

State of Connecticut

Capitol Area System Thermal Energy Plant Acquisition Support Services for the State of Connecticut DAS

FINAL

PREPARED FOR:



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PREPARED BY:

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1. EXECUTIVE SUMMARY

SourceOne was commissioned by AI Engineers, Inc. on behalf of the State of Connecticut (“State of CT” or “State”) to provide support services in the thermal supply contract negotiations as well as provide options for the thermal energy plant acquisition with the Capitol District Energy Center Cogeneration Association (CDECCA). The plant acquisition study aims at pursuing the following two goals:

- Conducting due diligence and performing technical and financial analysis to establish supporting positions for both, contract extension and/or thermal plant purchase.
- Developing and presenting a business case for thermal supply options to the Office of Policy and Management (CT OPM) to secure approval.

The purpose of this acquisition study is to provide a technical and financial evaluation of the plant and to develop the business case for owning and operating the plant beyond the lapse of the existing CDECCA contract in March 2021. The thermal energy plant includes hot water boilers, electric chillers, and pumps, all sized to match the existing load of the CAS, as well as provision for future load growth.

Specifically, the study is carried out in two phases with support provided to the State before and during negotiations with CDECCA.

A summary of the results of the study as they relate to each of the following objectives is as follows:

Phase 1, Objective A: Perform a preliminary high level condition assessment of the CDECCA thermal energy plant.

Findings: The CDECCA plant consists of Electric and Thermal generating equipment. The Electric generation facility contains a gas turbine, generator, heat recovery steam generator, steam turbine and turbine generator. The equipment related to the electricity generation at the facility is all near the end of its economic life. The Thermal generation facility contains two(2) boilers, four(4) chillers and a four(4) cell cooling tower. Boiler #1 and the absorption chiller at the thermal generation facility are nearing end of life and would need to be replaced.

Phase 1, Objective B: Provide a range of purchase prices based on technical and financial evaluations

Findings: The purchase price opinion determined by SourceOne is based solely on the two (2) appraisals conducted by Appraisal Economics and the one (1) appraisal conducted by Federal Appraisal, both provided by the State and assumes that there are no environmental remediation requirements at the property.

Purchase Price Opinion: \$4,093,574

This purchase price opinion takes into consideration two (2) factors, Asset Liquidation and Land/Property Value, and does not take into account the Income Based Approach which is based on revenue from electrical generation equipment. Additional calculation details can be found in Section 4.2.

The State can operate the CDECCA Plant for less than HSE in all scenarios, unless HSE chooses to keep the generating equipment online, which it has said it does not intend to do. The key take-away from removing this electrical generation equipment is that the plant will be moved from an interruptible electric tariff to an uninterruptible tariff which carries an increase in the per unit cost of electricity. Because this tariff change (from Tariff 39 to Tariff 58) is pending, we have included the future variable costs to the State in this analysis.

Note that, for ease of use, the scenario numbers listed within this report and appendices are different than those listed in the SourceOne memo issue Friday, August 14th.

Phase 1, Objective C: Propose a new operating budget for the TEP

Findings: To accurately estimate the cost component related to operations & maintenance SourceOne would ideally need access to HSE's existing cost accounting and profit margin. However, since this was not made available, although requested in our RFI at the onset of the project, to be conservative, we assume that the existing Operating Demand Payment to HSE (~\$2.5M) is reflective of the actual cost to operate and maintain the plant. This includes the cost to operate and maintain heating and cooling equipment, and the cost for expendables including water and chemicals. Unplanned capital costs and unplanned major operating and maintenance costs associated with legacy equipment are the responsibility of, and paid for by, the State. Based on the State's assumption that a third party operator would be used to run the plant under State ownership, we assume that the fixed annual costs to operate (~\$2.5M) will be equivalent to those currently charged by HSE.

Phase 1, Objective D: Create and maintain financial model for the TEP

Findings: See Appendix A for a 20, 30, and 40 year financial model showing present costs during those terms, as well as relative savings for the purchase price of \$4,093,574.

Recommendation/Next Steps:

It is advisable for the State to not spend more than \$4,093,574 for the CDECCA plant. This recommendation is based on the appraisals provided as well as the savings associated with plant purchase if this value is accepted by HSE. Note that this value opinion is only as accurate as the appraisals provided by Appraisal Economics and Federal Appraisal.

The State can operate the CDECCA Plant for less than HSE in most cases, unless HSE chooses to keep the generating equipment online, which it has said it does not intend to do. The key take-away from removing this electrical generation equipment is that the plant will be moved from an interruptible electric tariff to an uninterruptible tariff which carries an increase in the per unit cost of electricity. Because this tariff change (from Tariff 39 to Tariff 58) is pending, we have included the future variable costs to the State in this analysis.

It is recommended that the State pursue conducting a hazardous materials evaluation of the facility prior to purchase or, at a minimum, obtain a copy of a previously conducted evaluation from HSE.

2. BACKGROUND

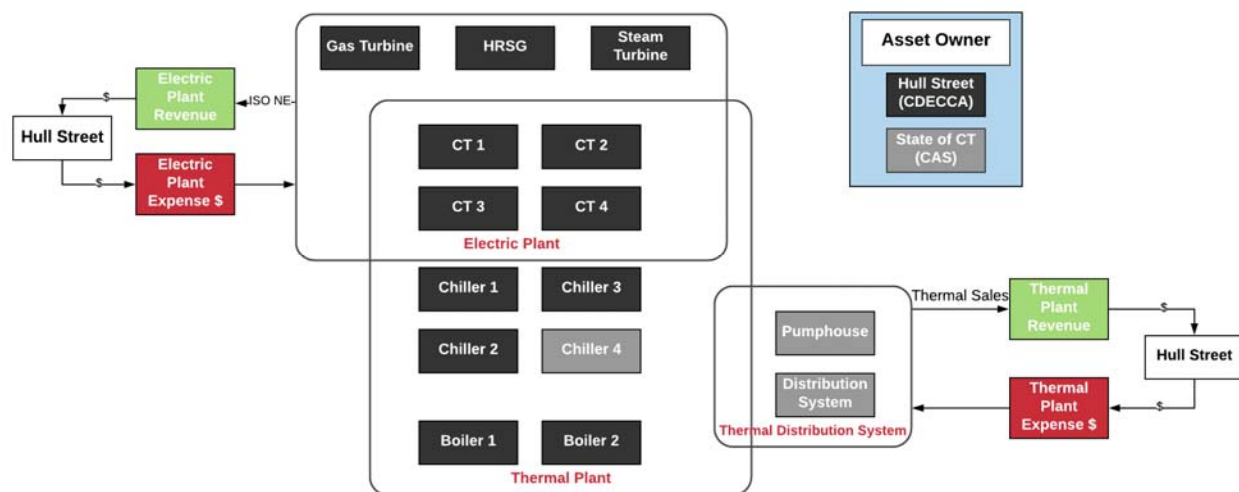
The State of Connecticut (“State of CT” or “State”) owns a thermal energy pumping and distribution piping network which runs throughout downtown Hartford. This piping network, known as the Capitol Area System (CAS), supplies State and private facilities with both hot and chilled water for conditioned air and domestic hot water heating. Capitol District Energy Center Cogeneration Association (CDECCA) is currently contracted to supply steam and chilled water from their existing thermal energy plant, located at 490 Capitol Avenue, to the state-owned pump house where two (2) heat exchangers convert steam to hot water and pumps transport hot and chilled water throughout the energy distribution network. The CDECCA thermal plant also supplies thermal energy to the nearby Capitol Avenue Complex (410-474 Capitol Ave) through a separate piping branch from the pump house.

Key terms from the current contract, which expires March 2021 are as follows

1. Combined gross cooling nameplate capacity: absorption chiller 900 tons, centrifugal chillers 4,500 tons.
2. Combined gross heating nameplate capacity: 177,600 lbs/hr capacity.
3. Demand payments which are comprised of the following components
 - a. Monthly Capacity Demand Payment: \$100,000
 - b. Operating Demand Payment to Hull Street Energy [O&M by PureEnergy, LLC] currently approximately \$110,000 per month (adjusted for CPI-U every October per the October 25, 2018 contract amendment).
4. Energy payments are based on metered consumption of thermal products multiplied by established performance (efficiency) curves. System efficiency under the current contract is based on boiler efficiency curves in Appendix A and Appendix B and the chiller efficiency curves in Appendix C of the October 1, 2008 First Amendment to the contract.

The following sketch (Figure 1) shows the assumed points of demarcation between CDECCA and State owned assets.

Figure 1: CDECCA and State Owned Assets



This was referenced from CAS Supply Agreement Amendment 1 -2015 Exhibit D (see Appendix B)

In 2019, SourceOne carried an evaluation of the technical and financial feasibility of an alternate approach, involving repurposing a building located at 470 Capitol Avenue building to a thermal energy plant capable of delivering up to 45 MMBTU/hr of hot water and 5,400 tons of chilled water to the CAS Loop. The feasibility study addressed site, building, budget, project schedule/timeline criteria and how they relate to the current lease agreement with CDECCA as well as provides a revised executive summary, and recommendations pertaining to either continuing business with CDECCA, purchasing the CDECCA plant, or building their own thermal energy plant.

SourceOne was commissioned by AI Engineers, Inc. in 2019 on behalf of the State of Connecticut to provide a thermal energy plant feasibility study (Capitol Area System Thermal Energy Plant Feasibility Study, November 15, 2019) aimed at evaluating the technical and financial feasibility of the following three (3) options: Business as Usual, State of CT to purchase the existing CDECCA plant, and State of CT to repurpose 470 Capitol Ave to a thermal energy plant. At the end of June 2020, AI Engineers, Inc. on behalf of the State of CT re-engaged SourceOne to perform services to support the purchasing of the existing thermal plant located at 490 Capitol Avenue from CDECCA. The existing CDECCA plant would continue to supply steam and chilled water throughout the energy distribution network. This study assesses the technical and financial condition of the CDECCA plant and provides a range of plant valuations under various operating scenarios.

3. CONDITIONS ASSESSMENT

For the purpose of this study, we have utilized data provided by the State of CT, field observations and past deliverables submitted over the course of our on-call consulting engagement with the State of CT including our Capitol Area System Thermal Plant Feasibility Study prepared in 2019.

The State of CT is interested in purchasing the existing CDECCA plant located at 490 Capitol Ave in Hartford, CT to serve the thermal energy needs of the facilities tied into the CAS loops. As of the date of this report the CDECCA plant is owned by Maxim Power Inc. which is ultimately owned by Hull Street Energy, LLC (HSE). As a separate due diligence effort, the State of CT had previously commissioned two appraisals of the CDECCA plant by Federal Appraisals LLC and Appraisal Economics (see Section 4.1).

3.1. FACILITY DESCRIPTION

The existing CDECCA facility was constructed in 1989 and is located at 490 Capitol Ave. The plant is a natural gas-fired, dual fuel capable, combined-cycle cogeneration merchant plant with a generation nameplate capacity of 62.1 MW. CDECCA provides peaking energy to the ISO New England power market as well as steam and chilled water to the Hartford Capitol district heating network, through a State of CT owned pump house.

The facility consists of a General Electric model PG 6531 (Frame 6) gas combustion turbine generator (CTG) with an in-line three (3) pressure Heat Recovery Steam Generator (HRSG) with duct-firing capabilities, a 22.5 MW Alstom condensing/extraction steam turbine generator (STG), one (1) 900-ton two-stage absorption chiller (de-rated to 350-400 tons), two (2) 1,800-ton centrifugal chillers¹, one (1) 900-ton variable speed centrifugal chiller, a diesel starter engine, and two (2) package boilers to provide supplemental and backup steam to the CAS loop and Capitol Ave Complex. The facility is dual fuel capable of burning natural gas and fuel oil as needed.

The existing heating and cooling equipment are adequately sized to serve the current and future load of the district energy system. The Boiler #1 appears to be significantly oversized, resulting in steam venting over summer months as to be able to comply with boiler minimum turndown restrictions.

As per our understanding, under State ownership the electrical generating equipment in the CDECCA plant would be abandoned in place or removed and sold at salvage value. Modifications to the sequence of operations/other systems are unlikely since the CDECCA plant currently runs electrical generating equipment for only 5%-20% of the year, with the boilers and chillers primarily supporting the thermal load for most of the year.

3.2. MAJOR EQUIPMENT LIST

Existing major equipment² at the CDECCA plant is summarized below:

¹ Procurement and installation of one (1) 1,800 ton centrifugal chiller (Trane 1800T CVHF 1720) has been paid for (\$1,311,467) by the State of CT. It can be purchased from CDECCA for \$1 at the end of the existing contract term.

² Information from Federal Appraisals LLC, CDECCA contract and publicly available sources.

BOILERS

- Cleaver brooks 27,600 lbs/hr – 1 unit. Newest dual-fuel boiler; tuned and inspected annually. Used 8 months of the year, on average.
- Zurn boiler 150,000 lbs/hr (S/N 101087) – 1 unit. 31 years old, burns natural gas only due to the fact that when the unit is run on fuel oil, it does not meet State of CT emissions. Has 4 repaired economizer tubes. Control parts are obsolete. The unit is oversized for the thermal CAS and Capitol Avenue Complex heating load.

Total boiler capacity: 177,600 lbs/hr saturated steam at 125 psig through two (2) boilers. The resulting installed boiler capacity is significantly higher than current peak demand of the system as well as future load. Note that because the existing boiler capacity is oversized for the load, the resulting boiler plant thermal efficiency is much lower than industry benchmarks.

CHILLERS

- Lithium bromide chiller – 1 unit: 900 ton steam driven chiller. Setup to run with either aux boiler #1 or #2 or off the steam turbine extraction when the gas turbine is online. The chiller is 31 years old and currently full capacity is 350 to 400 tons, de-rated from the original 900 tons. The steam driven chiller is to be replaced with a 900-ton centrifugal chiller in the future.
- Centrifugal chillers – 3 units:
 - Unit #2 is a 900 ton Trane chiller that was installed less than a decade ago, it is VFD driven.
 - Unit #3 is 1,800 tons and has an updated controls package. This is a Carrier chiller and parts for this unit are obsolete. The unit is dependent on reengineered parts.
 - Unit #4³ is an 1,800 ton/hr Trane chiller (Trane 1800T CVHF) installed in 2019. It has a VFD driven 4160 drive.

Total contract chiller nameplate capacity: 5,400 Tons (900 tons Absorption [de-rated to 350-400 tons] and 4500 electric centrifugal). The resulting chilled water capacity appears properly sized for the current peak demand (3,750 tons) and future peak demand (4,440 tons).

COOLING TOWER

- BAC-Pritchard 4 Cell, mechanical draft 36,000 GPM Rated design. 3750 Ton rating per cell tower.

³ This chiller has been paid for (\$1,311,467) by the State of CT. It can be purchased from CDECCA for \$1 at the end of the existing contract term.

PUMPS

- General pumps
 - Deaerator feed pump - 250 HP
 - Condensate pump - 40 HP
 - Centrifugal chiller condensate pump - 125 HP
 - Auxiliary fuel oil forwarding pump -7.5 HP
 - Auxiliary boiler feed pump - 100 HP
 - Main circulating water pump - 250 HP
 - Auxiliary cooling water pump - 250 HP
 - Makeup pump - 15 HP
- Boiler feed water pump - 1250 HP

The major equipment that would serve the thermal energy plant have been listed in the above section. Under proposed State ownership the existing combustion turbine, heat recovery steam generator, steam turbine and underground fuel tanks would be decommissioned and removed at HSE's sole cost and expense.

CONDENSATE RETURN SYSTEM

Currently, the plant's condensate return is only 20%. If it is increased to 100%, the total savings to the plant are \$47,000 per year in water / sewer costs as well as a considerable reduction (>20%) in gas costs due to improved system efficiency. The condensate return system should at least attempt to capture all of the condensate within the plant. Steam is also sent directly to the Cap Ave Complex but it is unlikely that this investment would have a short payback.

3.3. PROCESS FLOW DIAGRAMS

Based on current HSE ownership and projected State ownership, a general arrangement was developed (refer to Figure 2 and Figure 3). The general arrangement shows the major equipment at the thermal energy plant owned by HSE and State of CT. The State owns the pump house and purchased Chiller 4 in 2018. After the CDECCA plant purchase, the State will own all the thermal generating equipment and the electrical generating equipment will be decommissioned by HSE.

Figure 2: Before Purchase

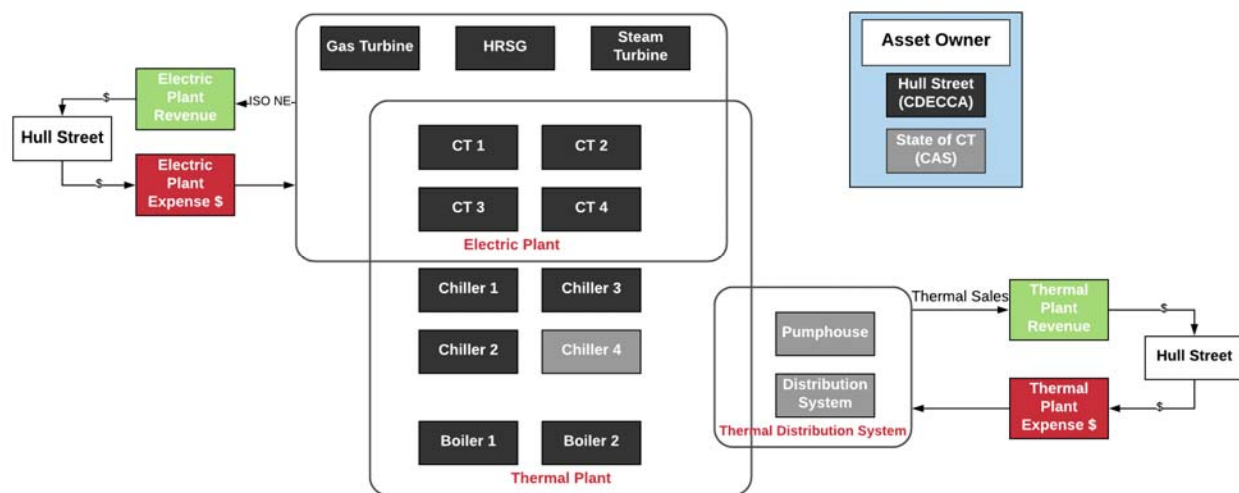
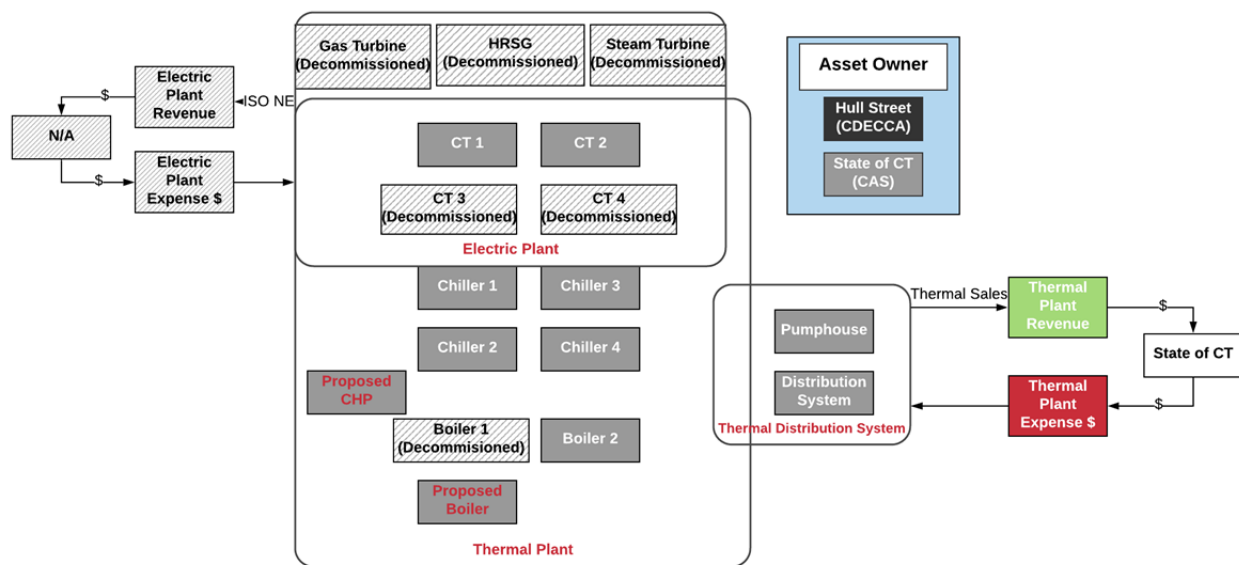


Figure 3: After Purchase



3.4. EXPECTED EQUIPMENT LIFE AND REMAINING USEFUL LIFE

SourceOne performed a desktop evaluation of existing major equipment in the plant in order to estimate salvage value and replacement costs. This evaluation was based solely on the age of the equipment and estimated remaining useful life. Expected equipment useful life is the length of time a piece of equipment is likely to operate before it requires replacement. The Expected Equipment Life estimates are based on the Equipment Life Expectancy Chart authored by American Society of

Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)⁴. The purpose of this chart is to provide information on service life of similar equipment. SourceOne is not a professional appraisal firm and no attempt was made to evaluate the physical condition of the equipment itself. The actual useful life of any piece of equipment is dependent upon many factors such as run hours, maintenance schedule and other factors which are beyond the scope of this report. The expected equipment life and installation year was deducted from the present year to find the remaining life of the equipment. Installation dates for all major equipment are known. The cooling towers and pump installation dates were not known and therefore were assumed to be original to the plant.

Table 1: Major Asset Estimated Remaining Life

Asset List	Installation Year	Expected Equipment Life (Years)	Remaining Life (Years)
Absorption Chiller/Centrifugal Chiller #1	1989	23	0
Centrifugal Chiller #2	2013	23	16
Centrifugal Chiller #3	1989	23	0
Centrifugal Chiller #4	2019	23	22
Cooling Tower #1	1989	30	0
Cooling Tower #2	1989	30	0
Boiler #2	2005	30	15
Boiler #1	1989	30	0
Deaerator feed pump	1989	17	0
Condensate pump	1989	17	0
Centrifugal chiller condensate pump	1989	17	0
Auxiliary fuel oil forwarding pump	1989	17	0
Auxiliary boiler feed pump	1989	17	0
Main circulating water pump	1989	17	0
Auxiliary cooling water pump	1989	17	0
Makeup pump	1989	17	0
Feedwater pump #1 (1250 hp)	1989	17	0
Sump pump	1989	17	0

⁴ ASHRAE is the industry organization that sets the standards and guidelines for most all HVAC-R equipment.

3.5. EXPECTED REPLACEMENT COST

The estimated replacement cost is a useful metric to quantify the future expenses of the plant. Most of the equipment at the thermal plant tends to have a lifespan of around 15-30 years, though equipment that undergoes annual maintenance may exceed expected life span. The replacement cost is derived by estimating the capacity of the replacement equipment and estimating the cost per capacity of the equipment.

