the facility and performing selective demolition as appropriate with full demolition to be complete at the end of useful life of the entire facility. The study also included evaluating potential value of equipment for sale on the secondary market.

Decommissioning Study / Confidential Client
Ohio River Valley / 2013

Project manager on a decommissioning study for two coal fired generating facilities in the Ohio River Valley. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful life. The costs are being used for planning purposes by the client.

Decommissioning Study / EDP Renewables
Illinois / 2013

Project manager on a decommissioning study for a wind farm being developed in New York. The evaluation was performed to determine the costs to demolish the units and restore the site at the end of its useful life to support Calpine's application to construct a major electric generating facility under Article 10 of the New York Public Service Law. Subsequent to the study, Jeff will be available to provide written testimony in the Article 10 public hearings regarding the study findings.

Strategic Site Selection Study / Confidential Client
Western Kansas / 2012

Lead on a strategic site selection study for a new natural gas fired generation resource in the state of Kansas. The study resulted in the identification of multiple viable site alternatives to support the natural gas-fired generation options under consideration.

Due Diligence / Confidential Client
Northeast / 2012

Project manager for a due diligence evaluation of a coal-fired generating facility being offered for sale. The client was considering acquiring the assets from the current owner. The evaluation includes a technical, environmental, and contractual review of the coal fired generation facility.

Due Diligence / Old Dominion Electric Cooperative
Pennsylvania / 2012

Jeff provided support for a due diligence evaluation of a facility under development, that included a 2-on-1 combined cycle power block, being offered for sale. The client was considering acquiring the site from the current owner. The evaluation included a technical, environmental, and contractual review of the combined cycle generation facility. The evaluation included a review of existing agreements and permits in place to facilitate development of the generation resource. The project also included a review of the project capital costs to determine whether the costs were reasonable, and to identify any gaps that may increase the overall project cost.

Due Diligence / Old Dominion Electric Cooperative
New Jersey / 2012

Project manager for a due diligence evaluation of a facility that was under construction at the time, and was being offered for sale. The client was considering acquiring the 2-on-1 combined cycle power generating facility, from the current owner. The evaluation included a technical, environmental, and contractual review of the including a review of existing agreements and permits in place. The project also included a review of the project capital costs to determine whether the costs were reasonable, and to identify any gaps that may increase the overall project cost.

Due Diligence / Old Dominion Electric Cooperative
Virginia / 2012

Project manager for a due diligence evaluation of a facility under development, that included a 2-on-1 combined cycle

power block, being offered for sale. The client was considering acquiring the site from the current owner. The evaluation included a technical, environmental, and contractual review of the combined cycle generation facility. The evaluation included a review of existing agreements and permits in place to facilitate development of the generation resource. The project also included a review of the project capital costs to determine whether the costs were reasonable, and to identify any gaps that may increase the overall project cost.

Due Diligence / Confidential Client
Southeast / 2012

Jeff assisted with a due diligence evaluation of a facility that includes two, 2-on-1 combined cycle power blocks, being offered for sale. The client was considering acquiring the assets from the current owner. The evaluation included a technical, environmental, and contractual review of the combined cycle generation facility.

Development Assistance / Tenaska
Ohio / 2012

Project manager assisting a client with the preparation of a Certificate of Environmental Compatibility and Public Need for conversion of an existing simple cycle facility to combined cycle. The facility includes five combustion turbines, four of which will be converted to two, 2-on-1 combined cycle power blocks. The project includes full preparation of the Certificate of Environmental Compatibility and Public Need application, as well as public meeting support.

Repower Assessment / Confidential Client
North Dakota / 2011

Jeff assisted a client with an evaluation comparing the economic viability of retrofitting an existing coal-fired power plant with air quality control system equipment in comparison to replacing the plant with new natural gas fired generation. The project includes preparing capital cost estimates; operating and maintenance cost estimates, and determining the net present value of each alternative evaluate the relative economic attractiveness of each alternative.

Decommissioning Study / Progress Energy
North Carolina & South Carolina / 2011

Project manager on a decommissioning study for the entire fleet of power generating facilities owned by Progress Energy Carolinas. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives. The evaluation included several coal-fired plants, as well as several natural gas-fired and fuel oil-fired units.

Decommissioning Study / Minnesota Power
Minnesota / 2011

Project manager on a decommissioning study for several power generating facilities owned by Minnesota Power. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives. The evaluation included three coal-fired plants and a biomass fired facility. .