Table 2: Major Asset Estimated Replacement Cost

Asset List	Existing Capacity	Replacement Capacity	Replacement Cost	
Absorption/Centrifugal Chiller #1	400 ton	900 ton	720 \$/ton	\$648,000
Centrifugal Chiller #2	900 ton	900 ton	720 \$/ton	\$648,000
Centrifugal Chiller #3	1800 ton	1800 ton	720 \$/ton	\$1,296,000
Centrifugal Chiller #4	1800 ton	1800 ton	720 \$/ton	\$1,296,000
Cooling Tower #1	3750 tons X 2	3750 tons	150 \$/ton	\$562,500
Cooling Tower #2	3750 tons X 2	3750 tons	150 \$/ton	\$562,500
Boiler #2	800 HP	800 HP	1250 \$/HP	\$1,000,000
Boiler #1	4300 HP	1600 HP	1250 \$/HP	\$2,000,000
Deaerator feed pump	250 HP	250 HP	275 \$/HP	\$68,800
Condensate pump	40 HP	40 HP	275 \$/HP	\$11,100
Centrifugal chiller condensate pump	125 HP	125 HP	275 \$/HP	\$34,500
Auxiliary fuel oil forwarding pump	7.5 HP	7.5 HP	275 \$/HP	\$2,100
Auxiliary boiler feed pump	100 HP	100 HP	275 \$/HP	\$27,600
Main circulating water pump	250 HP	250 HP	275 \$/HP	\$68,800
Auxiliary cooling water pump	250 HP	250 HP	275 \$/HP	\$68,800
Makeup pump	15 HP	15 HP	275 \$/HP	\$4,200
Feedwater pump #1	1250 HP	30 HP	275 \$/HP	\$8,300
Feedwater pump #2	-	30 HP	275 \$/HP	\$8,300
Sump Pump	25 HP	25 HP	275 \$/HP	\$7,000

The capacities for most of the equipment were obtained from the Federal appraisal. Estimated capacities are mentioned below.

CHILLER CAPACITY and COST PER CAPACITY

The Trane absorption chiller is 31 years old and currently full capacity is 350 to 400 tons, de-rated from the original 900 tons. We understand that this absorption chiller will be replaced with a 900 ton electric centrifugal chiller in future.

The cost per capacity (720 \$/ton) was derived from the procurement and replacement charges of the recent purchase of one (1) 1,800 ton centrifugal chiller by the State of CT in 2019.

COOLING TOWER CAPACITY and COST PER CAPACITY

The BAC Pritchard four (4) cell counter flow cooling tower is designed at 36,000 GPM. With a temperature difference of 10 degrees between inlet and outlet water temperature, the cooling tower serves 3,750 tons per cell. We understand that only two of the four (4) cooling tower cells will be required in future.

SourceOne developed high-level conceptual cost estimates based on per unit pricing developed in-house from similar projects. The estimated per unit cost of a cooling tower (125 \$/ton) was derived from the above cost estimates.

BOILER CAPACITY and COST PER CAPACITY

The Zurn boiler 150,000 lbs/hr (4,300 HP) has crossed its equipment life and requires replacement as soon as possible. The existing boiler capacity is significantly higher than current peak demand of the system as well as future load. As per the Waldron report, the capacity for the replacement boiler can reduce from 4,300 HP to 1,600 HP.

The estimated per unit cost of the boiler (1,250 \$/HP) was obtained from the Federal Appraisal valuation.

FEEDWATER PUMP CAPACITY and COST PER CAPACITY

The existing Bingham feedwater pump (1,250 HP) is significantly oversized as a result of the existing boiler capacity being oversized. As per Waldron, the steam generated by the plant peaks at 75,000 lbs/hr which equates to around two (2) 30 HP feedwater pumps.

The estimated per unit cost of pumps (275 \$/HP) was derived by finding the average unit cost of various pumps across the market.

3.6. PENDING EQUIPMENT REPLACEMENT COSTS AND CAPITAL RESERVE FUNDING SCHEDULE

3.6.1. PENDING EQUIPMENT REPLACEMENT COSTS

Based on the expected equipment life, remaining useful and replacement costs, SourceOne estimated the 'Year 0' costs for each major piece of equipment which has reached the end of its life and will require immediate replacement, which is summarized in the following table. These costs

apply to the 20, 30 and 40 year schedules and are assumed to be borne by the State regardless of plant ownership.

Table 3: Estimated 'Year 0' Costs

Asset	Cost of Replacement - Year 0
Centrifugal Chiller #1	\$648,000
Centrifugal Chiller #3	\$1,296,000
Cooling Tower #1	\$562,500
Cooling Tower #2	\$562,500
General pumps	\$281,700
Feedwater pump #1	\$8,300
Feedwater pump #2	\$8,300
Boiler #1	\$2,000,000
Total	\$5,367,300

3.6.2. CAPITAL RESERVE FUNDING SCHEDULE

The following charts depict the Capital Reserve Funding Schedule. The capital required is segregated, over a period of time, to cover the repair or replacement cost of existing equipment in the plant. Capital Reserve Funding Schedules are part of a long-term financial plan, which helps in planning future expenses. Annual Capital Reserve Funding goes down over time because, as the term end date approaches, there are fewer assets that require replacement.

Figure 4:

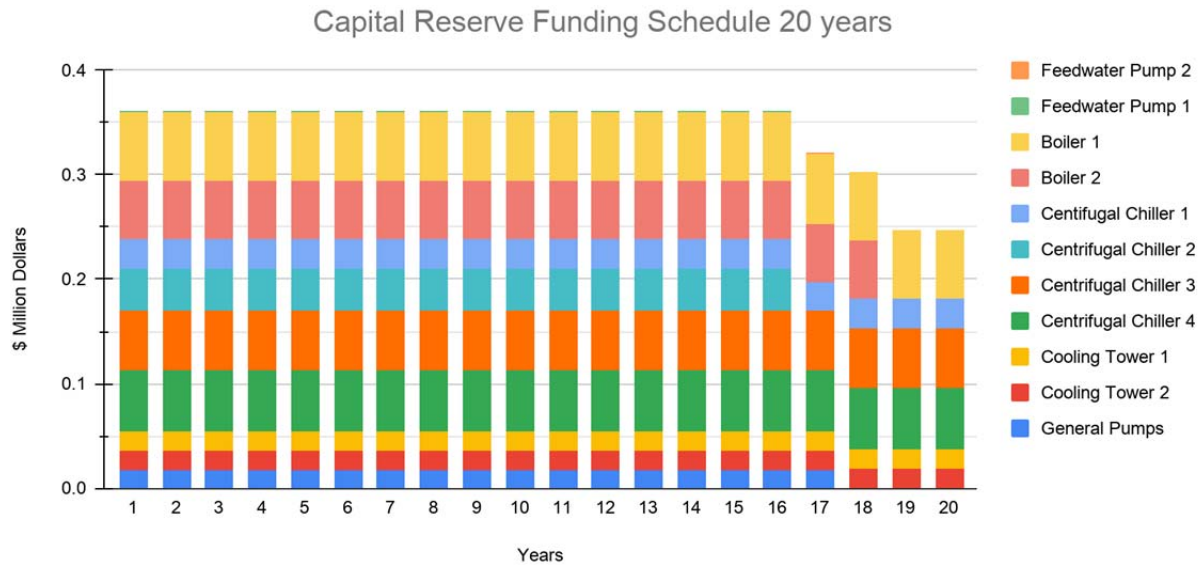


Figure 5:

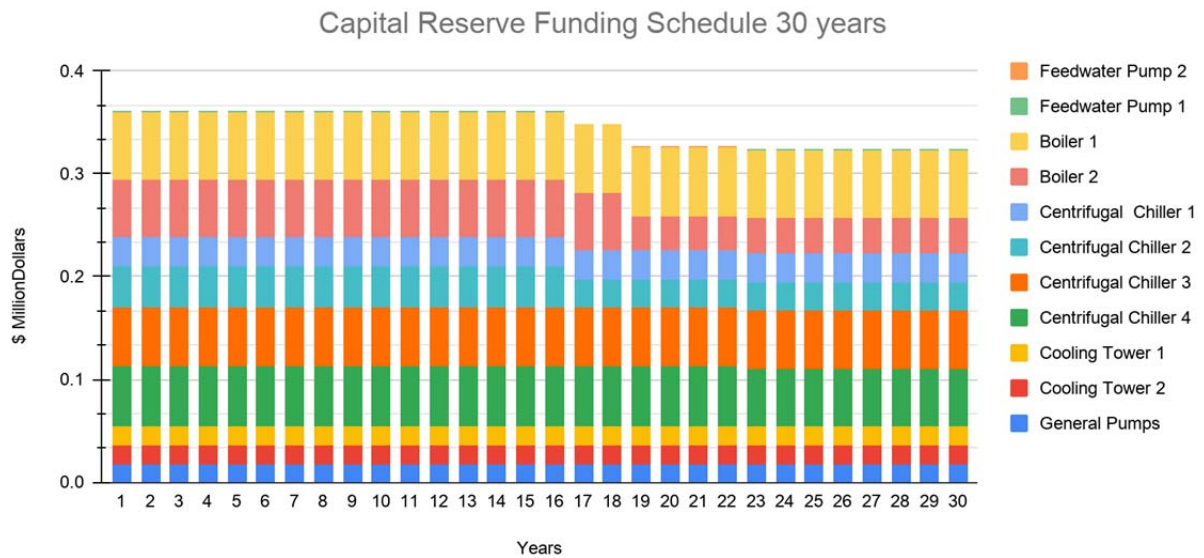
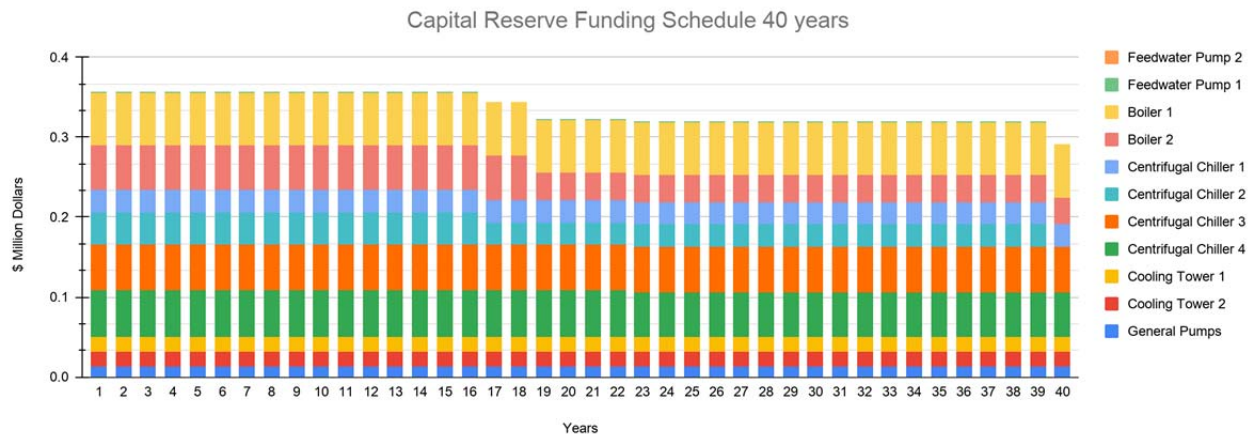


Figure 6:



3.7. DEPRECIATED VALUE

To determine the estimated useful value of the asset, we used the straight-line depreciation rate methodology. The estimated remaining useful life (in years) is divided by the equipment full useful life (in years) to arrive at the straight line depreciation rate. This rate is multiplied by the asset cost. As discussed in Section 3.4, remaining life (in years) for some equipment was estimated.

Table 4: Estimated Depreciated Values

Asset List	Expected Equipment Life (Years)	Remaining Life (Years)	Estimated Cost if New (\$)	Depreciated Value (\$)
Absorption/Centrifugal Chiller #1	23	0	\$648,000	\$0
Centrifugal Chiller #2	23	16	\$648,000	\$450,783
Centrifugal Chiller #3	23	0	\$1,296,000	\$0
Centrifugal Chiller #4	23	22	\$1,296,000	\$1,239,652
Cooling Tower #1	30	15	\$562,500	\$281,250
Cooling Tower #2	30	15	\$562,500	\$281,250
Boiler #2	30	15	\$1,000,000	\$200,000
Zurn Boiler #1 (4300 HP)	30	0	\$2,150,000	\$0
Deaerator feed pump	17	0	\$68,800	\$0
Condensate pump	17	0	\$11,100	\$0
Centrifugal chiller condensate pump	17	0	\$34,500	\$0
Auxiliary fuel oil forwarding pump	17	0	\$2,100	\$0

Auxiliary boiler feedwater pump	17	0	\$27,600	\$0
Main circulating water pump	17	0	\$68,800	\$0
Auxiliary cooling water pump	17	0	\$68,800	\$0
Makeup pump	17	0	\$4,200	\$0
Feedwater pump #1 (1250 HP)	17	0	\$343,800	\$0
Sump pump	17	0	\$7,000	\$0

3.8. SALVAGE VALUE OF EQUIPMENT AT PLANT PURCHASE

As per Federal Appraisal LLC, the equipment related to the electricity and thermal generation at the Facility is all near the end of its economic life. There were different salvage values between the appraisals provided by Appraisal Economics (\$3,180,726) and Federal Appraisals (\$50,000). Due to the significant difference in value, these two (2) were averaged, once the value of electrical generation equipment (\$1,312,500) was removed from the Appraisal Economics number. The resulting value of the equipment is \$959,113.

4. PURCHASE PRICE EVALUATION

4.1. PREVIOUS APPRAISALS

As part of the purchase price evaluation SourceOne reviewed three (3) plant appraisals prepared for the state: Federal Appraisal LLC (Federal), Appraisal Report on CDECCA Co-Generation Plant, November 4, 2019 (Appendix C); Appraisal Economics Inc. (AE), Fair Market Value Study, November 5, 2019 (Appendix D); and, AE, Orderly Liquidation Value, November 5, 2019 (Appendix E). All three (3) of these reports use a valuation date of March 31, 2021, which is the date that the State's current contract with CDECCA expires. The reports also assume that the contract will not be renewed and, after March 31, 2021, the plant will only generate and sell electricity, with no steam or chilled water provided to the State. The Federal report and AE Fair Market Value Study both use an income based approach to determine the market value of the plant based on the assumption of electricity production only. Federal determined a market value of \$5,520,000 and AE determined a market value of \$13,340,000. The main difference in the valuations appears to be the assumptions regarding the amount of electricity sold to market and the overall term. Federal assumes a plant capacity factor of 0.8-1% over seven (7) years while AE assumes a plant capacity factor of 11% over eleven (11) years. SourceOne's own electric market research indicates that electric sales going forward are likely to be very low and closer to the 1% capacity factor. In any case, since it is assumed that the plant would cease electrical generation, per HSE, and only continue to produce steam and chilled water under a State acquisition, these income based valuations are of limited value. Additionally, the owner of the plant has stated that they plan to decommission the electrical generation portion of the plant by 2022, and possibly as soon as 2021, so the assumptions in the appraisals are no longer valid.

Two (2) of the reports did provide estimated values for the salvage/sale value of the plant equipment but they varied widely. Federal estimated a salvage value of \$50,000 based on their assessment of the age and deterioration of the equipment, as well as the costs required to demolish all or part of the existing building in order to access and remove the equipment, the labor cost to remove the equipment, and the cost to test and re-license any usable equipment for reuse elsewhere. Federal concluded that the existing equipment is not desirable on the open market relative to newer, easier to access second-hand equipment. They also noted that even repair or replacement of major equipment in the plant may require demolition portions of the building. The AE Orderly Liquidation Value report estimated a resale value of \$3,180,726 for all of the equipment in the plant. Auxiliary equipment such as pumps was assumed to be sold with major equipment or to have minimal value. AE used a combination of similar sales in the used equipment market and replacement cost less depreciation where comparable sales were not available. AE did not appear to take into account any challenges associated with actually removing the equipment from the building as Federal did. AE also assumed that the power plant would be sold as one unit to be operated elsewhere.

AE estimated the market value of the land, building and improvements to be \$3,465,000. Federal did not provide a similar estimate but did provide the City's total assessed value of \$2,132,700.

Table 5: Appraisal Summary Table

	Income Based Market Value (Turbine Only)	Equipment Sale/Salvage Value (All Equipment)	Land & Building Value
Federal Appraisals	\$5,520,000	\$50,000	\$2,132,700
Appraisal Economics	\$13,340,000	<i>Power Plant - \$1,312,500</i> <i>Steam Equipment - \$116,850</i> <i>Chilled Water Equipment - \$1,713,289</i> <i>Storage Tanks - \$38,807</i> Total - \$3,180,726	\$3,465,000

4.2. PURCHASE PRICE SUMMARY

The purchase price opinion determined by SourceOne is based solely on the two (2) appraisals conducted by Appraisal Economics and the one (1) appraisal conducted by Federal Appraisal, both provided by the State and assumes that there are no environmental remediation requirements at the property.

Purchase Price Opinion: \$4,093,574

Methodology

This purchase price opinion takes into consideration two (2) factors, 'Equipment Sale/Salvage' and 'Land & Building Value', shown in Table 5, and does not take into account the Income Based Approach which is based on revenue from electrical generation equipment.

The 'Equipment Sale/Salvage Value' from Appraisal Economics because it provided a level of accuracy above Federal Appraisal. This value, however, required adjustment as it included the electrical generation equipment, which will not be included in the purchase, and the value of Chiller #4, which is owned by the State. The values of the electrical generating equipment (from Appraisal Economics) and of Chiller #4 (estimated by SourceOne based on linear depreciation) are shown below.

Equipment	Estimate Source	Value
All Equipment	Appraisal Economics	\$3,180,726
Electrical generating equipment	Appraisal Economics	\$1,312,500
Chiller #4	SourceOne	\$1,239,652

Subtracting the values of the electrical generating equipment and Chiller #4 leaves a total equipment value of \$628,574. This value was then added to the 'Land & Building Value' from AE of \$3,465,000 because their estimate was based on a market value of the land, building, and improvements which was a more rigorous effort when compared to Federal.

The sum of these values provided the purchase price opinion of \$4,093,574.

4.3. HSE PROPOSAL

SourceOne was provided with the January 3, 2020 email from Todd Wynn of HSE to the State (Subject: CONFIDENTIAL - NON-BINDING PROPOSALS FOR STATE OF CONNECTICUT) which provided the broad outlines of proposals for the State to either 1) extend the contract to continue to purchase heating and cooling services from HSE or 2) purchase the facility from HSE. As part of a 20 year contract extension, HSE proposed to increase overall plant efficiency by replacing the inefficient older, oversized boiler (Boiler #1) with a smaller, more efficient boiler for \$2 million, and add a 750 kW reciprocating engine (CHP) for \$3 million which would supply power to the chillers and produce limited steam. HSE projected that these improvements would reduce annual variable charges from an average of \$1.6 million to \$1.2 million, while annual demand charges would remain constant at \$2.5 million, for a total annual savings of approximately \$0.4 million. These savings were based on the estimated savings in Table 1 from the Waldron Repowering Study: \$253,062/year in savings for the 750 kW CHP and \$162,235/year in savings for the new boiler. However, these savings do not take into account the expected increase in future electric rates upon decommissioning of the existing electrical generation equipment. While not explicitly stated, it is assumed that the financing cost (at a 6% rate) for these system improvements would be passed on

to the State through the existing demand charges. Since these demand charges would remain constant from the existing contract it is also assumed that the financing costs are being offset by lower operational costs.

Under the plant purchase option, HSE proposed to sell the plant to the State for \$10 million. HSE projected \$1.4 million in annual savings over the contract extension option under State ownership, with the CHP and new boiler improvements included in this scenario as well. These savings appear to consist of \$0.5 million in property tax savings (due to State ownership) and \$0.9 million from a combination of reduced operating costs and lower financing charges for the \$5 million in improvements due to more favorable interest rates available to the State. It was not clear from the email where the operational savings came from and they could not be confirmed without access to HSE's current operating costs and profit margins.

Under both scenarios the existing combustion turbine, heat recovery steam generator, steam turbine and underground fuel tanks would be decommissioned and removed at HSE's sole cost and expense.

4.4. PROPOSED SYSTEM IMPROVEMENTS

Waldron evaluated several options for adding CHP to the plant in their study but recommended a 750 kW Reciprocating Engine as the best economic solution because it provided an electric base load, steam produced at a high efficiency, and hot jacket water to offset steam auxiliaries. Although not part of the original scope of their study, they also evaluated replacing the inefficient older, oversized boiler (Boiler #1) with a smaller, more efficient boiler. A summary of their findings is presented in the table below. The electric rates and associated savings have been updated to reflect the higher anticipated rates upon decommissioning of the existing electrical generation equipment as described in Section 4.5.2 below.

Table 6: Waldron CHP & New Boiler Summary

	Baseline	Proposed 750 kW CHP	Proposed 50 kpph Boiler
Installed Capacity (kW)	-	800	-
Installed Steam Capacity (kpph)	-	1.7	50
Screening Level Project Cost (\$)	-	\$3,000,000	\$2,000,000
Annual Purchased Fuel Baseline (MMBtu)	173,278	200,627	147,709
Unit Fuel Cost (\$/MMBtu)	\$7.58	\$7.25	\$7.79
Purchased Fuel Cost (\$)	\$1,313,446	\$1,454,546	\$1,151,211
Annual Fuel Savings (\$)	-	(\$141,100)	\$162,235

Annual Purchased Electricity (MWh)	8,769	2,735	8769
Unit Electricity Cost (\$/MWh)	\$175	\$175	\$175
Purchased Electricity Cost (\$)	\$1,534,575	\$478,625	\$1,534,575
CHP Electricity Production (MWh)	-	6,051	-
CHP Auxiliary Loads (MWh)	-	182	-
Annual Electric Savings (\$)	-	\$1,055,950	-
REC Credit Revenue (\$)	-	\$63,538	-
Maintenance Costs (\$)	-	\$60,512	-
Screening Level Annual Savings (\$)	-	\$917,876	\$162,235
Simple Payback Period (yrs)	-	3.3	12.3

Annual savings are based on avoided electricity purchased and reduced fuel usage through increased boiler efficiency and heat produced by the CHP. As expected, projected savings for the CHP option increase significantly due to the higher rate paid for purchased electricity. The higher rate has been used to adjust baseline costs for comparison purposes only and does not reflect current costs associated with plant operations. The actual electric rate is likely to vary based on the actual amount of electricity generated on-site, and therefore the amount purchased. It should be noted that Waldron evaluated the CHP and boiler savings as stand-alone measures only. SourceOne's evaluation in Section 5 below provides estimated savings for the combined effect of these measures.

4.5. INCOME BASED APPROACH

SourceOne evaluated the estimated value of the plant to the State using an income capitalization approach. This approach is similar to the approach used by Federal and AE in their appraisals. However, for the purposes of this report it was assumed that under State ownership after March 31, 2021, the plant would only generate steam and chilled water for use by the State and that no electricity will be generated for onsite use or sale. Furthermore, it was assumed that all electrical generation equipment will be decommissioned and either sold or abandoned in place. This income approach determines the value of the asset based on the income received, or in this case, the savings to the State from owning and operating the plant themselves versus continuing to pay the current owner to generate steam and chilled water for the State's use. The following section summarizes SourceOne's evaluation of these estimated costs under the seven (7) scenarios of State ownership or a contract extension after March 31, 2021.

4.5.1. ELECTRICAL GENERATION EQUIPMENT

We understand that if the State were to purchase the CDECCA plant, the electrical generating equipment would no longer be used and the existing combustion turbine, heat recovery steam generator, steam turbine and underground fuel tanks would be decommissioned and removed at HSE's sole cost and expense. As a result of such action, it is likely that the facility's Title V air permit would no longer be necessary. Modifications to the sequence of operations/other systems are unlikely since the CDECCA plant currently runs electrical generating equipment for only 5%-20% of the year, with the boilers and chillers primarily supporting the thermal load for most of the year. A significant electricity cost increase will likely result due to the abandonment/removal of electrical generating equipment and a potential change in the currently favorable electric rate applicable to the plant (see Section 4.5.2). However, with the plans of the current owner to decommission the electrical generation equipment regardless of sale to the State, the favorable electric rate will no longer be applicable starting in 2021 or 2022 even if the State does not purchase the plant.

4.5.2. ELECTRIC UTILITY RATE

As noted in SourceOne's previous Capitol Area System Thermal Energy Plant Feasibility Study (November 15, 2019), the commodity cost component of the cooling cost is based on the reported electricity usage in HSE monthly invoices as well as the calculated electricity cost for the plant. HSE currently charges the State based on the Locational Marginal Pricing (LPM) when the Gas Turbine is operating and an estimated local utility cost⁵ when it is not. The existing rate for the plant is Connecticut's Light and Power's Rate 39: Large Interruptible Service. This rate is currently closed (since 2/5/1999) and not available to new customers. It provides for favorable terms compared to alternate rate structures, but requires that the plant be able to interrupt a connected load of at least 2,000 kW. Since the State plans to not utilize the Gas Turbine for electrical generation⁶, we assume that this power interruption would not be acceptable and that the facility would shift to the Connecticut Light & Power's Large Time-of-Day (Rate 58) tariff which applies to non-manufactures whose demand has previously equaled or exceeded 1,000 kW⁷. The individual charges for this rate as of July 1, 2019 are as follows:

- Customer Charge: \$2,200/month (2,000 kW-5,000 kW)
- Distribution Demand Charge: \$7.41/kVA
- System Improvement Demand Charge: \$0.23/kVA
- Sales Tax: 0.00%
- FMCC Distribution Charge:
 - Peak Hours: 1.633 ¢/kWh
 - Off-Peak Hours: 0.349 ¢/kWh

⁵ Estimated by CDECCA using the hourly LMP plus an assumed \$11 per MWh for other fees & charges. Electricity demand/transmission and distribution charges are added on top of the estimated supply rate.

⁶ The plant may be able to sustain the favorable rate by installing back-up generators; a discussion with CL&P (Eversource) is recommended, if this option is of interest to the State of CT.

⁷ We assume a 0.85 power factor for demand change calculations.

- Transmission Charge: \$10.07/kVA
- Combined Public Benefits Charge: 0.727 ¢/kWh
- Revenue Adjustment Mechanism⁸: 0.0 ¢/kWh
- Supply Charge: Utility published data⁹

Overall, we calculate a blended electricity rate of \$0.175 per kWh under State ownership compared to a blended electricity rate of \$.072 per kWh under HSE ownership.

4.5.3. THERMAL UTILITY RATE

The current commodity cost component of the heating cost is based on the reported natural gas and fuel oil volumes (in MMBTU) in HSE monthly invoices as well as the calculated fuel cost needed to make steam at the plant. HSE currently charges the State based on an agreed upon natural gas and fuel oil rate structure, that for natural gas is based on an estimated natural gas commodity cost plus a variable transportation cost.

To calculate the commodity cost, we assume only natural gas will be used by the plant. We utilize the local utility's (Connecticut Natural Gas) applicable tariff structure for natural gas. The facility would fall into the LGS Customer rate, which is defined as a customer whose anticipated consumption is greater than 30,000 CCF per year. The individual charges for service using this rate as of May 1, 2019 are as follows:

- Customer Service Charge: \$345.00/month
- Daily Demand Meter Charge: \$19.32/month
- Sales Tax: 0.00%
- Demand Charge: \$1.1132/ccf of Billing Demand
- Delivery Charge:
 - First 5,000 ccf \$0.0155/ccf
 - All Over 5,000 ccf \$0.0057/ccf
- Conservation Adjustment Mechanism (CAM): \$0.0460/ccf
- DIMP Charge: \$(0.0199)/ccf of Billing Demand
- Decoupling Charge: \$0.0000/ccf
- SER Charge: \$(0.0169)/ccf of Billing Demand
- Sales Services Charge: \$0.4486/ccf of Billing Demand
- Supply Charge: Utility published data for the applicable period

⁸The Revenue Adjustment Mechanism is assumed to be zero as the charges and credits resulting from this mechanism are expected to cancel out over the period of this study (20+ years). Individual years however may result in net positive or negative charges.

⁹It is likely that the State of CT, will choose to utilize the existing third party supply agreement for electricity with Direct Energy (DAS Contract 17PSX0044) instead of default utility supply. We utilize default utility supply as to be conservative.

Overall, we calculate a blended natural gas rate of \$6.4 per MMBTU of natural gas under State ownership compared to \$8.05 per MMBTU currently charged by HSE. Some of the reasons for the difference may include utilization of fuel oil, contractual terms that vary from actual generation costs and/or a different natural gas third party supplier other than CNG.

4.5.4. OPERATIONAL COSTS

To accurately estimate the cost component related to operations & maintenance SourceOne would ideally need access to HSE's existing cost accounting and profit margin. However, since this was not made available, although requested in our RFI at the onset of the project, to be conservative, we assume that the existing Operating Demand Payment to HSE [O&M by PureEnergy, LLC] of approximately \$110,000 per month (adjusted for CPI-U every October per the October 25, 2018 contract amendment), plus the fixed Capacity Demand Payment of \$100,000 per month, is reflective of the actual cost to operate and maintain the plant. The Demand payments were established to cover HSE's planned capital and fixed operating and maintenance costs. This includes the cost to operate and maintain heating and cooling equipment, and the cost for expendables including water and chemicals. Unplanned capital costs and unplanned major operating and maintenance costs associated with legacy equipment are the responsibility of, and paid for by, the State. Based on the State's assumption that a third party operator would be used to run the plant under State ownership, we assume that the fixed annual costs to operate (~\$2.5M) will be equivalent to those currently charged by HSE. As with any contract, rebidding and/or negotiating price reduction can result in increased benefit/savings. Note that the plant generates 125 psig steam so it will require 24/7 staffing. For the purposes of the study, we assume that the existing thermal infrastructure (building, piping network, etc.) is still in good condition and will not require a significant investment by the State.

It should also be noted that HSE is projecting much lower fixed annual operating costs for the plant under State ownership in their January 3, 2020 email: \$0.6 million for operational expenses (Opex), \$0.2 million for water & chemicals, and \$0.3 million for financing for the new CHP and boiler, for a total of \$1.1 million per year. However, as previously noted, without access to HSE's current operating expenses and profit margin these savings cannot be confirmed by SourceOne.

4.5.5. PROPERTY TAXES

According to City of Hartford tax records CDECCA currently pays approximately \$111,000 per year in real estate taxes and \$371,000 per year in personal property taxes which is assumed to be passed on to the State as an expense in the demand charges under the current contract and any extension. Under the State's arrangement with the City of Hartford, they pay the City a flat fee in lieu of property taxes, therefore this expense (~\$482,000) would be eliminated under State ownership of the plant. For the purposes of this report SourceOne assumes that these savings will be used to reduce the fixed annual costs of ~\$2.5M to operate the plant.

4.5.6. CAPITAL RESERVE FUND

In all scenarios, regardless of ownership, major capital replacements are covered by the State. Because of this, the capital reserve fund, while certainly a factor when calculating the annual costs projections to the State, does not affect the relative comparison of each option. This evaluation does not include, nor does it require, capital renewal beyond that of the new boiler and CHP system as proposed by HSE and described in further detail below.

4.5.7. DEBT SERVICE

Under either a contract extension or State ownership, it is assumed that financing costs for either the CHP, new boiler or both, will be covered under the projected ~\$2.5 million per year in demand costs. Any savings from lower financing charges for the \$5 million in improvements due to more favorable interest rates available to the State are assumed to be used to reduce the fixed annual costs of ~\$2.5M to operate the plant. The State's discount rate of 1.66% was used in our calculations.

5. FINANCIAL MODEL

5.1. OVERVIEW

Several variables were identified when performing the financial model comparison which significantly changed the cost of each scenario. These variables include owner (HSE or State), electric tariff (39 or 58), capital improvement plans (status quo, new boiler, new CHP, new CHP + boiler). Unique combinations of each of these variables create sixteen (16) different scenarios that were evaluated for three (3) different term lengths (20, 30, and 40 years).

Owner: Each owner has its own discount rate and only the State carries a cost for the purchase of the plant. The discount rate is 6% for HSE and is 1.66% for the State.

Electric Tariff: When the electric generation equipment is decommissioned at the plant, it is expected that the rate will change from an interruptible rate (Tariff 39) to an uninterruptible rate (Tariff 58). As discussed in Section 4.5.2, Tariff 39 has a blended cost of electricity of \$0.072 per kWh, during the 'status quo' and 'new boiler' scenarios, and \$0.089 per kWh, during the 'new CHP' and 'new CHP + boiler' scenarios. SourceOne used a blended cost of electricity of \$0.175 per kWh for Tariff 58 for all scenarios. Regardless of owner, it is SourceOne's understanding that the plant will be required to move to Tariff 58 or will be required to install emergency generators during a time when power is interrupted. For this reason, we suggest that all scenarios be compared that are calculated using Tariff 58.

Capital Improvement Plans: There were four (4) options evaluated regarding capital improvement plans with different annual natural gas and electricity volumes. 'Status Quo' carries no cost and uses the current annual natural gas and electricity consumption (MMBTU and kWh). 'New boiler' carries a cost of \$2.0M uses reduced annual natural gas consumption but current electricity consumption. 'New CHP' carries a cost of \$3.0M and 'new CHP + boiler' carries a cost of \$5.0M. Both use reduced annual natural gas and electricity consumption but 'new CHP + boiler' has gas consumption that is approximately 10% less.

Because an hourly boiler and CHP feasibility study was outside of the scope of this financial evaluation, all annual natural gas and electricity consumption quantities were obtained from the Waldron Report for their respective capital improvement plan. It should be noted that, although not included as part of the capital improvement plans, SourceOne anticipates approximately \$3,367,300 - \$5,367,300 in 'Year 0' expenses in all scenarios with HSE or the State as the owner for replacement of end of life equipment (see Section 3.6.1). This was not included in the comparison between scenarios between the different owners because the State presently pays for all capital improvements and unplanned maintenance at the plant.

5.2. METHODOLOGY

All of the evaluated scenarios were compared against each other using present costs¹⁰ of the associated annual payments, escalated¹¹ annually, over the term length of either the loan or contract with HSE. When two scenarios are compared, the lower of the two present costs has value over the other. This value is equal to the difference between them.

Example:

If Scenario A has a present cost of \$60M and Scenario B a present cost of \$50M then the value of Scenario B is \$10M when compared to Scenario A. In all cases, the present value is relative and must be compared to a base case.

Net Present Costs:

'Present Costs'

= Present Value of 'Sum of Annual Costs' at 'Discount Rate'

'Sum of Annual Costs'

= 'Annual Costs (Year 1)' + 'Annual Costs (Year 2)' + ... + 'Annual Costs (Year 20 / 30 / 40)'

'Annual Costs (Year X)'

Where '**X**' is the year of the payment. For example, in the second year of the loan, '**X**' = 2

= 'Fixed Costs (Year X)' + 'Natural Gas Costs (Year X)' + 'Electricity Costs (Year X)' + 'Taxes (Year X)' + 'Loan Savings¹² (Year X)'

Where:

'Fixed Costs (Year X)' = 'Fixed Costs (Year 0)' x (1 + 'Hull Street Escalation Rate')^(X)

'Natural Gas Cost (Year X)' = 'Natural Gas Cost (Year 0)' x (1 + 'Natural Gas Escalation Rate')^(X)

'Electricity Cost (Year X)' = 'Electricity Cost (Year 0)' x (1 + 'Electricity Escalation Rate')^(X)

'Taxes (Year X)' = 'Taxes (Year 0)' x (1 + 'Tax Escalation Rate')^(X)

¹⁰ Present Cost is the value of a series of payments in today's money using a discount rate. In all cases, the discount used was 1.66%, provided by the State.

¹¹ Escalation Rates: These services, taxes, and utilities are expected to increase annually by the following percentages: Taxes = 2%, Electricity = 2%, Natural Gas = 2%, and Hull Street Fixed Costs = 1%.

¹² Loan Savings is the cost difference between the loan amount at the HSE rate (6%) and the loan amount at the State rate (1.66%). Because a loan for the proposed CHP or boiler is paid for by the ~\$2.52M fixed costs to HSE, if the State takes out a loan to pay for these items themselves, there will be a reduction in the annual loan payment.

$$\text{'Loan Savings (Year X)'} = \text{'Loan Savings (Year 0)'} \quad [No escalation rate]$$

HSE as owner charges:

1. Fixed Cost Capacity Demand Payment: \$1.28M
2. Fixed Cost Operating Demand Payment: \$1.24M
3. Variable Costs: (Varies based on 'Capital Improvement Plan')

These charges are defined as:

1. Planned capital costs = minor capital + margin
2. Fixed operating and maintenance costs = labor + margin, R&M + margin, taxes
3. Variable costs include natural gas purchases and electricity purchases

Total cost summary = **1 + 2 + 3**

SOC as owner charges:

1. Fixed Cost Capacity Demand Payment: \$1.28M
2. Fixed Cost Operating Demand Payment: \$1.24M
3. Tax Savings: \$0.482M (*savings*)
4. Loan Savings (as applicable, per scenario)
 - a. Proposed Boiler: \$0.105M (*savings*)
 - b. Proposed CHP: \$0.158M (*savings*)
 - c. Proposed CHP + Boiler: \$0.264M (*savings*)
5. Variable Payment: (Varies based on 'Capital Improvement Plan')

These charges are defined as:

1. Planned capital costs = minor capital + margin
2. Fixed operating and maintenance costs = labor + margin, R&M + margin
3. Taxes: The cost difference between the taxes paid by HSE (\$482,000) and the taxes paid by the State (\$0)
4. Loan savings: the cost difference between the loan amount at the HSE rate (6%) and the loan amount at the State rate (1.66%)
5. Variable costs include natural gas purchases and electricity purchases

Total cost summary = **1 + 2 + 3 + 4 + 5**

Each present cost was calculated as described above and then was compared to three (3) of the scenarios to determine the net present value. These scenarios are the following:

Scenario 1 has HSE as the owner, Tariff 39 in use, and is the 'status quo' within the options for a capital improvement plan.

Scenario 4 has HSE as the owner, Tariff 39 in use, and is the 'new CHP + boiler' within the options for a capital improvement plan.

Scenario 9 has HSE as the owner, Tariff 58 in use, and is the 'status quo' within the option for a capital improvement plan. This option is a worst case scenario for the State because it shows what the State might pay to HSE if the contract is extended without any capital improvement plan to increase plant efficiency.

5.3. CONCLUSION

It is advisable for the State to not spend more than \$4,093,574 for the CDECCA plant. This recommendation is based on the appraisals provided as well as the savings associated with plant purchase if this value is accepted by HSE.

As stated, removing the gas turbine generator will cause the plant to be moved from an interruptible electric tariff (Tariff 39) to an uninterruptible tariff (Tariff 58) which carries an increase in the per unit cost of electricity.

Based on a purchase price of \$4,093,574, the following savings can be expected when compared to Scenario 9, which has HSE as the owner and Tariff 58 in place, and to Scenario 4, which has HSE as the owner and Tariff 39 in place.

Note that because these savings are based on the Waldron Report, their accuracy should not be considered better than +/- 30%.

20 Year Term Comparison

- Scenario 13 (State, 'Status Quo', Tariff 58) has 6.7% savings over Scenario 9 (HSE, Status Quo, Tariff 58)
- Scenario 16 (State, 'CHP + Boiler', Tariff 58) has 7.6% savings over Scenario 4 (HSE, 'CHP + Boiler', Tariff 39)

30 Year Term Comparison

- Scenario 13 (State, 'Status Quo', Tariff 58) has 8.6% savings over Scenario 9 (HSE, Status Quo, Tariff 58)
- Scenario 16 (State, 'CHP + Boiler', Tariff 58) has 10.7% savings over Scenario 4 (HSE, 'CHP + Boiler', Tariff 39)

40 Year Term Comparison

- Scenario 13 (State, 'Status Quo', Tariff 58) has 9.6% savings over Scenario 9 (HSE, Status Quo, Tariff 58)
- Scenario 16 (State, 'CHP + Boiler', Tariff 58) has 12.1% savings over Scenario 4 (HSE, 'CHP + Boiler', Tariff 39)

Our analysis shows that the State can operate the CDECCA Plant for less than HSE in all equivalent scenarios, defined as keeping the capital improvement plan and electric tariff the same. In addition, the CHP scenarios offer savings for the higher electric tariff (Tariff 58), when compared to HSE as the owner on the lower electric tariff (Tariff 39), due to the reduced electricity consumption from the utility.

APPENDIX A

Financial Model

Appendix A: 20 Year Term Comparison

Scenario Description	Scenario No.	Owner	20 Year Costs (Present Costs)	Comparison to 'Status Quo' / Scenario 1 [Tariff 39]				Comparison to 'CHP + Boiler' / Scenario 4 [Tariff 39]				Comparison to 'Status Quo' / Scenario 9 [Tariff 58]			
				20 Year Value to State	20 Year Value to State (After Purchase of Plant)	Average Annual Savings	Average Annual Savings	20 Year Value to State	20 Year Value to State (After Purchase of Plant)	Average Annual Savings	Average Annual Savings	20 Year Value to State	20 Year Value to State (After Purchase of Plant)	Average Annual Savings	Average Annual Savings
Contract Extension: Status Quo / No Plant Mods Cap Ex: 0\$ Electric Tariff: 39 (Current)	1	HSE	\$87.60M	\$0.00M	\$0.00M	\$0.00M	0.00%	-\$8.20M	-\$8.20M	-\$0.40M	-9.40%	\$14.40M	\$14.40M	\$0.70M	16.40%
Contract Extension: Boiler Only Cap Ex: \$2M Electric Tariff: 39 (Current)	2	HSE	\$84.20M	\$3.40M	\$3.40M	\$0.20M	3.80%	-\$4.90M	-\$4.90M	-\$0.20M	-5.60%	\$17.80M	\$17.80M	\$0.90M	20.30%
Contract Extension: CHP Only Cap Ex: \$3M Electric Tariff: 39 (Current)	3	HSE	\$82.50M	\$5.10M	\$5.10M	\$0.30M	5.80%	-\$3.10M	-\$3.10M	-\$0.20M	-3.60%	\$19.50M	\$19.50M	\$1.00M	22.20%
Contract Extension: CHP + Boiler Cap Ex: \$5M Electric Tariff: 39 (Current)	4	HSE	\$79.40M	\$8.20M	\$8.20M	\$0.40M	9.40%	\$0.00M	\$0.00M	\$0.00M	0.00%	\$22.60M	\$22.60M	\$1.10M	25.80%
State Owned: Status Quo / No Plant Mods Cap Ex: 0\$ Electric Tariff: 39 (Current)	5	SOC	\$77.60M	\$10.00M	\$5.90M	\$0.30M	6.70%	\$1.70M	-\$2.40M	-\$0.10M	-2.70%	\$24.40M	\$20.30M	\$1.00M	23.10%
State Owned: Boiler Only Cap Ex: \$2M Electric Tariff: 39 (Current)	6	SOC	\$73.30M	\$14.30M	\$10.20M	\$0.50M	11.70%	\$6.10M	\$2.00M	\$0.10M	2.20%	\$28.70M	\$24.60M	\$1.20M	28.10%
State Owned: CHP Only Cap Ex: \$3M Electric Tariff: 39 (Current)	7	SOC	\$71.10M	\$16.50M	\$12.40M	\$0.60M	14.20%	\$8.30M	\$4.20M	\$0.20M	4.80%	\$30.90M	\$26.80M	\$1.30M	30.60%
State Owned: CHP + Boiler Cap Ex: \$5M Electric Tariff: 39 (Current)	8	SOC	\$67.00M	\$20.60M	\$16.50M	\$0.80M	18.80%	\$12.40M	\$8.30M	\$0.40M	9.40%	\$35.00M	\$30.90M	\$1.50M	35.20%
Contract Extension: Status Quo / No Plant Mods Cap Ex: 0\$ Electric Tariff: 58 (Pending)	9	HSE	\$102.00M	-\$14.40M	-\$14.40M	-\$0.70M	-16.40%	-\$22.60M	-\$22.60M	-\$1.10M	-25.80%	\$0.00M	\$0.00M	\$0.00M	0.00%
Contract Extension: Boiler Only Cap Ex: \$2M Electric Tariff: 58 (Pending)	10	HSE	\$98.60M	-\$11.00M	-\$11.00M	-\$0.50M	-12.50%	-\$19.20M	-\$19.20M	-\$1.00M	-22.00%	\$3.40M	\$3.40M	\$0.20M	3.90%
Contract Extension: CHP Only Cap Ex: \$3M Electric Tariff: 58 (Pending)	11	HSE	\$83.80M	\$3.80M	\$3.80M	\$0.20M	4.40%	-\$4.40M	-\$4.40M	-\$0.20M	-5.00%	\$18.20M	\$18.20M	\$0.90M	20.80%
Contract Extension: CHP + Boiler Cap Ex: \$5M Electric Tariff: 58 (Pending)	12	HSE	\$81.00M	\$6.60M	\$6.60M	\$0.30M	7.50%	-\$1.60M	-\$1.60M	-\$0.10M	-1.90%	\$21.00M	\$21.00M	\$1.00M	23.90%
State Owned: Status Quo / No Plant Mods Cap Ex: 0\$ Electric Tariff: 58 (Pending)	13	SOC	\$92.00M	-\$4.40M	-\$8.50M	-\$0.40M	-9.70%	-\$12.60M	-\$16.70M	-\$0.80M	-19.10%	\$10.00M	\$5.90M	\$0.30M	6.70%
State Owned: Boiler Only Cap Ex: \$2M Electric Tariff: 58 (Pending)	14	SOC	\$87.70M	-\$0.10M	-\$4.20M	-\$0.20M	-4.70%	-\$8.30M	-\$12.40M	-\$0.60M	-14.20%	\$14.30M	\$10.20M	\$0.50M	11.70%
State Owned: CHP Only Cap Ex: \$3M Electric Tariff: 58 (Pending)	15	SOC	\$72.40M	\$15.30M	\$11.20M	\$0.60M	12.70%	\$7.00M	\$2.90M	\$0.10M	3.30%	\$29.60M	\$25.50M	\$1.30M	29.10%
State Owned: CHP + Boiler Cap Ex: \$5M Electric Tariff: 58 (Pending)	16	SOC	\$68.70M	\$19.00M	\$14.90M	\$0.70M	17.00%	\$10.70M	\$6.60M	\$0.30M	7.60%	\$33.30M	\$29.20M	\$1.50M	33.40%