Strategic Site Selection Study / Old Dominion Electric Cooperative
Virginia, Maryland, Pennsylvania, Delaware / 2011

Project manager on a strategic site selection study for a 750 MW combined cycle facility. The study resulted in the identification of multiple viable site alternatives to support the natural gas-fired generation option under consideration.

Due Diligence Evaluation / Old Dominion Electric Cooperative
Pennsylvania / 2011

Project manager on a due diligence evaluation of a 2-on-1 combined cycle facility being offered for sale by Liberty Electric in Pennsylvania. The client was considering acquiring the assets from the current owner. The evaluation included a technical, environmental, and contractual review of the combined cycle generation facility.

Due Diligence Evaluation / Tyr Energy
Florida / 2011

Project manager on a due diligence evaluation of a biomass power generating facility under development by American Renewables. The client was considering an equity

investment in the facility. The evaluation included a 100 MW bubbling fluidized bed boiler and steam turbine.

Due Diligence Evaluation / Electric Cooperative
Maryland / 2011

Project manager on a due diligence evaluation of a combined cycle facility under development in Maryland. The client was considering acquiring the site and all the development rights for installation of a 2-on-1 combined cycle facility. The evaluation included a review of existing agreements and permits in place to facilitate development of the generation resource.

Decommissioning Study / Tampa Electric Co.
Florida / 2011

Project manager on a decommissioning study for the power generating facilities owned by Tampa Electric Company. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives. The evaluation included a coal-fired plant, an integrated gasification combined cycle plant, and several natural gas-fired units.

Decommissioning Study / Confidential Client
Illinois / 2011

Project manager for a site retirement evaluation to help determine the cost to retire a 600 MW coal-fired project in Illinois at the end of its useful life. Estimates for demolition and site restoration were included in the evaluation.

Repower Assessment / Confidential Client
Minnesota / 2010

Jeff assisted a client with an evaluation comparing the economic viability of retrofitting an existing coal-fired power plant with air quality control system equipment in comparison to replacing the plant with new natural gas fired generation. The project includes preparing capital cost estimates; operating and maintenance cost estimates, and determining the net present value of each alternative evaluate the relative economic attractiveness of each alternative.

Biomass Plant Site Selection Study / Confidential Client
Texas / 2010

Project manager for a Site Selection Study for a Biomass project to be located in Texas. The project included ranking of candidate sites to determine a preferred site for development of a 20 MW biomass power generating facility.

Due Diligence Evaluation / Tyr Energy
Multiple Locations / 2010

Project manager on a due diligence evaluation for several natural gas-fired facilities being offered for sale by Tenaska. The client was considering an equity investment in the facilities. The evaluation included four combined cycle facilities and one simple cycle facility.

Power Plant Valuation Assessment / Basin Electric Power Cooperative
North Dakota / 2010

Project manager to provide a valuation assessment of the Antelope Valley Station Unit 2, which is being considered for purchase by Basin Electric Power Cooperative. The project includes valuing the 25 year old 450 MW coal fired unit in current dollars and at specified dates in the future.

Wind Farm Evaluation / Minnesota Power
North Dakota / 2010

Project manager to provide an evaluation of a proposed wind farm development in central North Dakota. The project includes wind resource assessments, conceptual engineering design, capital cost estimates, and estimated busbar costs for development of wind farm project in phases on the land currently under contract.

Decommissioning Cost Evaluations / Horizon Wind Energy
Midwest / 2008-2010

Project manager on multiple site retirement cost evaluations for several proposed wind energy facilities under development by Horizon Wind Energy. The evaluations were performed to support permitting activities on the facilities.

Due Diligence Evaluation / Tyr Energy
Hawaii / 2010

Project manager on a due diligence evaluation for a biomass gasification generating facility under development in Hawaii. The client was considering the facility for investment. The evaluation included a Primenergy gasifier with a net plant output of approximately 12 MW.

Project Development Assistance / Tradewind Energy
Kansas / 2009-2010

Project manager to provide development assistance on a wind farm facility in Southern Kansas. The development assistance includes support on land acquisition efforts for the project, transmission line routing and preliminary design, power collection system preliminary design, and general project development assistance.

Project Development Assistance / Tradewind Energy
Missouri / 2007-2010

Project manager to provide development assistance on two wind turbine facilities in Northern Missouri. The development assistance includes support on land acquisition efforts for the project, transmission line routing and preliminary design, power collection system preliminary design, and general project development assistance.

Decommissioning Cost Evaluation / Northern Indiana Public Service Co.
Indiana / 2008

Project manager on a site retirement cost evaluation for several generating facilities owned by NIPSCO. The evaluation was performed to determine the costs to demolish the units and restore the sites and included several coal-fired facilities and a combined cycle generating facility.