Appendix A: 30 Year Term Comparison

Scenario Description	Scenario No.	Owner	30 Year Costs (Present Costs)	Comparison to 'Status Quo' / Scenario 1 [Tariff 39]				Comparison to 'CHP + Boiler' / Scenario 4 [Tariff 39]				Comparison to 'Status Quo' / Scenario 9 [Tariff 58]			
				30 Year Value to State	30 Year Value to State (After Purchase of Plant)	Average Annual Savings	Average Annual Savings	30 Year Value to State	30 Year Value to State (After Purchase of Plant)	Average Annual Savings	Average Annual Savings	30 Year Value to State	30 Year Value to State (After Purchase of Plant)	Average Annual Savings	Average Annual Savings
Contract Extension: Status Quo / No Plant Mods Cap Ex: 0\$ Electric Tariff: 39 (Current)	1	HSE	\$130.20M	\$0.00M	\$0.00M	\$0.00M	0.00%	-\$12.60M	-\$12.60M	-\$0.40M	-9.70%	\$21.90M	\$21.90M	\$0.70M	16.80%
Contract Extension: Boiler Only Cap Ex: \$2M Electric Tariff: 39 (Current)	2	HSE	\$125.10M	\$5.10M	\$5.10M	\$0.20M	4.00%	-\$7.40M	-\$7.40M	-\$0.20M	-5.70%	\$27.10M	\$27.10M	\$0.90M	20.80%
Contract Extension: CHP Only Cap Ex: \$3M Electric Tariff: 39 (Current)	3	HSE	\$122.40M	\$7.80M	\$7.80M	\$0.30M	6.00%	-\$4.80M	-\$4.80M	-\$0.20M	-3.70%	\$29.70M	\$29.70M	\$1.00M	22.80%
Contract Extension: CHP + Boiler Cap Ex: \$5M Electric Tariff: 39 (Current)	4	HSE	\$117.70M	\$12.60M	\$12.60M	\$0.40M	9.70%	\$0.00M	\$0.00M	\$0.00M	0.00%	\$34.50M	\$34.50M	\$1.20M	26.50%
State Owned: Status Quo / No Plant Mods Cap Ex: 0\$ Electric Tariff: 39 (Current)	5	SOC	\$115.00M	\$15.20M	\$11.10M	\$0.40M	8.60%	\$2.70M	-\$1.40M	\$0.00M	-1.10%	\$37.20M	\$33.10M	\$1.10M	25.40%
State Owned: Boiler Only Cap Ex: \$2M Electric Tariff: 39 (Current)	6	SOC	\$107.80M	\$22.50M	\$18.40M	\$0.60M	14.10%	\$9.90M	\$5.80M	\$0.20M	4.50%	\$44.40M	\$40.30M	\$1.30M	31.00%
State Owned: CHP Only Cap Ex: \$3M Electric Tariff: 39 (Current)	7	SOC	\$104.10M	\$26.20M	\$22.10M	\$0.70M	17.00%	\$13.60M	\$9.50M	\$0.30M	7.30%	\$48.10M	\$44.00M	\$1.50M	33.80%
State Owned: CHP + Boiler Cap Ex: \$5M Electric Tariff: 39 (Current)	8	SOC	\$97.20M	\$33.00M	\$29.00M	\$1.00M	22.20%	\$20.50M	\$16.40M	\$0.50M	12.60%	\$55.00M	\$50.90M	\$1.70M	39.10%
Contract Extension: Status Quo / No Plant Mods Cap Ex: 0\$ Electric Tariff: 58 (Pending)	9	HSE	\$152.20M	-\$21.90M	-\$21.90M	-\$0.70M	-16.80%	-\$34.50M	-\$34.50M	-\$1.20M	-26.50%	\$0.00M	\$0.00M	\$0.00M	0.00%
Contract Extension: Boiler Only Cap Ex: \$2M Electric Tariff: 58 (Pending)	10	HSE	\$147.00M	-\$16.80M	-\$16.80M	-\$0.60M	-12.90%	-\$29.40M	-\$29.40M	-\$1.00M	-22.50%	\$5.20M	\$5.20M	\$0.20M	4.00%
Contract Extension: CHP Only Cap Ex: \$3M Electric Tariff: 58 (Pending)	11	HSE	\$124.40M	\$5.90M	\$5.90M	\$0.20M	4.50%	-\$6.70M	-\$6.70M	-\$0.20M	-5.10%	\$27.80M	\$27.80M	\$0.90M	21.30%
Contract Extension: CHP + Boiler Cap Ex: \$5M Electric Tariff: 58 (Pending)	12	HSE	\$120.20M	\$10.10M	\$10.10M	\$0.30M	7.70%	-\$2.50M	-\$2.50M	-\$0.10M	-1.90%	\$32.00M	\$32.00M	\$1.10M	24.60%
State Owned: Status Quo / No Plant Mods Cap Ex: 0\$ Electric Tariff: 58 (Pending)	13	SOC	\$136.90M	-\$6.70M	-\$10.80M	-\$0.40M	-8.30%	-\$19.30M	-\$23.40M	-\$0.80M	-17.90%	\$15.20M	\$11.10M	\$0.40M	8.60%
State Owned: Boiler Only Cap Ex: \$2M Electric Tariff: 58 (Pending)	14	SOC	\$129.70M	\$0.60M	-\$3.50M	-\$0.10M	-2.70%	-\$12.00M	-\$16.10M	-\$0.50M	-12.40%	\$22.50M	\$18.40M	\$0.60M	14.10%
State Owned: CHP Only Cap Ex: \$3M Electric Tariff: 58 (Pending)	15	SOC	\$106.00M	\$24.20M	\$20.20M	\$0.70M	15.50%	\$11.70M	\$7.60M	\$0.30M	5.80%	\$46.20M	\$42.10M	\$1.40M	32.30%
State Owned: CHP + Boiler Cap Ex: \$5M Electric Tariff: 58 (Pending)	16	SOC	\$99.70M	\$30.50M	\$26.50M	\$0.90M	20.30%	\$18.00M	\$13.90M	\$0.50M	10.70%	\$52.50M	\$48.40M	\$1.60M	37.20%

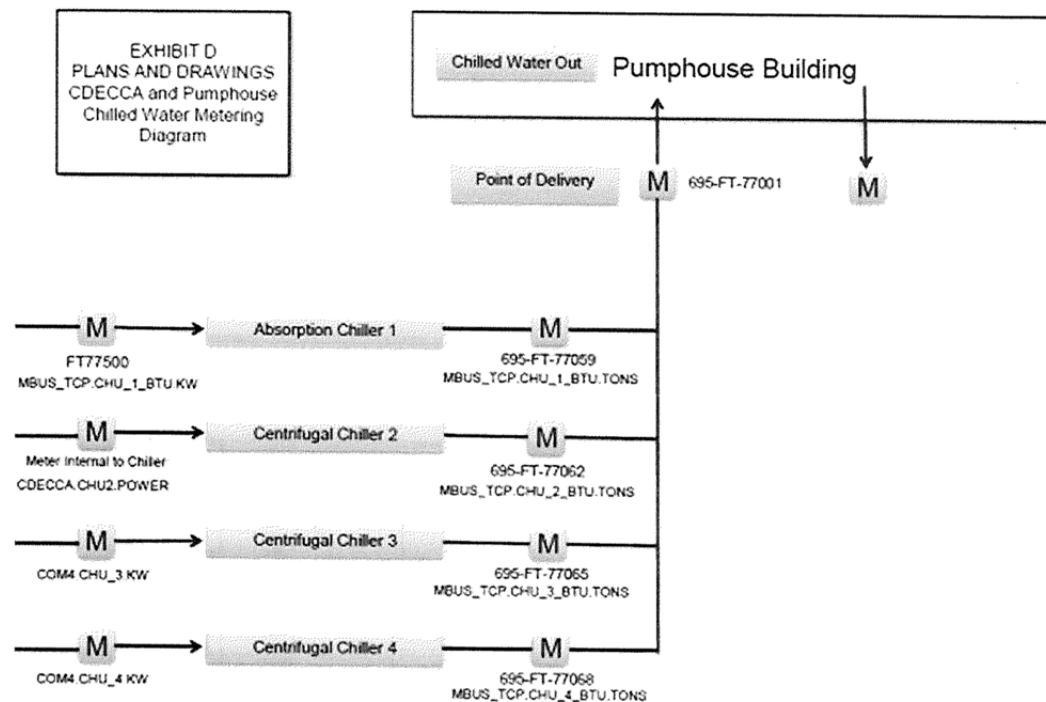
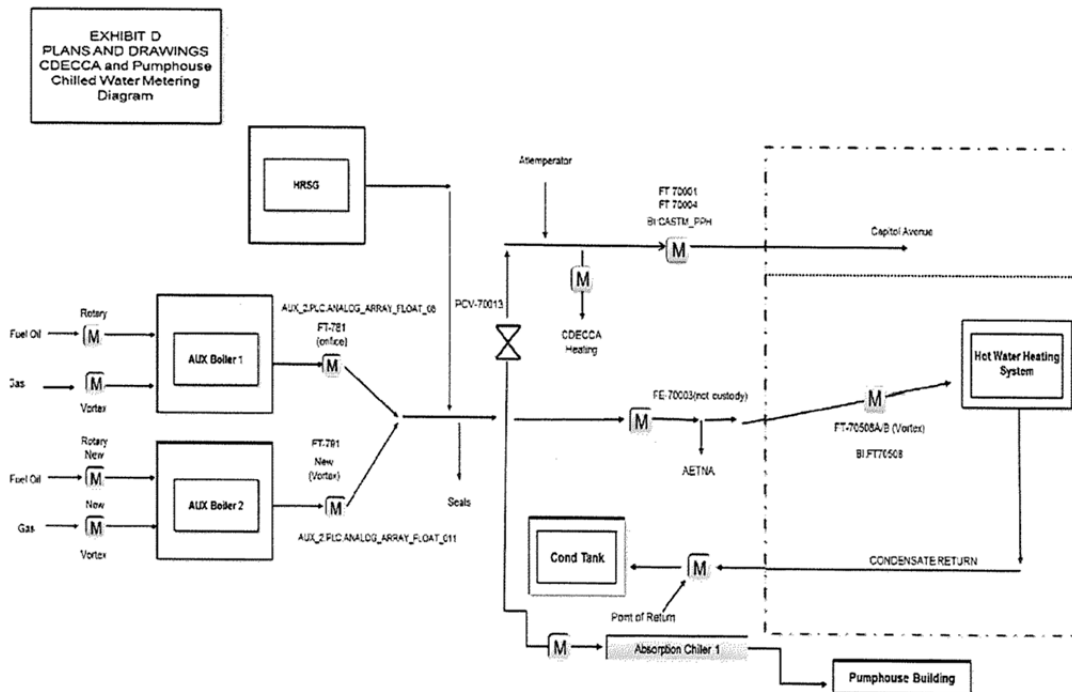
Appendix A: 40 Year Term Comparison

Scenario Description	Scenario No.	Owner	40 Year Costs (Present Costs)	40 Year Value to State	40 Year Value to State (After Purchase of Plant)	Average Annual Savings	Average Annual Savings	40 Year Value to State	40 Year Value to State (After Purchase of Plant)	Average Annual Savings	Average Annual Savings	40 Year Value to State	40 Year Value to State (After Purchase of Plant)	Average Annual Savings	Average Annual Savings
Contract Extension: Status Quo / No Plant Mods Cap Ex: 0\$ Electric Tariff: 39 (Current)	1	HSE	\$172.20M	\$0.00M	\$0.00M	\$0.00M	0.00%	-\$17.10M	-\$17.10M	-\$0.40M	-9.90%	\$29.70M	\$29.70M	\$0.70M	17.30%
Contract Extension: Boiler Only Cap Ex: \$2M Electric Tariff: 39 (Current)	2	HSE	\$165.30M	\$7.00M	\$7.00M	\$0.20M	4.10%	-\$10.10M	-\$10.10M	-\$0.30M	-5.90%	\$36.70M	\$36.70M	\$0.90M	21.30%
Contract Extension: CHP Only Cap Ex: \$3M Electric Tariff: 39 (Current)	3	HSE	\$161.70M	\$10.60M	\$10.60M	\$0.30M	6.10%	-\$6.50M	-\$6.50M	-\$0.20M	-3.80%	\$40.30M	\$40.30M	\$1.00M	23.40%
Contract Extension: CHP + Boiler Cap Ex: \$5M Electric Tariff: 39 (Current)	4	HSE	\$155.20M	\$17.10M	\$17.10M	\$0.40M	9.90%	\$0.00M	\$0.00M	\$0.00M	0.00%	\$46.80M	\$46.80M	\$1.20M	27.20%
State Owned: Status Quo / No Plant Mods Cap Ex: 0\$ Electric Tariff: 39 (Current)	5	SOC	\$151.60M	\$20.70M	\$16.60M	\$0.40M	9.60%	\$3.60M	-\$0.50M	\$0.00M	-0.30%	\$50.40M	\$46.30M	\$1.20M	26.90%
State Owned: Boiler Only Cap Ex: \$2M Electric Tariff: 39 (Current)	6	SOC	\$141.50M	\$30.70M	\$26.60M	\$0.70M	15.50%	\$13.70M	\$9.60M	\$0.20M	5.50%	\$60.50M	\$56.40M	\$1.40M	32.70%
State Owned: CHP Only Cap Ex: \$3M Electric Tariff: 39 (Current)	7	SOC	\$136.40M	\$35.80M	\$31.70M	\$0.80M	18.40%	\$18.80M	\$14.70M	\$0.40M	8.50%	\$65.60M	\$61.50M	\$1.50M	35.70%
State Owned: CHP + Boiler Cap Ex: \$5M Electric Tariff: 39 (Current)	8	SOC	\$126.90M	\$45.40M	\$41.30M	\$1.00M	24.00%	\$28.30M	\$24.20M	\$0.60M	14.10%	\$75.10M	\$71.00M	\$1.80M	41.20%
Contract Extension: Status Quo / No Plant Mods Cap Ex: 0\$ Electric Tariff: 58 (Pending)	9	HSE	\$202.00M	-\$29.70M	-\$29.70M	-\$0.70M	-17.30%	-\$46.80M	-\$46.80M	-\$1.20M	-27.20%	\$0.00M	\$0.00M	\$0.00M	0.00%
Contract Extension: Boiler Only Cap Ex: \$2M Electric Tariff: 58 (Pending)	10	HSE	\$195.00M	-\$22.70M	-\$22.70M	-\$0.60M	-13.20%	-\$39.80M	-\$39.80M	-\$1.00M	-23.10%	\$7.00M	\$7.00M	\$0.20M	4.10%
Contract Extension: CHP Only Cap Ex: \$3M Electric Tariff: 58 (Pending)	11	HSE	\$164.30M	\$8.00M	\$8.00M	\$0.20M	4.60%	-\$9.10M	-\$9.10M	-\$0.20M	-5.30%	\$37.70M	\$37.70M	\$0.90M	21.90%
Contract Extension: CHP + Boiler Cap Ex: \$5M Electric Tariff: 58 (Pending)	12	HSE	\$158.60M	\$13.70M	\$13.70M	\$0.30M	7.90%	-\$3.40M	-\$3.40M	-\$0.10M	-2.00%	\$43.40M	\$43.40M	\$1.10M	25.20%
State Owned: Status Quo / No Plant Mods Cap Ex: 0\$ Electric Tariff: 58 (Pending)	13	SOC	\$181.30M	-\$9.10M	-\$13.20M	-\$0.30M	-7.70%	-\$26.10M	-\$30.20M	-\$0.80M	-17.60%	\$20.70M	\$16.60M	\$0.40M	9.60%
State Owned: Boiler Only Cap Ex: \$2M Electric Tariff: 58 (Pending)	14	SOC	\$171.30M	\$1.00M	-\$3.10M	-\$0.10M	-1.80%	-\$16.10M	-\$20.20M	-\$0.50M	-11.70%	\$30.70M	\$26.60M	\$0.70M	15.50%
State Owned: CHP Only Cap Ex: \$3M Electric Tariff: 58 (Pending)	15	SOC	\$139.00M	\$33.20M	\$29.10M	\$0.70M	16.90%	\$16.20M	\$12.10M	\$0.30M	7.00%	\$63.00M	\$58.90M	\$1.50M	34.20%
State Owned: CHP + Boiler Cap Ex: \$5M Electric Tariff: 58 (Pending)	16	SOC	\$130.20M	\$42.00M	\$37.90M	\$0.90M	22.00%	\$24.90M	\$20.80M	\$0.50M	12.10%	\$71.70M	\$67.60M	\$1.70M	39.30%

APPENDIX B

CAS Supply Agreement Amendment 1 -2015 Exhibit D

Metering Diagrams



APPENDIX C

Federal Appraisal LLC Appraisal Report on CDECCA Co-Generation Plant, November 4, 2019

FEDERAL APPRAISAL LLC



APPRAISAL REPORT ON
CDECCA CO-GENERATION PLANT
490 CAPITOL AVENUE,
HARTFORD, CONNECTICUT

VALUATION DATE: MARCH 31, 2021
A PROSPECTIVE APPRAISAL DATE
REPORT DATE: NOVEMBER 4, 2019

PREPARED FOR
THOMAS J. PYSH
PROPERTY AGENT II
STATEWIDE LEASING AND PROPERTY TRANSFER
DEPARTMENT OF ADMINISTRATIVE SERVICES
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Federal Appraisal LLC provides appraisal and advisory services,

concerning

- businesses
- infrastructure, power plants and utilities
- commercial real estate and
- machinery and equipment, and personal property

for various purposes and uses, including

- legal
- accounting
- federal, state and local tax,
- development
- investment and
- financing

covering conventional and complex topics, such as

- due diligence
- financing
- litigation
- investor reporting and
- tax reporting

nationally and internationally.

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2 Executive Summary and Transmittal

Appraisal Client ("Client"):	Thomas J. Pysh Property Agent II Statewide Leasing and Property Transfer Department of Administrative Services 450 Columbus Boulevard, Suite 1402 Hartford, CT 06103
Other Intended / Permitted Users:	State of Connecticut
Name of Facility:	CDECCA Co-generation Plant (the "Facility", "Plant", "Subject" or "Property")
Address:	490 Capitol Avenue, Hartford, CT 06106
Property ID:	Parcel 202-416-020
Description:	The CDECCA Co-Generation Plant is a 62.1-megawatt co-generation, natural gas fired combined-cycle power plant. The Plant began commercial operations in 1989. It is located adjacent to Interstate-84 in downtown Hartford, CT. Maps and photos of the site and location can be seen in the appropriate sections of this report.
Estate or Interest Appraised:	Fee Simple Estate.
Highest and Best Use:	Continued use as a natural gas fired combined cycle co-generation power plant.
Appraisal Purpose & Use:	The purpose of the appraisal report is to determine the market value of the Subject under two scenarios: 1) the market value of the Subject as of March 31, 2021, assuming continued use as a natural gas fired combined-cycle plant for electricity generation only (after the expiration of the existing steam and chilled water agreement), and 2) the full liquidation value of the Subject plant as of March 31, 2021. Federal understands the Client will use the Report to assist with internal due diligence and negotiations for a potential purchase. The Client understands that this level of service is different than for litigation or condemnation purposes.
Hypothetical or Extraordinary Assumptions:	We have made the extraordinary assumption that the current steam and chilled water agreement in place will not be renewed as of the appraisal date, March 31, 2021 and that the Subject plant will only generate and sell electricity, not steam and chilled water. If this assumption proves to be untrue, it could have an impact on our conclusions of value. No other hypothetical conditions or extraordinary assumptions were made in this appraisal.

Scope of Appraisal:	We have conducted a complete appraisal analysis of the Facility, and have considered the three traditional approaches to value – the sales comparison approach, cost approach, and income approach. Our appraisal was conducted in compliance with the Uniform Standards of Professional Appraisal Practice of the Appraisal Foundation, and with the standards of the Appraisal Institute, and the American Society of Appraisers. We did not exclude any of the appropriate appraisal approaches from consideration, and we performed all the research and analyses necessary to estimate the market value of the Facility, for the scope of work determined to be appropriate for the Client's intended purpose and use. Our report is presented as a full narrative Appraisal Report in accordance with the Uniform Standards of Professional Appraisal Practice ("USPAP") of the Appraisal Foundation.
Land Use Restrictions:	We were not given a title report to review. We do not know of any easements, encroachments, or restrictions that adversely affect the site's use that would prevent it from the continued use as it has historically been used. We assume that all easements, encroachments, restrictions, permissions, permits and approvals required to continue to operate that Facility as it has been operated, will continue indefinitely.
Hazardous Substances:	We were not provided with information regarding, and have no indications of, any existing hazardous substances at the Property.
Valuation date:	March 31, 2021
Report Date:	November 4, 2019

3 Conclusion of Market Value

Subject to the assumptions and limiting conditions stated throughout this report and based on our research and analysis, we have estimated the Market Value of the Facility as of March 31, 2021. Our results are summarized in the following figure.

Figure 3-1 Concluded Total Market Value

Market Value Conclusion (Going Concern, Electricity Production Only)	\$5,520,000
Market Value Conclusion (Assuming No Steam, Chilled Water nor Electricity Operations)	\$0
Salvage Value Conclusion, Assuming No Steam or Electricity Operations	\$50,000

3.1 Hypothetical or Extraordinary Assumptions

We have made the extraordinary assumption that the current steam and chilled water agreement in place will not be renewed as of the appraisal date, March 31, 2021 and that the Subject plant will only generate and sell electricity, not steam and chilled water. If this assumption proves to be untrue, it could have an impact on our conclusions of value. No other hypothetical conditions or extraordinary assumptions were made in this appraisal.

4 Certification

I certify that, to the best of my knowledge and belief:

1. The statements of fact in this appraisal are true and correct. Commensurate with the purpose and use of the appraisal, type and definition of value, and scope of services for this appraisal, professional appraisal efforts have been made to verify such statements of facts.
2. The reported analyses, opinions, and conclusions contained herein are limited only by the assumptions and conditions reported in this appraisal, and are the undersigned's personal, impartial, and unbiased professional analyses, opinions and conclusions. The undersigned have no present or future interest in the asset(s) that is(are) the subject of this appraisal, and the undersigned have no personal interest with respect to the parties involved. The undersigned have no bias with respect to the asset(s) that is(are) subject of this appraisal, or to the parties and issues involved.
3. The undersigned's engagement in this appraisal was not contingent upon developing or reporting predetermined results. The undersigned's compensation for this appraisal is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
4. The undersigned has performed appraisal services on, and has provided any other type of services regarding, the property that is the subject of this appraisal, within the three-year period immediately preceding acceptance of the current appraisal assignment.
5. The reported analyses, opinions, and conclusions were developed, and this appraisal has been prepared in conformity with the Uniform Standards of Professional Appraisal Practice ("USPAP") of the Appraisal Foundation. The reported analyses, opinions, and conclusions were developed, and this report has been prepared in conformity with Code of Professional Ethics and Standards of Professional Practice of the Appraisal Institute, and the American Society of Appraisers. When applicable, the reported analyses, opinions, and conclusions were developed, and this appraisal has been prepared in conformity with ethics and standards of the International Valuation Standards, and the Uniform Appraisal Standards for Federal Land Acquisition ("Yellow Book"). The use of this appraisal is subject to the requirements of the Appraisal Institute, and American Society of Appraisers, relating to review by their respective duly authorized representatives.
6. As of the date of this appraisal, Mark Pomykacz, MAI, AI-GRS, ASA has completed the requirements of the continuing education program of the Appraisal Institute, and the American Society of Appraisers.
7. The Property was inspected on May 30, 2019. The following individuals personally inspected the Property: Mark Pomykacz, Katherine Tantanin.
8. This appraisal may rely upon the professional assistance, documents, reports and opinions from or of other professionals. The undersigned believe that it is reasonable to rely on the professional assistance, documents, reports and opinions from or of the other professionals. Given the purpose and use of this appraisal, type and definition of value, and scope of services for this appraisal, professional appraisal efforts have been made to confirm that it is reasonable to rely on such professional assistance, documents, reports and opinions. The efforts may be described elsewhere in this appraisal. The undersigned do not guarantee or certify the assistance, documents, report or opinions provided by the other professionals, unless they are listed below in item 9 of this certification.
9. No one other than those listed below provided significant appraisal assistance to undersigned in the preparation of the analyses, conclusions, and opinions concerning the assets that are set forth in this appraisal. Their significant appraisal assistance includes contributing to the development and the reporting of the appraisal. Their work includes subject property and market data research and analysis, and includes drafting of the various appraisal methodologies. and includes spreadsheet drafting and report drafting. All aspects of their significant appraisal assistance were completed under the supervision of the undersigned. The undersigned believe that it is reasonable to rely on their appraisal

Appraisal of CDECCA Co-generation Plant, Hartford, CT

assistance, given their adherence to professional appraisal standards and ethics, and their training, experience and capabilities, and the supervision provided by the undersigned.

Katherine Tantinan

Certified by:

DRAFT

Mark Pomykacz, MAI, AI-GRS, ASA
Managing Partner
State Certified General Real Estate Appraiser

Alabama	G01411
Connecticut	RCG 00010448
Pennsylvania	GA001700R
Washington	1101976
Michigan	1201069583
Illinois	553.001871
Texas	TX 1380478 G
Delaware	X1-0000701
New York	46000000871
New Jersey	42RG00144500
Montana	REA-RAG-LIC-7541
Virginia	4001017013
California	AG043987
Massachusetts	103483
Minnesota	40620869
New Hampshire	NHCG-853
Maryland	10807
Florida	RZ3225
Utah	9137815-CG00
South Carolina	7775
Maine	CG3503
Nevada	A.0207866-CG
Georgia	358368
Louisiana	2181
Nebraska	CG22100T

This certification was last updated September 16, 2019

5 Appraisal Introduction

As requested by our Client, we have appraised the CDECCA Co-generation Plant. Herein we present our report.

Our appraisal has been specifically conducted and our report has been specifically written for the Client's purpose and use, and no other purpose or use. The reading and use of this appraisal by anyone other than our Client and for other purposes and uses is prohibited.

The conclusions and opinions reported herein are subject to the assumptions and conditions stated throughout this report, and are made within the context of the Client's purpose and use for the report, and the appraisal scope of work.

5.1 Appraisal Process

The appraisal process requires that appraisers must first establish the purpose, use, and scope of an appraisal. This step includes setting the appraisal context, such as the definition of value, date of the report, hypothetical and extraordinary conditions, and others. Next, we study the property, and the legal rights and the physical qualities to be appraised. The market and industry is researched and analyzed as well. Next the highest and best use of the property is analyzed. Only then are the various analyses, or approaches to value, conducted. There are three basic approaches in determining the value of real estate: the sales comparison approach, the cost approach and the income approach. The principles and basic methodology involved in each approach are summarized later in this report. After conducting the applicable approaches to value, the appraiser concludes the appraisal with a reconciliation process whereby the various indications of value are reviewed, and the particular merits of each of the completed approaches are analyzed.

A reconciliation process is completed whenever various indications of value or value computation inputs for the appraised property are discerned. When the appraisal assignment calls for it, various techniques, such as allocations, residuals, or summations are finally made to or with the various elements or components of the concluded values from the three traditional approaches, in order to determine overall asset values or parts of a concluded overall value.

6 Appraisal Context

6.1 Date of Appraisal and Date of Report

The dates of appraisal, also known as the date of value or valuation date, is March 31, 2021, a prospective valuation date. The date of report is November 4, 2019, and is the date the written report is published.

An appraisal can have either a retrospective, current, or prospective appraisal date. Technical definitions for each of these terms are included in the Appendix.

6.2 Intended Permitted Users

The scope of work completed for this appraisal was specifically designed, and this appraisal report was specifically written, for the Client's and the intended permitted users' specific purpose and use. No other purposes, uses, or users are permitted. The Client is Thomas J Pysh of the Connecticut Department of Administrative Services. The only other Intended User is the State of Connecticut.

6.3 Property Identification

The CDECCA Co-Generation Plant is a 62.1-megawatt co-generation, natural gas fired combined-cycle power plant. The Plant began commercial operations in 1989. It is located adjacent to Interstate-84 in downtown Hartford, CT.

Maps and photos of the site and location can be seen in the appropriate sections of this report.

6.4 Type and Definition of Value, Use and Scope

The purpose of the appraisal report is to determine the market value of the Subject under two scenarios: 1) the market value of the Subject when there is no steam and chilled water agreement in place, as of March 31, 2021, for continued use as a co-generation plant for electricity generation, no steam or chilled water, and 2) the full liquidation value of the Subject plant. Federal understands the Client will use the Report to assist with internal due diligence and negotiations for a potential purchase.

We have conducted a complete appraisal analysis of the Facility, and have considered the three traditional approaches to value – the sales comparison approach, cost approach, and income approach. Our report is presented as a full narrative Appraisal Report in accordance with the Uniform Standards of Professional Appraisal Practice ("USPAP") of the Appraisal Foundation, and the standards and codes of ethics of the Appraisal Institute.

The purpose of the appraisal report is to determine the market value of the Subject under two scenarios: 1) the market value of the Subject as of March 31, 2021, assuming continued use as a natural gas fired combined-cycle plant for electricity generation only (after the expiration of the existing steam and chilled water agreement), and 2) the full liquidation value of the Subject plant as of March 31, 2021. We have asked the property owner representatives for extensive information regarding the Subject property. While we were provided with historical electricity and steam production as well as some demand expense history, we were not provided with any historical income or operating expense data, nor were we provided an asset list of the machinery and equipment at the Facility. A copy of the Steam and Chilled Water Agreement between the property owners and the State of Connecticut was provided by our Client.

6.5 Hypothetical Conditions or Extraordinary Assumptions

We have made the extraordinary assumption that the current steam and chilled water agreement in place will not be renewed as of the appraisal date, March 31, 2021 and that the Subject plant will only generate and sell electricity, not steam and chilled water. If this assumption proves to be untrue, it could have an impact on our conclusions of value. No other hypothetical conditions or extraordinary assumptions were made in this appraisal.

6.6 Property Rights, Estate or Interest Appraised

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Our appraisal assumes that the property is held in a fee simple estate. Further we assume that any and all easements, rights of way, permits and approvals needed to operate the Plant, as it is currently built and as the Plant has been operated in recent years, will remain valid and in place.

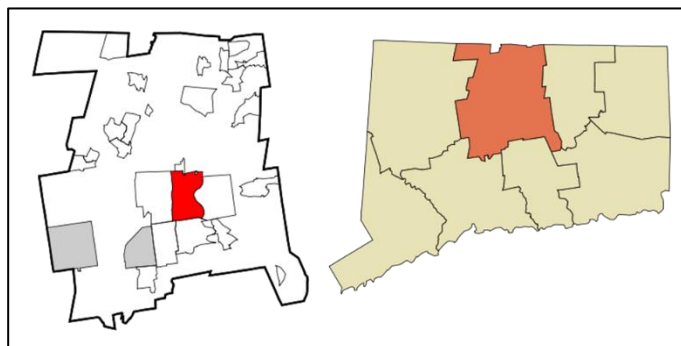
We assume no easement, encroachments, or other deed restrictions or limitations upon the use and enjoyment of the property, beyond 1) the typical governmental powers and utilities and 2) those requirements to maintain and operate the property for the purpose it is improved, and 3) any easements or limitations on the Subject are not material. Lastly, we assume no environmental or engineering issues are negatively impacting the Property.

7 Market Area Description

The Subject is located in Hartford, Hartford County, Connecticut.

7.1 Hartford County

Hartford County lies within the north central region of the state of Connecticut and is home to the state's capital, Hartford. The county is bordered by Hampden County, Massachusetts to the north, Tolland County to the east, New London County to the southeast, Middlesex County to the south, New Haven County to the southwest, and Litchfield County to the west. Like the rest of Connecticut's counties, there is no county seat. Moreover, there is no county government, leaving towns responsible for local government. There are 29 municipalities located within the county, including three cities. Hartford County's geographic area is comprised of 750 square miles, including 735 square miles of land and 16 square miles of water (2.1% water).



According to a July 1, 2017 estimate from the U.S. Census Bureau, Hartford County's total population is 895,388, making it the second most populous county in the state. The population density is 1,217 per square mile (of land). There were 374,249 housing units as of the 2010 census at an average density of 509.1 per square mile.

Hartford County has varying income levels across the county, ranging from approximately \$17,000 to \$73,000 per capita income in various municipalities.

The median income for a household in the county was \$62,590 and the median income for a family was \$78,599. About 8.0% of families and 10.7% of the population were below the poverty line.

7.2 Hartford

7.2.1 (Overview):

Hartford is town located in Hartford County, Connecticut. The city is the center of the larger metropolitan region of Greater Hartford, which encompasses 54 separate municipalities.

7.2.2 (Population):

Hartford is the fourth-largest municipality of Connecticut by population. Per a 2017 U.S. Census estimate, Hartford has a total population of 123,400, with a population density of 7,135 per square mile. This is a 1.1% decline in population since the 2010 census. According to the U.S. Census Bureau, Hartford's population is composed of 30.1% residents under the age of 18, and 9.5% residents above the age of 65.

7.2.3 (Geographic/Border Description):

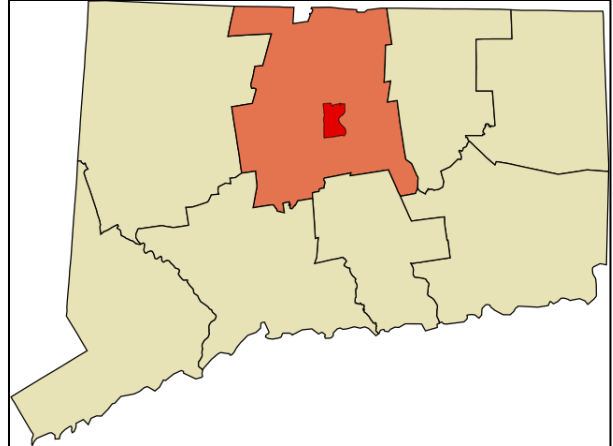
According to the U.S. Census Bureau, the city of Hartford has a total area of 18.0 square miles, of which 17.3 square miles are land and the remaining 3.67% are water.

Hartford is bordered by the towns of West Hartford, Newington, Wethersfield, East Hartford, Bloomfield, South Windsor, Glastonbury, and Windsor. East Hartford is located across the Connecticut River to the city's east.

7.2.4 (Neighborhoods Description):

Hartford is the fourth most populous city in Connecticut. There are various neighborhoods throughout Hartford, which include many historic sites.

Downtown Hartford is home to the city's central business district, as well as the state Capitol building and other governmental buildings including City Hall. There are also many insurance companies headquartered here, providing the city's main industry and giving the city its nickname, "The Insurance Capital of the World." Many of the city's corporations are housed in buildings constructed within the last 20-30 years. There are eight historic districts within the downtown area.



The neighborhood of Asylum Hill features a mix of residential and commercial locales, as well as historic sites including the former homes of Mark Twain and Harriet Beecher Stowe.

The neighborhood of Frog Hollow is home to Trinity College.

Other neighborhoods vary from residential, commercial/industrial, and historic areas, and combinations thereof. Some regions of the city are in economic distress, with slow improvements being made.

The city has the nation's 19th highest crime rates, and Connecticut's second highest.

7.2.5 (Median Household Income):

Median Household Income in 2017 dollars from 2013-2017 was above \$20,820 for Hartford residents. Per capita income in past 12 months (in 2017 Dollars from 2013-2017) was \$13,428. Despite a rather productive regional economy, over 30% of residents are living in poverty, which is one of the highest rates in the nation.

7.2.6 (Local Companies and Attractions):

Hartford's main economy is from insurance companies, including Aetna, Conning & Company, The Hartford, Harvard Pilgrim Health Care, The Phoenix Companies, and Hartford Steam Boiler based in the city. Other major businesses located in the city include Prudential Financial, Lincoln National Corporation, Travelers, and United Healthcare. Fortune 500 company Northeast Utilities is also located in Hartford.

Hartford is home to the nation's oldest public art museum (Wadsworth Atheneum), the oldest publicly funded park (Bushnell Park), the oldest continuously published newspaper (the Hartford Courant), and the second-oldest secondary school (Hartford Public High School). It also is home to the Mark Twain House, where the author wrote his most famous works and raised his family, among other historically significant sites.

Trinity College is located in Hartford, as well as Capital Community College and University of Connecticut. Several other educational institutions and campuses are located within the city.

7.2.7 (Transportation):

Interstate Routes 84 and 91 intersect at Downtown Hartford. Connecticut Routes 2 and 15 also serve the city. Due to a large surrounding suburban population, the city is often burdened with traffic.

Union Station in Hartford is a hub to Amtrak and Hartford Line rail services, as well as bus services.

Bradley International Airport is located approximately 12 miles north of downtown Hartford. Hartford-Brainard Airport is located within the city and serves local flights.

Local bus service is provided by the state-run Connecticut Transit (CTtransit), as well as local shuttle services. Interstate bus service is available through Peter Pan Bus, Greyhound Bus and Megabus.

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Furthermore, a portion of the East Coast Greenway bicycle route runs through the center of the city. The 3000-mile route connects Maine to Florida.

7.3 Demographics Information/Graphics

Below are some additional demographics data and information regarding the Hartford area from the U.S. Census Bureau (census.gov).

Age and Sex	Hartford city, Connecticut	Hartford County, Connecticut	UNITED STATES
Population estimates, July 1, 2018, (V2018)	NA	892,697	327,167,434
PEOPLE			
Age and Sex			
Persons under 5 years, percent	6.6%	5.3%	6.1%
Persons under 18 years, percent	24.4%	21.1%	22.6%
Persons 65 years and over, percent	10.3%	16.8%	15.6%
Female persons, percent	52.0%	51.4%	50.8%

Geography	Hartford city, Connecticut	Hartford County, Connecticut	UNITED STATES
Population estimates, July 1, 2018, (V2018)	NA	892,697	327,167,434
GEOGRAPHY			
Geography			
Population per square mile, 2010	7,178.8	1,216.2	87.4
Land area in square miles, 2010	17.38	735.10	3,531,905.43
FIPS Code	0937000	09003	00

Transportation	Hartford city, Connecticut	Hartford County, Connecticut	UNITED STATES
Population estimates, July 1, 2018, (V2018)	NA	892,697	327,167,434
PEOPLE			
Transportation			
Mean travel time to work (minutes), workers age 16 years+, 2013-2017	23.0	23.0	26.4

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Economy	Hartford city, Connecticut	Hartford County, Connecticut	UNITED STATES
Population estimates, July 1, 2018, (V2018)	NA	892,697	327,167,434
PEOPLE			
Economy			
In civilian labor force, total, percent of population age 16 years+, 2013-2017	61.5%	66.0%	63.0%
In civilian labor force, female, percent of population age 16 years+, 2013-2017	59.9%	61.9%	58.2%
Total accommodation and food services sales, 2012 (\$1,000) (c)	297,188	1,905,317	708,138,598
Total health care and social assistance receipts/revenue, 2012 (\$1,000) (c)	3,284,296	8,536,437	2,040,441,203
Total manufacturers shipments, 2012 (\$1,000) (c)	207,614	16,965,486	5,696,729,632
Total merchant wholesaler sales, 2012 (\$1,000) (c)	1,317,678	15,797,204	5,208,023,478
Total retail sales, 2012 (\$1,000) (c)	1,813,725	13,762,363	4,219,821,871
Total retail sales per capita, 2012 (c)	\$14,522	\$15,338	\$13,443

Businesses	Hartford city, Connecticut	Hartford County, Connecticut	UNITED STATES
Population estimates, July 1, 2018, (V2018)	NA	892,697	327,167,434
BUSINESSES			
Businesses			
Total employer establishments, 2016	X	22,795	7,757,807
Total employment, 2016	X	456,617	126,752,238
Total annual payroll, 2016 (\$1,000)	X	27,195,224	6,435,142,055
Total employment, percent change, 2015-2016	X	3.7%	2.1%
Total nonemployer establishments, 2016	X	58,805	24,813,048
All firms, 2012	7,841	73,386	27,626,360
Men-owned firms, 2012	3,619	41,848	14,844,597
Women-owned firms, 2012	3,224	24,353	9,878,397
Minority-owned firms, 2012	4,376	14,844	7,952,386
Nonminority-owned firms, 2012	2,795	55,488	18,987,918
Veteran-owned firms, 2012	521	7,061	2,521,682
Nonveteran-owned firms, 2012	6,557	62,045	24,070,685

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Housing	Hartford city, Connecticut	Hartford County, Connecticut	UNITED STATES
Population estimates, July 1, 2018, (V2018)	NA	892,697	327,167,434
PEOPLE			
Housing			
Housing units, July 1, 2017, (V2017)	X	379,719	137,403,460
Owner-occupied housing unit rate, 2013-2017	23.8%	64.6%	63.8%
Median value of owner-occupied housing units, 2013-2017	\$162,300	\$235,300	\$193,500
Median selected monthly owner costs -with a mortgage, 2013-2017	\$1,588	\$1,897	\$1,515
Median selected monthly owner costs -without a mortgage, 2013-2017	\$696	\$810	\$474
Median gross rent, 2013-2017	\$935	\$1,044	\$982
Building permits, 2017	X	957	1,281,977

Income & Poverty	Hartford city, Connecticut	Hartford County, Connecticut	UNITED STATES
Population estimates, July 1, 2018, (V2018)	NA	892,697	327,167,434
PEOPLE			
Income & Poverty			
Median household income (in 2017 dollars), 2013-2017	\$33,841	\$69,936	\$57,652
Per capita income in past 12 months (in 2017 dollars), 2013-2017	\$19,220	\$37,817	\$31,177
Persons in poverty, percent	30.5%	11.0%	12.3%

Education	Hartford city, Connecticut	Hartford County, Connecticut	UNITED STATES
Population estimates, July 1, 2018, (V2018)	NA	892,697	327,167,434
PEOPLE			
Education			
High school graduate or higher, percent of persons age 25 years+, 2013-2017	72.7%	89.4%	87.3%
Bachelor's degree or higher, percent of persons age 25 years+, 2013-2017	16.6%	37.4%	30.9%

Additional demographic information has been attached in the Appendix.

8 Electric Utility Deregulation

The Facility is located in Connecticut, which is in the New England Independent System Operator electricity market, referred to as ISO New England, or NE-ISO. This is a deregulated electricity market.

8.1 Introduction

In order to determine the market value of the Facility, it is necessary to understand the industry and marketplace in which it operates. As of the Date of Appraisal, the Facility was operating in a deregulated market. Deregulation of the electric generating industry developed over a number of years. This involved the restructuring of regulated, vertically-integrated electric utility companies, structural market changes, and now, generation facility and asset sales. Changes in utility industries, including electricity, airlines, telecommunications, and natural gas, arose from the energy crisis of the 1970's. Lower electricity prices, improved customer service, and a stronger focus on innovation are all reasons why deregulation and privatization were encouraged.¹ Today, in the Facility's market area the generation of power is now deregulated, while the transmission and distribution of electricity remain regulated franchises.

FERC was established in 1977 to regulate interstate electricity and gas concerns in response to a sharp increase in oil prices during the early 1970's. Throughout the 1970's (and the prior 60 years), the electricity industry was a state-regulated, approved monopoly. PURPA was established in 1978 as the National Energy Act, with the purpose of expanding the use of co-generation and renewable energy resources in the U.S. PURPA encouraged IPPs to either buy or construct electric generating facilities and to operate them independently of public utility generators. Under PURPA, the monopolistic, vertically-integrated nature of the electric industry began to change, allowing non-utility power generators, also known as qualifying facilities, to enter the wholesale or bulk power market. During this period, regulated utility companies were required to purchase power from non-regulated power generators at the avoided cost of the utility, which is the incremental cost that a particular utility would incur to produce the power itself.

The EPA Act was signed into law in 1992, to address issues such as nuclear plant licensing, environmental impact, and energy efficiency. The EPA Act made an immediate impact on the electricity industry by creating an open access for transmission. Although limitations were placed on this open access, the EPA Act essentially opened the door for competition in the electricity power generation industry by authorizing FERC to order utilities to provide access to their transmission lines to other utilities and participants in the wholesale electricity market.

In 1996, FERC issued NOPR Orders 888 and 889, as a response to a multitude of court cases involving IPPs, municipal utilities, and other utilities claiming discrimination in the conditions of transmission service. These orders allowed FERC to define the way the EPA Act would be implemented, especially with regard to full wholesale competition and open transmission access. Order 888 set a structure for the provision of non-discriminatory, open access, and transmission services to generators participating within a market. In addition, investor-owned utilities were required to file non-discriminatory tariffs for the provision of transmission services. Order 889 specified how open access was to be implemented, and required utilities to establish electronic systems to share information about available transmission capacity.

To understand FERC orders 888 and 889, one must recognize that the electricity industry is comprised of four functions: generation, transmission, distribution, and customer service. Traditionally, these functions were vertically integrated and provided by publicly owned electric utility companies acting as monopolies. By the mid 1990's, public concern about high-energy costs forced public utility commissions and state legislatures in the northeast US to consider "market driven" solutions.

Order 888 opened wholesale power (electric generation) sales to competition by requiring the separation of power generation from transmission and distribution. The intent was for each function (generation,

¹ Philipson, Lorrin and H. Lee Willis, "Regulation and De-Regulation", in *Understanding Electric Utilities and Deregulation*, Marcel Dekker, New York, 1999, p. 193-198.

transmission, and distribution) to be priced separately so as to prevent owners of transmission facilities from offering preferential treatment for their own power generation. Order 888 also provided for the full recovery of stranded costs. These costs were incurred by public utilities, prior to deregulation, from serving customers as part of the regulatory contract that existed between monopoly utilities and the various state public service commissions. FERC understood that stranded costs were necessarily incurred as part of the regulated market which existed, and that such costs might not be fully recovered under deregulation if customers were permitted the freedom to move to another supplier of electricity.

In requiring the “unbundling” or separation of generation, transmission and distribution, and requiring competitive access to transmission and distribution, the issue arose as to whether public utility companies should totally divest themselves of their electric generating facilities or whether they would be permitted to spin those assets off into new and wholly owned “independent” subsidiaries. FERC deferred this decision to the public utility commissions of each state. This effectively left the specifics of how deregulation was to be implemented to state agencies, legislatures, generator owners, transmission owners, distribution owners, marketers, and municipal utilities.

As a result of Orders 888 and 889, as well as actions taken by various states, the financial structure of the electric generating industry changed from one of capital investment dependence to one driven by income (i.e., measured by maximizing income and minimizing costs, while still providing reliable electric generation to customers). No longer are electricity generators seen as safe investments with stable rates of return. Instead, the industry has greater risk (uncertainty) associated with the potential of greater rewards (income).

8.2 Impact of Deregulation on Valuation Methodologies

Historically, regulators allowed a utility to purchase or construct generation facilities so that the utility had the capability to meet its obligations to provide adequate electricity to meet consumer demand. Efficiency and profitability were secondary concerns. For this reason, a regulated income stream was frequently not an accurate determinate of a facility’s value as compared to the cost of either reproducing or replacing the facility. The reason behind this bias toward cost-based value indicators was that the cash flows generated by these facilities were not subject to market forces, but rather were based on recovery of the original costs, which was effectively ensured by the state public service commissions that authorized the capital expenditures. The rate base was calculated to provide a predetermined return on investment for a facility, regardless of the economic fundamentals affecting the electricity market it served. Appraisers therefore favored methodologies based on cost because they more accurately reflected the fair value of facilities that, due to the state public service commissions, had legally connected income to the cost of the facilities.

Once these regulations were removed, investors were required to value an electric generation facility just like any other income producing asset: by forecasting the anticipated cash flows available to investors over its useful life. The legal connection between cost and value was broken by deregulation. The value of a facility was no longer necessarily based on the cost to construct it, but rather more based on its profitability. Power facility developers would no longer be guaranteed a return (income) that matched their cost to build. It therefore follows that the earnings power of a deregulated electric generating facility became a more accurate and appropriate determinant of overall value for these assets than a cost-based approach.