Due Diligence Evaluation / Grays Harbor Public Utility District
Washington / 2008

Project manager on a due diligence evaluation for a biomass-fired cogeneration facility being offered for sale in Washington. The facility evaluated was a paper mill that had been shutdown for several years. The facility included a wood waste fired boiler that provided steam to a steam turbine for electric power generation as well as providing plant process steam.

Due Diligence Evaluation / Tyr Energy
New Mexico / 2008

Project manager on a due diligence evaluation for a natural gas-fired power generating facility being offered for sale in New Mexico. The evaluation included two Mitsubishi 501F combustion turbines operating in combined cycle mode.

Decommissioning Cost Evaluation / Horizon Wind Energy
Illinois / 2008

Project manager on a site retirement cost evaluation for a wind farm being proposed by Horizon Wind Energy in Illinois. The evaluation was performed to determine the costs to demolish the units and restore the sites to meet the county zoning requirements.

Due Diligence Evaluation / Tyr Energy
Western U.S. / 2008

Project manager on a due diligence evaluation for several natural gas-fired power generating facilities being offered for sale throughout the western United States. The evaluation included several GE LM6000 combustion turbines operating in simple cycle mode, several GE LM6000 combustion turbines operating in combined cycle mode, one GE 7EA combustion turbine operating in combined cycle mode, and one GE 7FA combustion turbine operating in simple cycle mode.

Due Diligence Evaluation / Tyr Energy
Virginia / 2007

Project manager on a due diligence evaluation for a generating facility being offered for sale in Virginia. The evaluation included 7 GE LM6000 fuel oil fired combustion turbines operating in simple cycle mode.

Due Diligence Evaluation / Tyr Energy
Colorado / 2007

Project manager on a due diligence evaluation for 5 GE LM6000 combustion turbines operating in combined cycle cogeneration mode with 2 steam turbines. The facility

includes a greenhouse that serves as the plant's thermal host for cogeneration operations.

Project Development Assistance / Mesa Wind Power
Texas / 2007

Jeff provided development assistance on a 4,000 MW wind turbine facility located in the panhandle of Texas. The development assistance includes pro forma economic modeling of the project.

Due Diligence Evaluation / Kelson Energy
Ohio / 2007

Project manager on a due diligence evaluation for a generating facility being offered for sale in Ohio. The evaluation included a partially constructed 2x1 Siemens Westinghouse 7FA combined cycle generating facility.

Due Diligence Evaluation / Grand River Dam Authority
Oklahoma / 2007

Project manager on a due diligence evaluation for a generating facility being offered for sale in Oklahoma. The evaluation included a 4x2 GE 7FA combined cycle generating facility.

Due Diligence Evaluation / Brazos Electric Power Cooperative
Texas / 2007

Project manager on a due diligence evaluation for the purchase of an equity share of a generating facility being constructed in Texas. The evaluation included an 890 MW supercritical pulverized coal fired generating facility.

Due Diligence Evaluation / Tyr Energy
Florida / 2007

Project manager on a due diligence evaluation for a generating facility being offered for sale in Florida. The evaluation included 3 GE 7FA combustion turbines operating in simple cycle mode. .

Cost Estimate Preparation / Direct Energy
Texas / 2007

Project manager for the preparation of planning level cost estimates for a new combined cycle facility to be constructed in Texas.

Due Diligence Evaluation / Tyr Energy
Various U.S Locations / 2007

Project manager on a due diligence evaluation for several generating facilities being offered for sale throughout the U.S. The evaluation included a coal, natural gas, and wind power facilities.

Owner's Engineer Services / Grays Harbor PUD
Washington / 2007

Project manager on an owner's engineer project to evaluate the plans for installation of a refurbished steam turbine at a paper mill. The evaluation included the review of the design for the installation of a 7 MW steam turbine.

Decommissioning Cost Evaluation / Tyr Energy
Various U.S Locations / 2007

Project manager on a site retirement cost evaluation for several generating facilities owned by Tyr Energy. The evaluation was performed to satisfy FASB 143 accounting standards and included a simple cycle and combined cycle generating facilities.

Due Diligence Evaluation / Tyr Energy
Virginia / 2006-2007

Project manager on a due diligence evaluation for a generating facility being offered for sale in Virginia. The evaluation included a 240 MW subcritical pulverized coal fired facility.

Due Diligence Evaluation / Brazos Electric Power Cooperative
Texas / 2006

Project manager on a due diligence evaluation for a generating facility being offered for sale in Texas. The evaluation included a 1x1 GE 7FA combined cycle

generating facility and 2 GE 7FA combustion turbines operating in simple cycle mode.