A fundamental assumption of the income approach is that potential purchasers will buy an asset based on their willingness to trade the purchase price for the right to earn future dollars at an implied rate of return. Within this approach, consideration is given to current and forecasted market prices of electricity revenues, fuel and other operational expenses, and other market-oriented factors that are absent from a cost-based analysis, thus providing a more accurate value estimate for a given point in time.² Today, buyers, sellers, and analysts alike universally utilize the income approach, where a specific expected income and a specific expected rate of return are determined based on unregulated market, hence riskier, forces. Consequently,

² Navigant Consulting Inc., “Study of the Effects of Energy Deregulation on the Appropriate Methods of Valuation of Generating Stations and Other Divested Property, March 2000, p.11-1, 11-2.

it is our opinion that in a deregulated market the income approach should be utilized and given the greatest weight among the three approaches to value for electric generation facilities.

8.3 Conclusions Concerning Regulation, Deregulation and Valuation Methodologies

In regulated power markets, income is fixed to the cost to construct via a rate of return that is established by the state public utility commission. If a utility was authorized to build a power generation facility, it was effectively guaranteed to receive the established rate of return (AKA: income). Therefore, the cost approach is the primary method to value power generation assets in regulated markets. Once a market is deregulated there is no longer a connection between cost and income, as the rate of return on the cost to construct is no longer effectively guaranteed by the local utility commission. In deregulated markets, costs may be incurred, and the developer has no guarantee of making an adequate return. Thus only the income approach can directly capture the developer/owner's expectation of what an adequate rate of return should be, and the cost approach will only be applicable when the appraiser properly accounts for all forms of obsolescence or when, at those certain time periods, there is no problematic obsolescence.

9 Electric Industry Description – ISO New England (ISO-NE)

The New England Power Pool, NEPOOL, was created in 1971 for the purpose of integrating the majority of New England's utilities and municipal systems establishing a central dispatch system and enhancing the region's overall system reliability. Then in 1996, the Federal Energy Regulatory Commission, FERC, deregulated portions of the industry. This changed the role of NEPOOL and led to the creation of the ISO New England.

The ISO New England was created in 1997 and is responsible for the operation of New England's bulk power generation and transmission system, the oversight and administration of the region's wholesale electricity markets, and management of a comprehensive regional bulk power system planning process. The ISO New England includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. The not-for-profit organization has an installed capacity of 32,000 MW and has over 200 market participants.

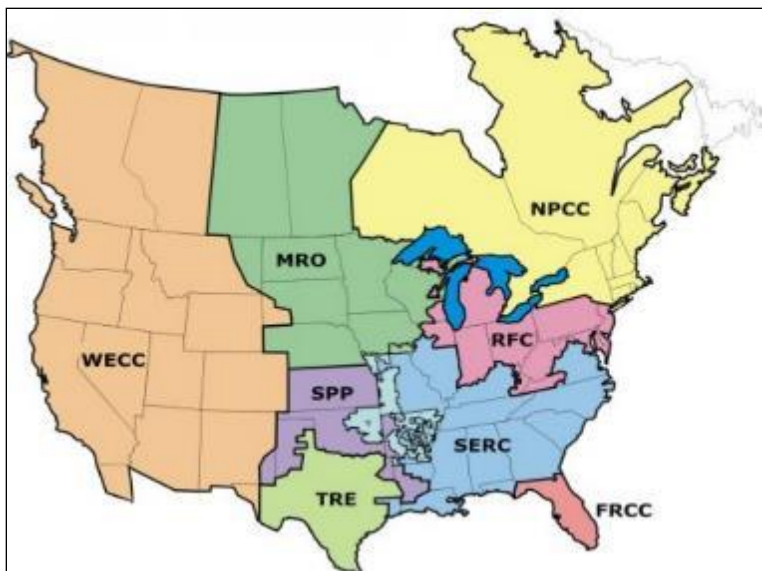
Figure 9-1: Map of the ISO New England



The North American Electric Reliability Corporation (NERC)

NERC is a not-for-profit corporation whose members are nine Regional Reliability Councils. The members of these councils come from all segments of the electric industry: investor-owned utilities; federal power agencies; rural electric cooperatives; state, municipal and provincial utilities; independent power producers; power marketers; and end-use customers. These entities account for virtually all the electricity supplied and used in the United States, Canada and a portion of Baja California Norte, Mexico.³

Figure 9-2: Map of NERC Regions



The Northeast Power Coordinating Council promotes the reliable and efficient operation of the international, interconnected bulk power systems in Northeastern North America through the establishment of regionally specific criteria, consistent with NERC broad-based standards, coordination of system planning, design and operations, and the assessment and enforcement of mandatory compliance with regional reliability criteria. In the development of reliability criteria, NPCC, to the extent possible, facilitates attainment of fair, effective and efficient competitive electric markets.⁴

9.1.1.1 Influence of Natural Gas Prices on the Electricity Market

Recent advances in technology have unlocked vast amounts of natural gas in the US, causing prices to decline substantially in the last decade. A combination of hydraulic fracturing (fracking) and horizontal drilling have allowed exploration and production companies to access shale reservoirs that had been previously uneconomic to access. The combination of these technologies, and the recession that hit the US economy in 2008, caused a rapid decline in natural gas prices from 2008 to 2009. Natural gas, which was considered to be in short supply in the US as late as 2007, has become abundant, and liquefied natural gas (LNG) import terminals that were built and opened in the late 1990s and 2000s are being retrofitted to export LNG from the US due to domestic prices here being drastically lower than the \$14 - \$16/MMbtu that utilities were paying in Europe and Asia in 2013 and 2014.

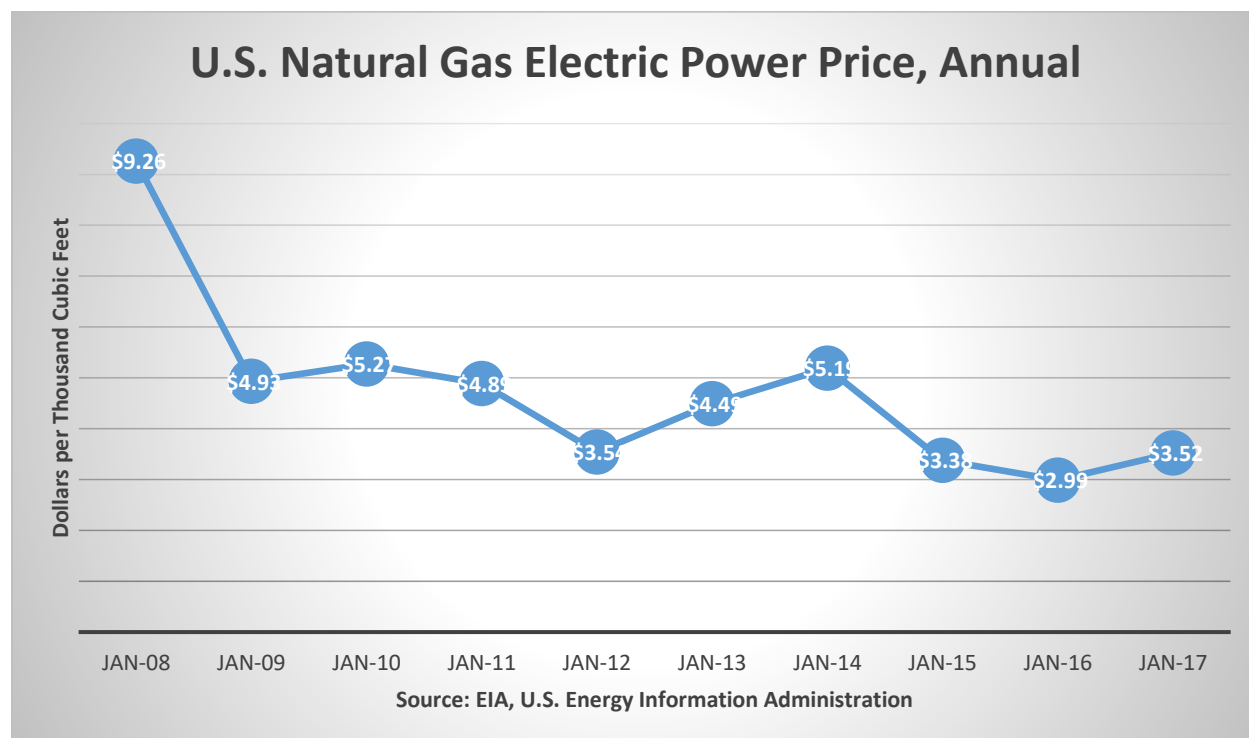
The decline in natural gas prices has caused power generators in the US to shift their generation profiles. Natural gas plants have typically been used as peaking plants, due to their ability to be switched on and off quickly in times of high demand. The lower fuel price to these plants has caused owners to run them longer, taking advantage of the low fuel costs. In addition, market participants have been building new combined cycle natural gas plants to take advantage of this low-cost natural gas. As the following tables show, natural

³ <http://www.nerc.com/about/>.

⁴ <http://www.nerc.com/regional/npcc.html>.

gas prices to electric power plants have been declining since the high price hit in 2008, and at the same time, natural gas has been taking market share from coal in the US power generation space.

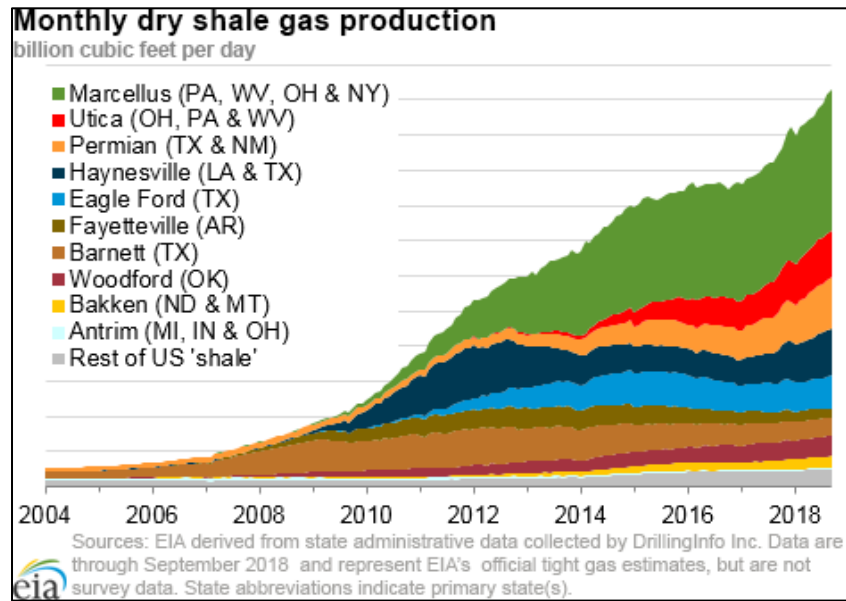
Figure 9-3: Natural Gas Electric Power Prices



While natural gas has a history of highly volatile pricing in the US based around weather patterns, the general economic consensus is that prices for the resource will generally remain low for the next several years, as new, multibillion dollar projects that will be large users of natural gas are in the process of being constructed. The large scale export of natural gas via LNG export terminals did not begin until the end of 2015, and total LNG export capacity was roughly 2.5 Bcf/d as of the valuation date. This capacity will slowly ramp higher through 2020 as new LNG facilities are completed. Pipeline exports to Mexico have been increasing lately, but still have not been large enough to affect prices in the US, as the infrastructure to move US natural gas further into Mexico has been hampered by delays in infrastructure build out there as well as delays in power plant construction in Mexico. Power burn by the electric generation industry has been a strong source of demand growth the last several years as well, and should continue to grow as new pipelines are expanded into New England and as new gas fired plants are built.

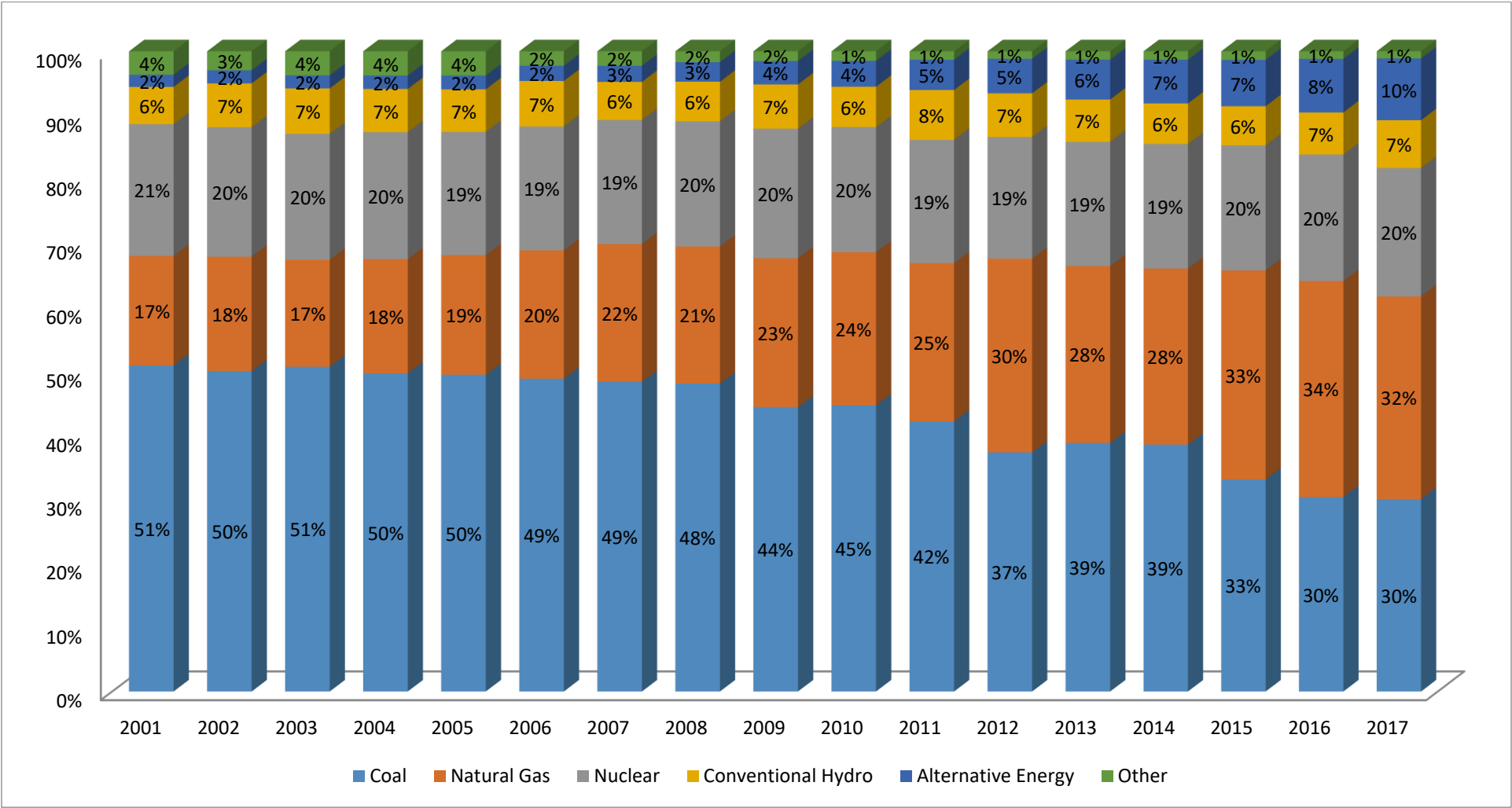
However, the rapid rate at which production has been expanded over the last several years, even at lower prices, points to a new shift in the price equilibrium for the commodity. In particular the Marcellus Shale, while lies under PA, NY, WV and Ohio, has been a huge source or the growth in production, re-shaping both the physical infrastructure of the country, and the price assumptions of market participants. Since 2007, production in the Marcellus has gone from ~1 Bcf per day to over 18.4 Bcf a day by the end of 2017. The Marcellus Shale now makes up close to 20% of all US natural gas production, with little signs of slowing. In addition, the Utica shale has gone from no production in early 2011 to over 5.5 Bcf/d by the valuation date, making the Appalachian region of PA, WV and OH one of the largest natural gas producing regions in the world. The growth from this region is likely to keep a ceiling on natural gas prices for the foreseeable future, as continued infrastructure build out allows drillers to tap new areas and drill more of the shale formation.

Figure 9-4: US Shale Natural Gas Production



With large numbers of coal plants being retired, the shift to greater usage of natural gas for fuel generation looks set to continue for the next several years. Data from the EIA shows that the industry is shifting away from coal as a dominant fuel source, as natural gas generation continues to gain market share.

Figure 9-5: US Electricity Generation % by Fuel Type



9.2 Electric Industry Conclusions

The prolonged slide in natural gas prices, as well as lackluster economic growth during and following the recession, has negatively affected electricity prices in Connecticut, in the ISO-NE, and nationally. At the same time, new regulations concerning power plant emissions are creating new requirements for lowering pollution that may require costly upgrades to some power plants with higher emissions. One major impact will be that coal plants of all ages, sizes, and usages will be required to make changes in order to meet the new requirements. The plants that do not end up retiring should be able to look forward to higher electricity prices in the future, based on a combination of less supply of electricity as some plants are forced to close and higher natural gas prices as the US begins exporting substantially more of that commodity and as more domestic uses for natural gas emerge. As such, the outlook for combined cycle power plants such as the Subject, are still economically feasible and profitable both currently and long term.

10 Facility Property Description

Property Name: CDECCA Co-generation Plant
(the "Facility", "Plant", "Subject" or "Property")

Property Address: 490 Capitol Avenue, Hartford, CT 06106

Property ID: Parcel # 202-416-020

Property Description: The CDECCA Co-Generation Plant is a 62.1-megawatt (shown nameplate capacity, property representatives report 65 MW) natural gas fired combined-cycle, co-generation power plant. The Plant initially began construction around 1986-1987 and finished construction and began its commercial operations in 1989. It is located adjacent to Interstate-84 in downtown Hartford, CT. The Subject currently generates and sells electricity to the New England ISO power grid, and sells steam and chilled water to the State of Connecticut.

The Subject has a combined cycle gas combustion turbine generator (1 dual-fuel GE Frame 6B Gas Turbine), a condenser steam turbine generator (1 GE steam turbine 33 MW), a heat recovery steam generator, several chillers, a diesel starter engine, and several boilers as major equipment items at the property. A list of equipment at the plant provided by Hull Street Energy is included in the Appendix. All of the equipment and personal property associated with the facility are located within the only building on the site, which is reported on the property tax record card as containing 38,280 square feet, which was confirmed by property representatives during the site inspection. The building is one-story with a mezzanine area. The assessor's building sketch is shown later in this section. The building, while sufficient to house all of the equipment needed to run the Facility, is tight in its layout. Major equipment in need of major repair or replacement may require demolition portions of the building itself.

The plant is considered a peaking plant, which they bid in to the market on a daily basis, according to property representatives during the site inspection. Additionally, representatives have reported an average heat rate of 9.2 Mmbtu/Mwh for the plant (9.6 Mmbtu/Mwh in the summer and 8.5 Mmbtu/Mwh in the winter). The plant runs on natural gas as its main fuel source, but also has the ability to burn distillate fuel oil if necessary.

There are sprinklers throughout the facility, all of which are wet sprinkler systems. There are 11 full-time employees, as reported by Hull Street Energy during the site inspection. There is an employee on site 24/7 overseeing operations along with security and surveillance throughout the site.

There is currently a steam and chilled water agreement in place between the Subject plant and the State of Connecticut, dated October 1, 2008. The Facility currently supplies steam and hot and chilled water to the Capitol Area System (CAS) thermal energy loop (also called "the loop"), which is a series of municipal buildings. The agreement is set to end March 31, 2021, the appraisal date, and will not be renewed according to the Client. We have assumed in this appraisal that the plant will not be supplying any more steam and hot and chilled water after that date, and will only generate electricity for the remainder of its economic life. The equipment for the steam and water distribution to the loop is owned by the State of Connecticut and is not a part of the Subject power plant. The State of Connecticut is the only customer for steam and water from the Plant, and the Plant currently does not have the infrastructure in place to provide steam and/or water to other customers.

Maps and photos of the site and location can be seen in the appropriate sections of this report.

Land Area: $\pm$ 1.24 acres on the Subject parcel, Parcel # 202-416-020. The land is generally flat and level. This appraisal does not investigate whether there is excess or surplus land and rather assumes only that there is sufficient land for the operation of the Plant and for appropriate buffer zones surrounding the Plant's operation. The site is located adjacent to Interstate 84, and the cooling towers and smokestack exceed the adjacent highway in height.

The site is zoned CX-1, for Commercial-Industrial Mix. According to the City of Hartford's zoning ordinance, "The CX-1 district is intended to allow an innovative mix of office, residential, and low intensity industrial uses, along with supporting retail and service uses. The form of the area includes large-scale traditional warehouse and factory buildings (General Building Type), and the smaller-scale Workshop/Warehouse Buildings."

General Building requirements are as follows: 65% front line coverage, 5 feet minimum side and rear setback, 60% maximum building area, minimum height of two stories, maximum height of five stories.

Workshop/Warehouse Building requirements are as follows: 75% front line coverage, 5 feet minimum side and rear setback, 65% maximum building area, minimum height of one story, maximum height of five stories.

A copy of the zoning ordinance associated with CX-1 is attached in the Appendix.

10.1 Legal /

Environmental: We have not been made aware of any environmental issues at the Plant.

Americans with Disabilities Act: ADA issues were not investigated. We assume that no ADA issues are negatively affecting the Property.

10.2 Facility Transaction History

Property Owner: CDECCA Property Co LLC

Sales History and Analysis: The Subject has not been sold in the last three years.

10.3 Property Tax Assessment

The property was assessed in 2019 as follows:

Assessed Value

Building Value:	\$168,490
Extra Features Value:	\$757,750
Land Value:	\$566,650
Total Assessed Value:	\$1,492,890

70% Equalization Ratio in Hartford, CT

Assessor's Market Value

Total Assessor's Market Value: \$2,132,700

The assessment above is not comparable to the market value conclusions made in this report as the scope of work in this appraisal differs from the value reported for assessment purposes.

Figure 10-1: Location Maps

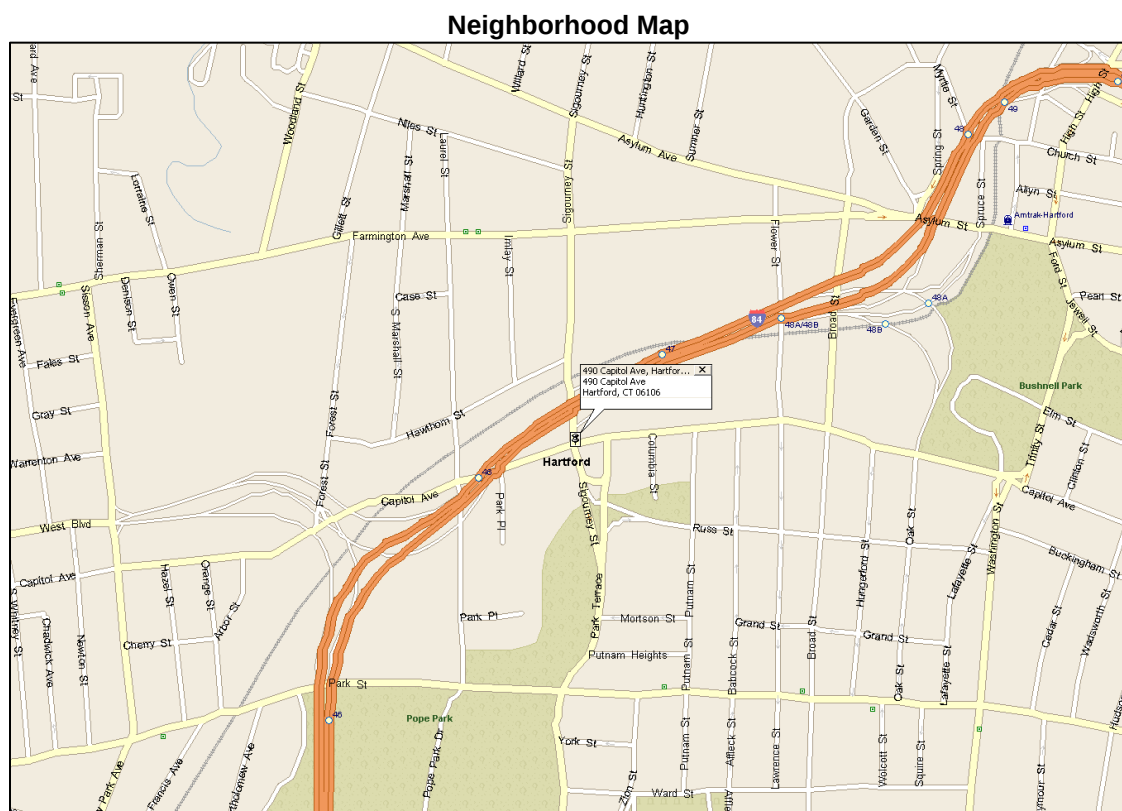
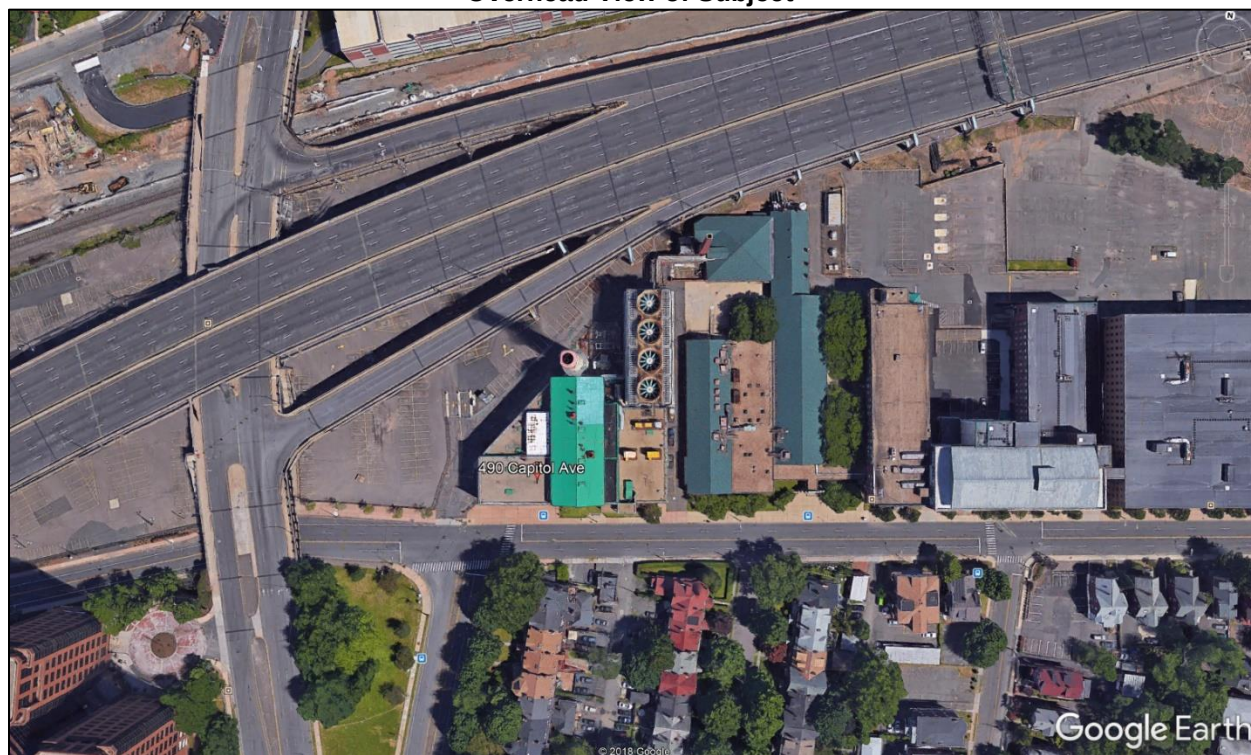