Due Diligence Evaluation / Kelson Energy
Ohio / 2007

Project manager on a due diligence evaluation for a generating facility being offered for sale in Ohio. The evaluation included a partially constructed 2x1 Siemens Westinghouse 7FA combined cycle generating facility.

Generation Alternatives Study / Ottertail Power Company
North Dakota / 2006

Project manager on a Generation Alternatives Study for the addition of a new 600 MW coal fired unit at an existing coal fired facility. The study includes a pro forma analysis of the technologies considered.

Technology Assessment / Minnesota Power
South Dakota / 2006

Assisted with a technology assessment for the addition of a new 500 MW coal fired unit at an existing coal fired facility. The study includes a pro forma analysis of the technologies considered.

Technology Assessment & Feasibility Study / Ottertail Power Co.
Minnesota / 2006

Project manager on a feasibility study and technology assessment for the addition of a new 500 MW coal fired unit at an existing coal fired facility. The study includes conceptual site layouts, cost estimates, performance estimates, and water balances.

Project Development Assistance / Tradewind Energy
Kansas / 2005-2006

Project manager to provide development assistance on a 250MW wind turbine facility in Central Kansas. The development assistance includes conceptual design and technical support for the development phase of the project.

Siting Study & Technology Assessment / Arizona Public Service
Arizona/New Mexico / 2005-2006

Assisted with a siting study and technology assessment for a 1,800 MW coal fired facility in Arizona and Northwestern New Mexico. Development resulted in the identification of multiple viable site alternatives to support coal-fired generation options.

Due Diligence Evaluation / Tyr Energy
California / 2005-2006

Project manager on a due diligence evaluation for four generating facilities being offered for sale in California. The evaluation included simple cycle facilities consisting of Pratt & Whitney FT8 Twinpacs. Professional Services: 2005-2006

Waste-to-Energy Feasibility Study / CPS Energy
Texas / 2005

Assisted with a feasibility study for a new waste-to-energy facility in the State of Texas. The study included a pro forma analysis of the facility considered.

Due Diligence Evaluation / Tyr Energy
Oklahoma / 2006

Project manager on a due diligence evaluation for a generating facility being offered for sale in Oklahoma. The evaluation included a simple cycle facility consisting of four General Electric 7EA turbines.

Due Diligence Evaluation / Cinergy
Indiana / 2005

Project manager on a due diligence evaluation for a generating facility being offered for sale in Indiana. The evaluation included a simple cycle facility consisting of four Siemens Westinghouse 501D5A turbines.

Due Diligence Evaluation / kRoad Power
Various Locations / 2003-2004

Project manager on due diligence evaluations for several generating facilities being offered for sale throughout the United States. The evaluations included four combined cycle plants utilizing Siemens Westinghouse 501G turbines.

Due Diligence Evaluation / kRoad Power
Various Locations / 2003

Project manager on due diligence evaluations for several generating facilities being offered for sale by Duke Energy. The evaluations included two combined cycle plants and one simple cycle plant utilizing General Electric 7FA turbines and General Electric 7EA turbines respectively.

Decommissioning Cost Evaluation / Old Dominion Electric Cooperative
Maryland/Virginia / 2002-2004

Project manager on several site retirement evaluations to help determine the cost to retire the facilities at the end of their useful life. The evaluations included simple cycle plants utilizing General Electric 7FA turbines and Caterpillar Diesel Gensets. Estimates for demolition and site restoration were included.

Decommissioning Cost Evaluation / Western Farmers Electric Cooperative
Oklahoma / 2004

Project manager on a site retirement evaluation to determine the approximate cost to retire the facilities, prepare demolition contract documents, and evaluate bids. The evaluation included a duel fuel genset site.

Decommissioning Cost Evaluation / Panda Energy
North Carolina / 2003

Project manager on a site retirement evaluation to help determine the cost to retire the Panda-Rosemary Project at the end of its useful life. The evaluation included a combined cycle cogeneration facility in Roanoke Rapids, North Carolina. Estimates for demolition and site restoration were included in the evaluation.

Independent Engineer's Report / Panda Energy
North Carolina / 2003-2004

Produced an Independent Engineer's Report for the Panda-Rosemary Project. The report included a due diligence evaluation of plant performance and financial assessment of a combined cycle cogeneration facility in Roanoke Rapids, North Carolina.

Decommissioning Cost Evaluation / Sempra Energy
Arizona / 2003

Provided a site retirement evaluation to help determine the cost to retire the Mesquite Energy Generating Facility at the end of its useful life. The evaluation included a combined cycle plant near Phoenix, Arizona. Estimates for demolition and site restoration were included in the evaluation.

Feasibility Study / Northeast Utility Service Corp
New Hampshire / 2004

Assisted with a feasibility study to replace an existing coal-fired unit with a new coal fired unit. The study included the installation of a single 600 MW unit in New Hampshire. A pro forma analysis of the new unit was prepared and benchmarked against a pro forma analysis for the existing unit.

Technology Assessment & Feasibility Study / Ottertail Power Corp
South Dakota / 2006

Assisted with a technology assessment and feasibility study for a new coal-fired generation facility in South Dakota. The study included a pro forma analysis of the alternative technologies considered.

Waste-to-Energy Feasibility Study / CPS Energy
Texas / 2005

Assisted with a feasibility study for a new waste-to-energy facility in the State of Texas. The study included a pro forma analysis of the facility considered.

Technology Assessment & Feasibility Study / Progress Energy
Florida / 2004

Assisted with a technology assessment and feasibility study for new solid fuel fired generation in the State of Florida. The study included a pro forma analysis of the alternative technologies considered.

Resources Corporation Project Development Assistance / Peoples Energy

Oregon / 2001-2004

Provided project development assistance for a 1,200 MW combined cycle power plant in Oregon. Mr. Kopp assisted in the preparation of an Energy Facility Site Certificate including preliminary engineering design, preparation and review of written exhibits, and public presentation support.

Project Development Assistance / Peoples Energy Resources Corporation

New Mexico / 2001-2004

Provided project development assistance for a simple cycle power plant in New Mexico. Mr. Kopp provided preliminary engineering design and project development assistance. This included preparing preliminary site design drawings that were approved by the county zoning commission during the site design review process as well as public presentation support.

Testimony Experience

Jeff Kopp, PE

Managing Director – Utility Consulting

Regulatory Agency	Docket No.	Client Represented	Subject
Florida Public Service Commission	20210015-EI	Florida Power & Light Company	Rate Case – Decommissioning Costs
Public Utility Commission of Texas	PUC Docket No. 49831	Southwestern Public Service Company	Rate Case – Decommissioning Costs
New Mexico Public Regulation Commission	Case No. 19-00170-UT	Southwestern Public Service Company	Rate Case – Decommissioning Costs
Federal Energy Regulatory Commission	ER20-277-000	Southwestern Public Service Company	Rate Case – Decommissioning Costs
Indiana Utility Regulatory Commission	Cause No. 45253	Duke Energy Indiana	Rate Case – Decommissioning Costs
The Corporation Commission of the State of Oklahoma	PUD 201800140	Oklahoma Gas and Electric	Rate Case – Decommissioning Costs
The Regulatory Commission of Alaska	U-18-010	Golden Valley Electric Association	Retirement Report for Healy Unit 1 – Decommissioning Costs
Florida Public Service Commission	090079-EI	Progress Energy Florida	Rate Case – Decommissioning Costs
Minnesota Public Utilities Commission	E017/M-10-1082	Otter Tail Power Company	Advanced Determination of Prudence – AQCS Upgrades
Public Service Commission of the State of North Dakota	PU-11-165	Otter Tail Power Company	Advanced Determination of Prudence – AQCS Upgrades
Public Utilities Commission of the State of Colorado	14AL-0660E	Public Service Company of Colorado	Rate Case – Decommissioning Costs
Public Utilities Commission of the State of Colorado	16A-0231E	Public Service Company of Colorado	2016 Revised Depreciation Rates
Florida Public Service Commission	160021-EI; 160062-EI	Florida Power & Light Company	Rate Case – Decommissioning Costs
Kentucky Public Service Commission	2017-00321	Duke Energy Kentucky	Rate Case – Decommissioning Costs
North Carolina Utilities Commission	Docket No. E-2, Sub 1142	Duke Energy Progress	Rate Case – Decommissioning Costs
North Carolina Utilities Commission	Docket No. E-7, Sub 1146	Duke Energy Carolinas	Rate Case – Decommissioning Costs
Corporation Commission of Oklahoma	Cause No. PUD 201700496	Oklahoma Gas and Electric	Rate Case – Decommissioning Costs
State of New York Board on Electric Generation Siting	Case No. 18-F-0262	Calpine Wind	Decommissioning Costs
State of New York Board on Electric Generation Siting	Case No. 16-F-0559	Calpine Wind	Decommissioning Costs
Kentucky Public Service Commission	2019-00269	Big Rivers Electric Corporation	Enforcement of Rates and Service Standards – Decommissioning Costs