Figure 10-2: Satellite Images of Facility

Overhead View of Subject



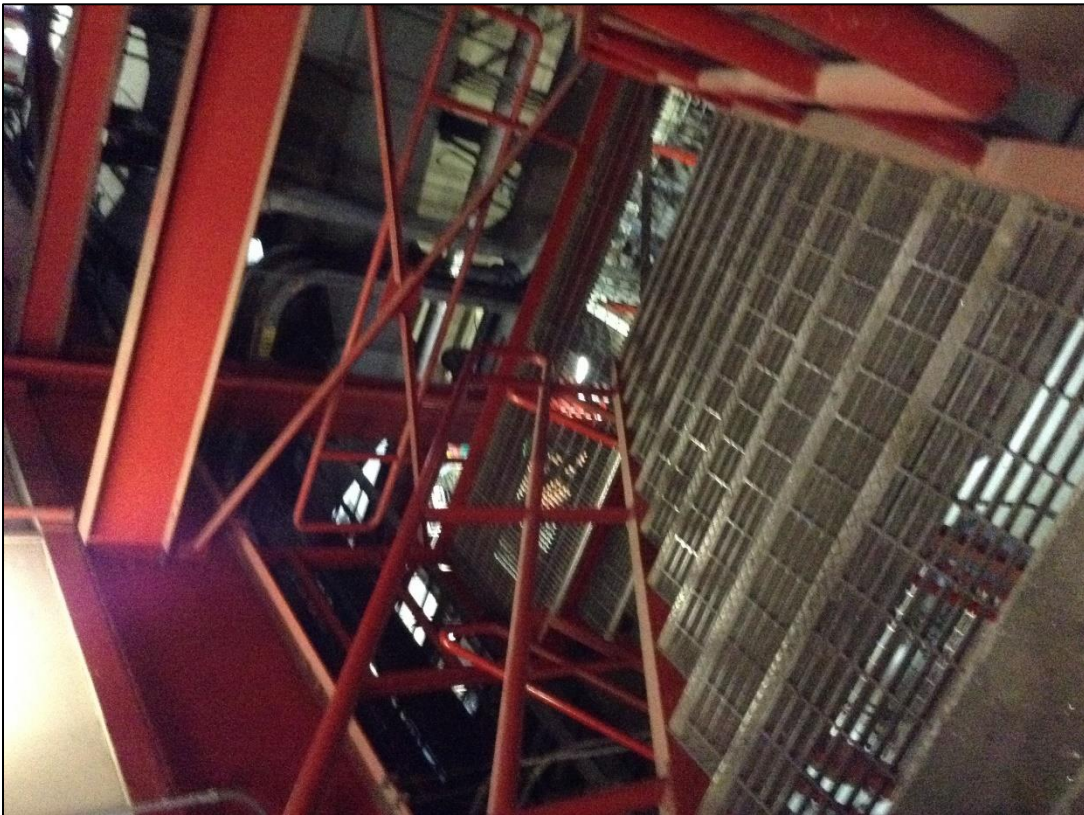
Close-up Overhead View of Subject

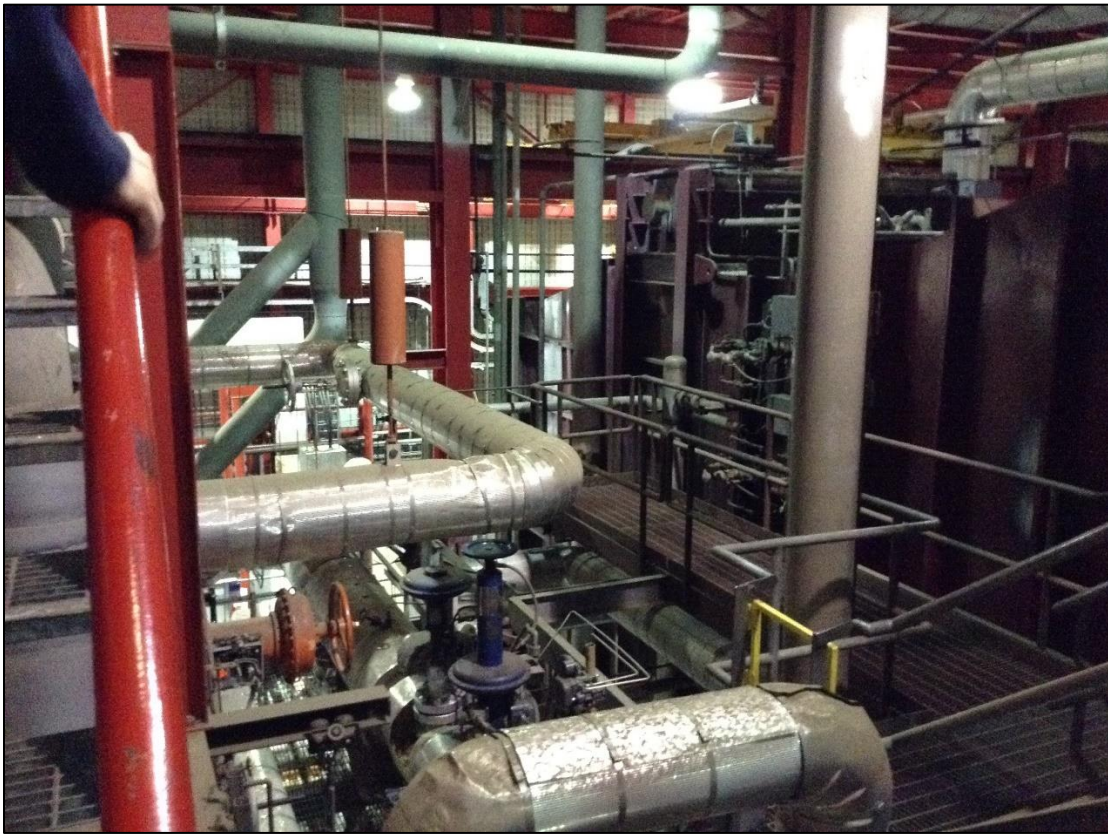


Figure 10-3: Photographs of Facility

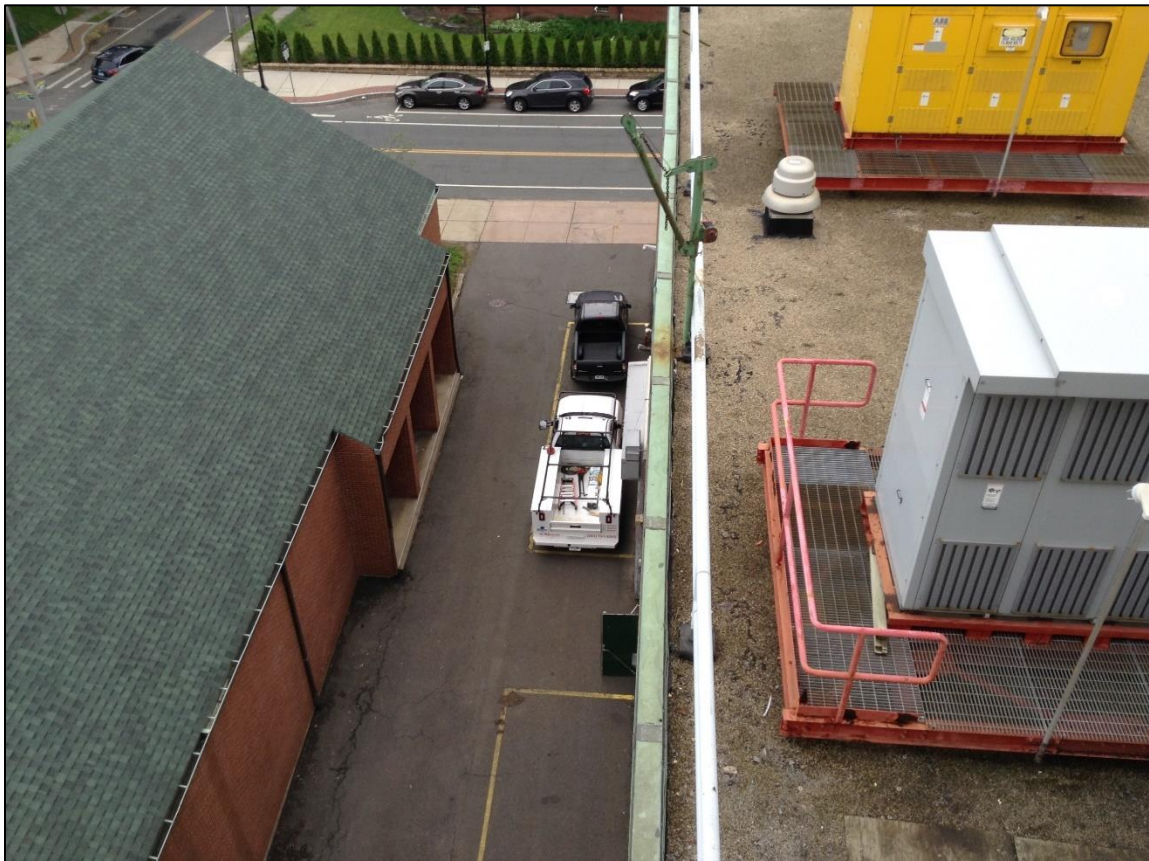




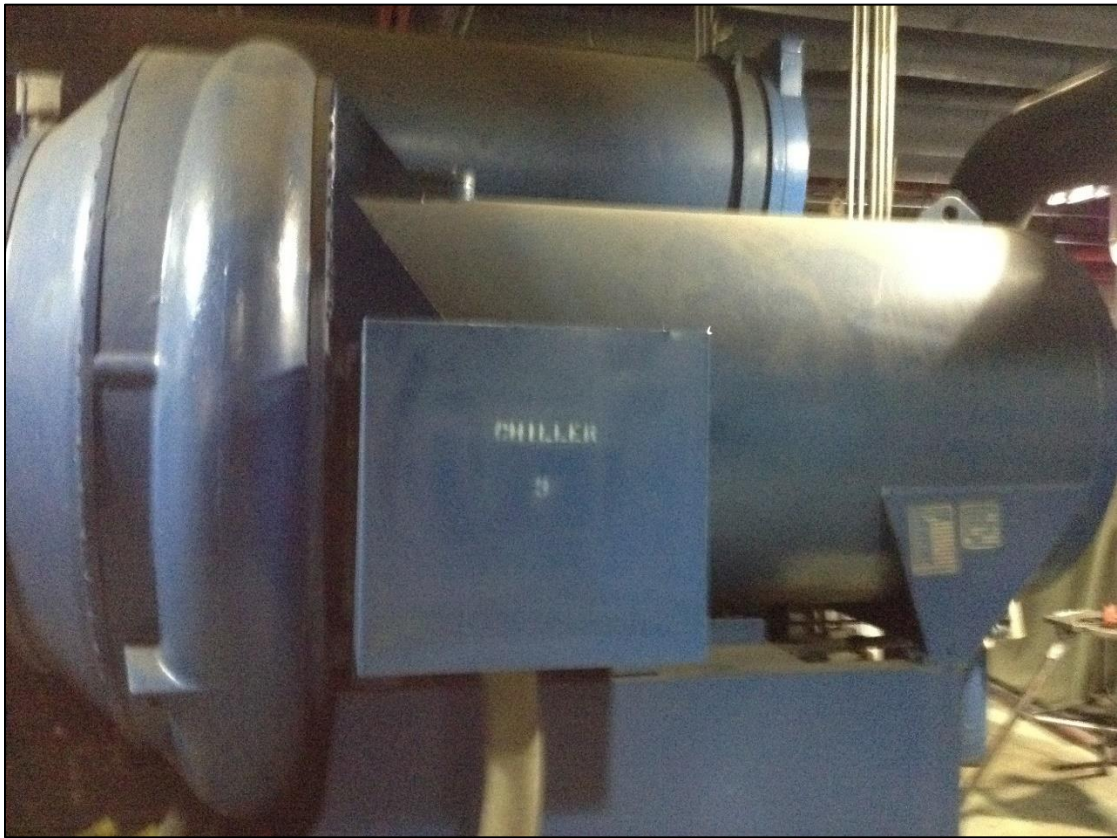


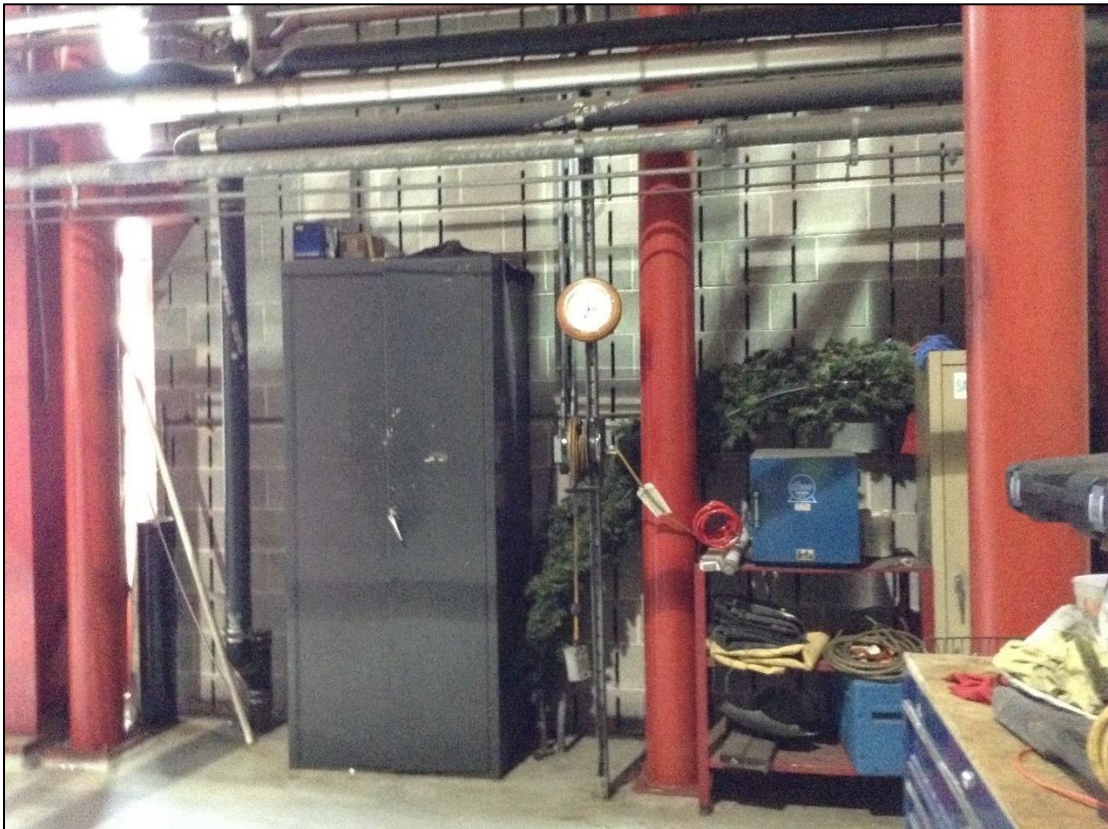












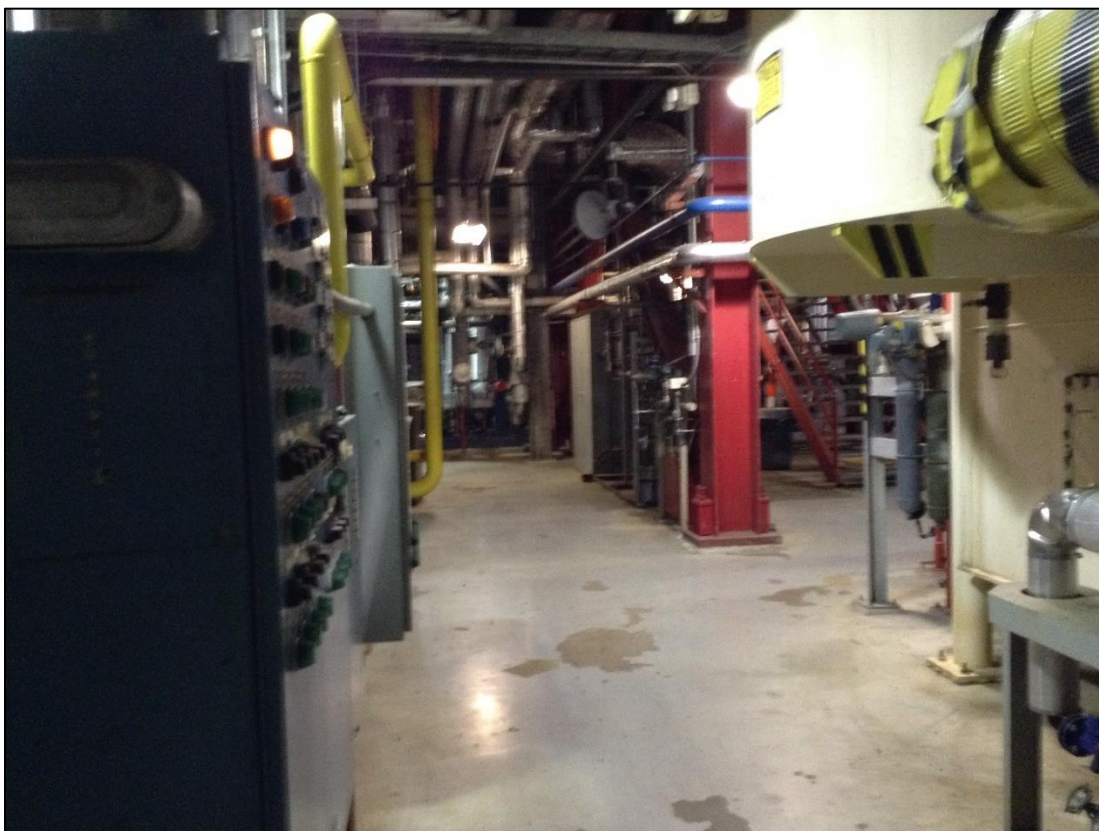








Figure 10-4: Subject Tax Map

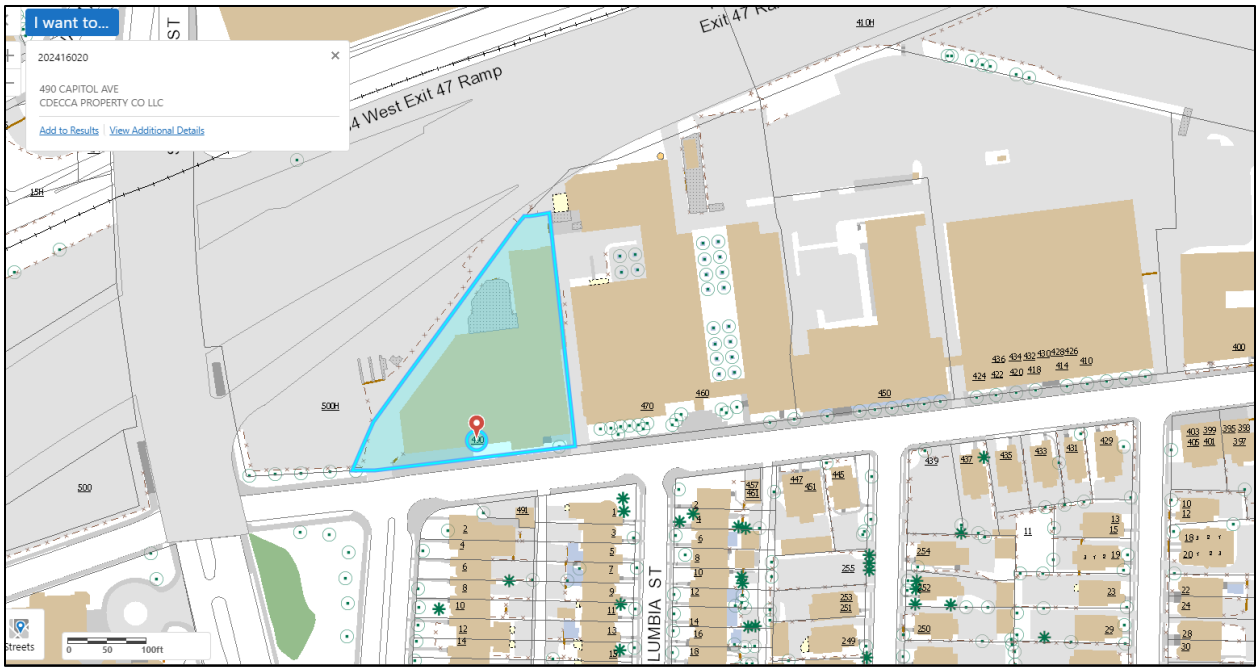


Figure 10-5: Wetlands Map



Figure 10-7: Flood Map

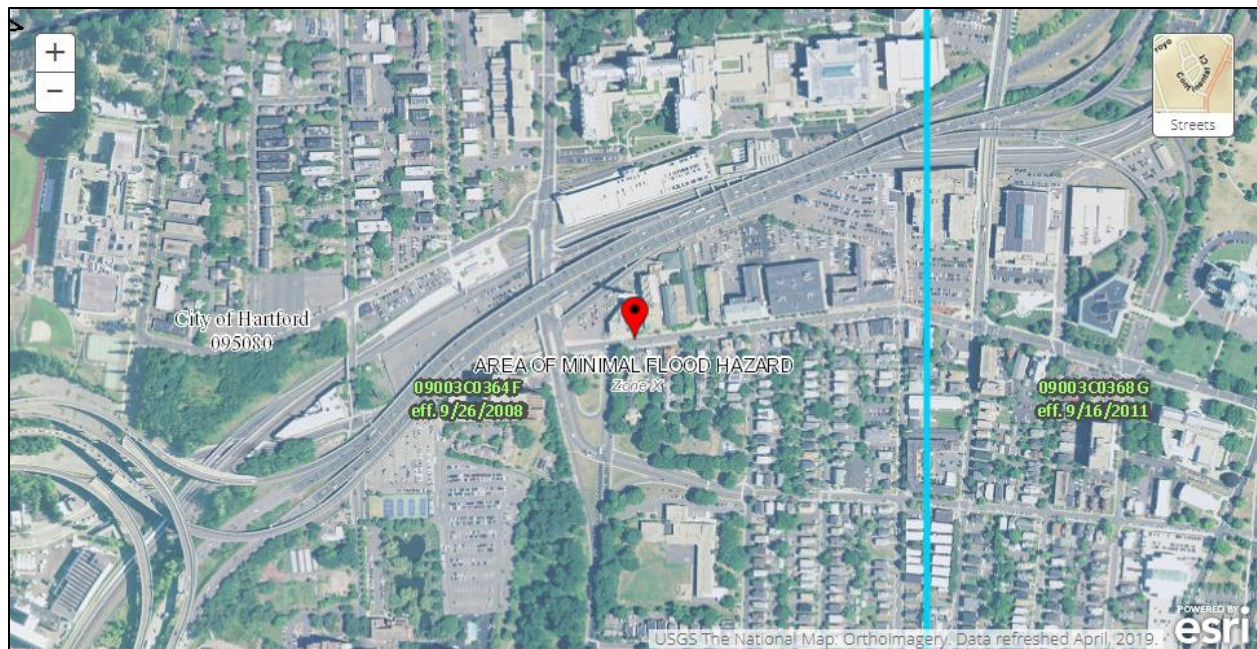
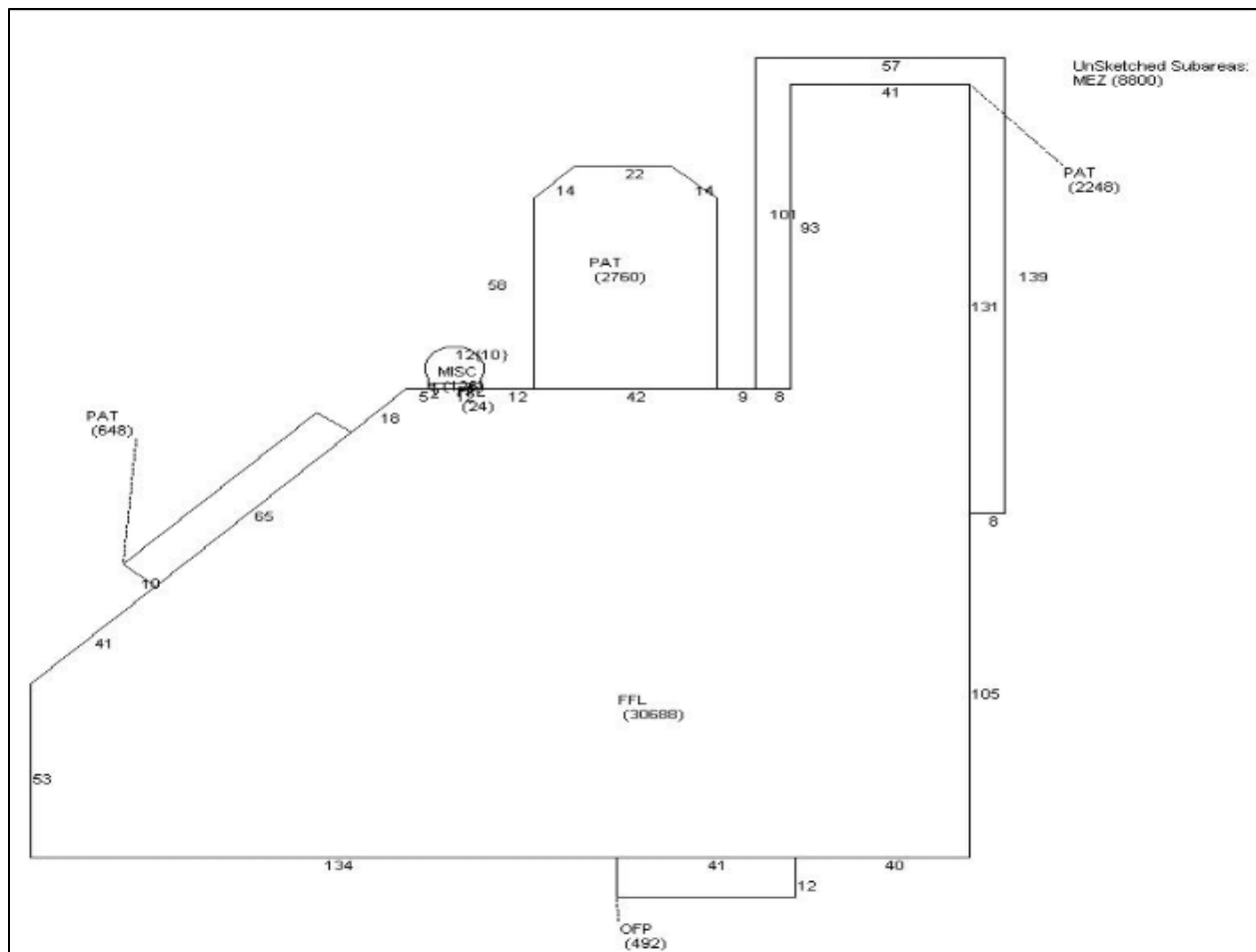


Figure 10-8: Assessor's Building Sketch



11 Highest and Best Use Analysis

In order to estimate the market value of a property, the appraiser must identify the highest and best use of the property, and must assume such highest and best use as the premise of value. Other types of value may assume other uses.

The 2018-2019 Uniform Standards of Professional Appraisal Practice unequivocally state the imperative of appraising market value only under the assumption of the highest and best use, in Standards Rule 1-3 (b).

11.1 Standards Rule 1-3

“When necessary for credible assignment results in developing a market value opinion, an appraiser must:

- (a) **identify and analyze the effect on use and value of existing land use regulations, reasonably probable modifications of such land use regulations, economic supply and demand, the physical adaptability of the real estate, and market area trends; and**

Comment: An appraiser must avoid making an unsupported assumption or premise about market area trends, effective age, and remaining life.

- (b) **develop an opinion of the highest and best use of the real estate.**

Comment: An appraiser must analyze the relevant legal, physical, and economic factors to the extent necessary to support the appraiser’s highest and best use conclusion(s).”

11.2 Highest and Best Use

The reasonably probable and legal use of vacant land or an improved property, which is physically possible, appropriately supported, financially feasible, and that results in the highest value. The four criteria the highest and best use must meet are legal permissibility, physical possibility, financial feasibility, and maximum productivity.⁵

11.3 Highest and Best Use of Land or a Site as Though Vacant

Among all reasonable, alternative uses, the use that yields the highest present land value, after payments are made for labor, capital, and coordination. The use of a property based on the assumption that the parcel of land is vacant or can be made vacant by demolishing any improvements.⁶

Highest and best use of land or a site as though vacant assumes that a parcel of land is vacant or can be made vacant by demolishing any improvements. Land as though vacant is a fundamental concept of valuation theory and the basis for the Cost Approach.

⁵ *The Dictionary of Real Estate Appraisal*. 5th ed. Chicago, Appraisal Institute.

⁶ Ibid.

11.4 Highest and Best Use of Property as Improved

The use that should be made of a property as it exists. An existing improvement should be renovated or retained as is so long as it continues to contribute to the total market value of the property, or until the return from a new improvement would more than offset the cost of demolishing the existing building and constructing a new one. Highest and best use of a property as improved pertains to the use that should be made of an improved property in light of its improvements. The use that maximizes an investment property's return on a long-term basis is its highest and best use as improved.⁷

11.5 The Four Criteria

There are four basic criteria that are considered and analyzed in determining the highest and best use of a property:

1. **Physically possible.** What uses are physically possible given the constraints of the size and physical characteristics of the site?
2. **Legally permissible.** What uses are permitted by zoning or other restrictions (i.e. deed restrictions) on the property?
3. **Financially feasible.** Of the physically possible and legally permitted uses, which are financially feasible in that they will produce a net return to the property owner?
4. **Maximally productive.** Of the financially feasible uses, which use will produce the highest net return, or result in the highest present value of the property?

11.6 Highest and Best Use Conclusions

Based on our analysis, the highest and best use of the Property is for continued use as it is currently improved, as a natural gas fired combined cycle co-generation power plant that produces and sells electricity. This use is physically possible, legally permissible, financially feasible, and represents the maximally productive use of the Property. We have made an extraordinary assumption that the plant, as of the appraisal date, will neither be generating nor selling steam nor water as no agreement nor renewal of the existing agreement will be in place.

If the land were vacant, then the highest and best use would be for general commercial retail, office, or light industrial development as per local zoning, to its maximum development potential. The site is zoned CX-1 for Commercial-Industrial Mix. These uses would be physically possible, legally permissible, financially feasible, and represents the maximally productive use of the Property.

⁷ *The Dictionary of Real Estate Appraisal*. 5th ed. Chicago, Appraisal Institute..

12 Approaches to Value

There are three approaches to valuing real estate and other capital assets: the Cost Approach, the Sales Comparison Approach (sometimes referred to as the Market Data Approach), and the Income Approach. After completing all appropriate approaches, the appraiser reconciles the various indications to derive a value conclusion for the property. Fundamental underlying assumptions and basic methodology involved in each approach and the reconciliation are summarized in this section.

12.1 Principles and Phenomena underlying Appraisal Theory

There are numerous principles and phenomena underlying appraisal theory. Understanding and recognizing them during an appraisal can greatly improve the precision and understanding of the appraisal results. Some of the leading appraisal principles include the following:

1. *An Asset* – An intangible or tangible item or combination of items that has positive value. These may include real property, personal property, and/or business intangibles.⁸
2. *A Liability* - An intangible or tangible item or combination of items that has negative value.⁹
3. *The Economic Unit* – A combination of assets and liabilities that if broken apart would sum to a lower aggregate value.¹⁰
4. *Value is based on the interest held* - (AKA bundle of rights theory) - The more rights held the higher the value, assuming the rights are interests in assets not liabilities.¹¹
5. *Value definitions vary* – Market value is not necessarily equal to value in use, or other values.¹²
6. *Market Value assumes ready, willing, and able typical participants, who are without duress, typically informed, acting within the usual time frames, and assumes the highest and best use.*¹³
7. *Highest and Best Use* –The reasonably probable use of a property that results in the highest value.¹⁴
8. *Market Value Appraisals must reflect the Market* – An appraisal to ascertain the market value of an economic unit must define the unit as a similar combination of assets and liabilities to those combinations found in the market, must utilize market-based data, and must analyze the unit as the market does.¹⁵
9. *Principle of Substitution* – The value of an item is equivalent to a substitute item of the same or similar utility and function.¹⁶
10. *Principle of Summation* – The value of the whole can be measured as the sum of the values of the parts. Differences, if any, are either due to obsolescence, profits, or good will.¹⁷
11. *Residual Value* – the inverse of *Summation*, the value of a part can be measured as the difference between the value of the whole and the sum of the values of all the other parts.¹⁸
12. *Enhancement or Contribution.* – Sometimes combining assets creates a greater value for the whole than the sum of the parts valued separately.¹⁹
13. *Value is based on expectations of future benefits or the Principle of Anticipation* - The historical benefits are only useful to the extent they aid in forecasting future benefits²⁰

⁸ *The Dictionary of Real Estate Appraisal*. 5th ed. Chicago, Appraisal Institute. – Digital version

⁹ Ibid.

¹⁰ Ibid.

¹¹ *The Appraisal of Real Estate*. 14th ed. Chicago: Appraisal Institute, 2013,

¹² Ibid.

¹³ Ibid. pg 332

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Ibid. pgs 30-31

¹⁷ Ibid. pgs 30-31

¹⁸ Ibid.

¹⁹ Ibid. pgs 30-31

²⁰ Ibid.

14. *Value is related and proportional to income.* – The income that an asset generates positively correlates with the asset's value, assuming that the rights to the income are interests in assets not liabilities.²¹
15. *Value is related and disproportionate to Risk.* – The higher the risk, the lower the value, all else being equal.²²
16. *The three approaches should indicate the same value.* – If they do not, then one or more of the approaches is incorrect or incomplete, or is measuring the value of a different asset.²³
17. *Scarcity of Appraisal Data and Reconciliation*– The lack of complete data is common in appraisal practice, yet credible values may still be ascertained.²⁴

In the appraisal of complex assets, like the Facility, understanding and employing these principles and the three approaches is essential to addressing the valuation issues that arise. For example, it is essential to recognize that some incomes and income-derived values, and some sale prices, reflect the benefits of a combination of assets, which is an example of Summation, Contribution or Enhancement. We may use techniques from the cost, sales comparison or income approaches to complete a residual analysis to find the income, cost, or value, of a part of the combined income or value.

As further explanation of the utility of the three approaches, we present the following content taken from *The Appraisal of Real Estate*, 14th ed. Chicago: Appraisal Institute, 2013, which is considered an authoritative reference.

12.2 Application of the Three Approaches to Value

The valuation process is applied to develop a well-supported estimate of a defined value based on an analysis of pertinent general and specific data. Appraisers develop an opinion of property value with specific appraisal procedures which reflect three distinct methods of data analysis – cost, sales comparison, and income capitalization. One or more of these approaches are used in all estimates of value. The approaches employed depend on the type of property, the intended use of the appraisal, and the quality and quantity of data available for analysis.

All three approaches are applicable to many appraisal problems, but one or more of the approaches may have greater significance in a given assignment. For example, the sales comparison approach is usually emphasized in the valuation of single-unit residential properties. However, this approach may not be applicable to specialized properties such as garbage disposal plants because comparable data may not be available. The income capitalization approach is used to value most income producing properties, but it can be particularly unreliable in the market for commercial or industrial property where owner-occupants outbid investors. The income capitalization approach is not typically applied in valuing homes. The cost approach may be more applicable to new and special-purpose properties and less applicable in valuing properties with older improvements that suffer substantial depreciation, which can be difficult to estimate. Appraisers should apply all the approaches that are applicable and for which there is data. The alternative value indications derived can either support or refute one another.

When all three approaches have been used, the appraiser examines the three, separate indications. The relative dependability and applicability of each approach are considered in reconciling the value indications into a final estimate of value. In the reconciliation section of the report, the appraiser can explain variations among the indications produced by the different approaches and account for any inconsistencies between the value conclusions and methods applied.

²¹ *The Appraisal of Real Estate*, 14th ed. Chicago: Appraisal Institute, 2013,

²² Ibid.

²³ Ibid.

²⁴ Ibid.

12.3 Cost Approach

In the cost approach, the cost to develop a property is compared with the value of the existing property or a similarly developed property. When applicable, the cost approach reflects the thinking of market participants by recognizing that market participants sometimes relate value to cost. Market participants tend to judge the value of an existing structure by considering the prices of and incomes from similar assets and the cost to create a new building with comparable physical conditions and functional utility. Market participants adjust the prices they are willing to buy, sell or rent by estimating the costs to bring an existing structure up to the physical condition and functional utility they desire.

Cost Approach: A set of procedures through which a value indication is derived for the fee simple interest in a property by estimating the current cost to construct a reproduction of (or replacement for) the existing structure, including an entrepreneurial incentive, deducting depreciation from the total cost, and adding the estimated land value. Adjustments may then be made to the indicated fee simple value of the subject property to reflect the value of the property interest being appraised.²⁵

12.3.1 Cost Approach Procedures

1. Estimate the value of the land as though vacant and available to be developed to its highest and best use.
2. Estimate the reproduction or replacement cost of the primary structure(s) as of the effective appraisal date. The estimate includes both direct (hard) costs and indirect (soft) costs.
3. Estimate other costs (indirect) incurred after construction to bring the new, vacant primary structure(s) up to market conditions and occupancy levels.
4. Estimate an appropriate entrepreneurial profit from an analysis of the market.
5. Add estimated replacement or reproduction cost, indirect costs, and the entrepreneurial profit, often expressed as a percentage of total direct and indirect costs, to arrive at the total replacement or reproduction cost of the primary structure (s).
6. Estimate the amount of accrued depreciation in the structure, which is divided into three major categories: physical deterioration, functional obsolescence, and external obsolescence.
7. Deduct the estimated accrued depreciation from the total reproduction or replacement cost of the primary structure(s) to derive an estimate of the depreciated reproduction or replacement cost.
 - a) When necessary, break down accrued depreciation into the three main components
 - i) Physical depreciation
 - ii) Functional obsolescence or superadequacy
 - iii) Economic obsolescence
8. Estimate reproduction or replacement costs and depreciation for any accessory buildings and site improvements, and then deduct the estimated depreciation from the reproduction or replacement costs of these improvements. Site improvements and minor buildings are often appraised at their net value i.e., directly on a depreciated cost basis.
9. Add the depreciated reproduction or replacement costs of the primary structure(s), the accessory buildings, and the site improvements to obtain the estimated total depreciated reproduction or replacement cost of all the improvements.
10. Add the site value to the total depreciated reproduction or replacement cost of all the improvements to arrive at the indicated value of the fee simple interest in the property.
11. Adjust the indicated fee simple value to reflect the property interest being appraised, if necessary, to arrive at the indicated value of the interest in the appraised property being appraised."²⁶

12.4 Sales Comparison Approach

The sales comparison approach is based on the principle of substitution, which states that buyers and sellers will not pay more for or sell for less than, respectively, what other similar properties sell for. The sales comparison approach is the process by which a market value estimate is derived by analyzing the sales of similar property and comparing these properties to the appraised property. Often property

²⁵ *The Dictionary of Real Estate Appraisal*. 5th ed. Chicago, Appraisal Institute.

²⁶ *The Appraisal of Real Estate*. 14th ed. Chicago: Appraisal Institute, 2013.

characteristics that differ between a subject property and comparable sales properties are analyzed in the sales comparison approach to determine the adjustments to be made to the prices of comparable property. The comparative techniques of analysis applied in the sales comparison approach are fundamental to the valuation process and are used in the other approaches as well.

Sales Comparison Approach: A set of procedures in which a value indication is derived by comparing the property being appraised to similar properties that have been sold recently, then applying appropriate units of comparison and making adjustments to the sale prices of the comparables based on the elements of comparison. The sales comparison approach may be used to value improved properties, vacant land, or land being considered as though vacant; it is the most common and preferred method of land valuation when an adequate supply of comparable sales are available.²⁷

12.4.1 Sales Comparison Approach Procedures

1. Research the market to obtain information on sales transactions, listings, and offers to purchase or sell properties that are similar to the appraised property in terms of the value-impacting characteristics such as property type, date of sale, size, location, quality, condition and property rights.
2. Select relevant units of comparison (e.g., income multipliers or dollar per acre or per building square foot, dollar per seat, bed, room, or dollar per megawatt hour) and develop a comparative analysis for each unit.
3. Compare comparable sale properties with the appraised property using the elements of comparison and adjust the sale price of each comparable appropriately to the appraised property or eliminate the sale property as a comparable. There are nine basic elements of comparison that should always be considered in sales comparison analysis. Adjustments are generally made for and in the sequence of:
 - a. Real property rights conveyed.
 - b. Financing terms.
 - c. Conditions of sale (motivation).
 - d. Market conditions (time).
 - e. Location.
 - f. Physical characteristics: (age, condition, quality, size)
 - g. Economic characteristics (e.g., attributes of a property that affect its net operating income, etc.).
 - h. Use.
 - i. Non-realty components of value (e.g., personality, business intangibles, or other items that do not constitute real property, etc.).
4. Reconcile the various value indications produced from the analysis of comparable sales into a single value indication or a range of values. In an imprecise market, subject to varying occupancies and economics, a range of values may be a better conclusion than a single value estimate."²⁸

12.5 Income Approach

The income capitalization approach is based on the principle of anticipation, which means that market participants desire property for their future benefits. For a property that generates income, the value of the property is derived from the anticipation of receiving the income.

Income Capitalization Approach: "a set of procedures through which an appraiser derives a value indication for income-producing property by converting its anticipated benefits (cash flows and reversion) into property value. This conversion can be accomplished in two ways. One year's income expectancy can be capitalized at a market derived capitalization rate or at a capitalization rate that reflects a specified income pattern, return on investment, and change in the value of the investment. Alternatively, the annual cash flows may be discounted for the holding period and the reversion can be discounted at a specified

²⁷ *The Dictionary of Real Estate Appraisal*. 5th ed. Chicago, Appraisal Institute.

²⁸ *The Appraisal of Real Estate*. 14th ed. Chicago: Appraisal Institute, 2013.

yield rate.”²⁹ The former is commonly known as direct capitalization, the latter known as yield capitalization or a discounted cash flow (DCF) analysis.

12.5.1 Income Approach Procedures

1. Estimate the future gross income, from all sources, for the subject property by analyzing its operating history and by surveying competitive property in the market area. An analysis of the highest and best use of the subject, as improved, aids in the selection of comparable properties. This results in a determination of potential gross income.
2. Estimate the future vacancy and collection loss and/or production/capacity loss from the subject property's operating history or from market data. Deduct this estimate from potential gross income to obtain an estimate of effective gross income.
3. Estimate the future total expenses, including operating and capital expenses, and debt and taxes by examining the expense history of the Facility as well as the expense histories of the competitive property. Net operating income (NOI) and cash flow result from deducting the total estimated expenses from the effective gross income.
4. Determine the appropriate capitalization method and gather market support for its application. There are two types of accepted capitalization methods - direct capitalization and yield capitalization.
5. Capitalize the resulting future net operating income or cash flow into a value indication for the Facility.

12.6 Definitions of Value

It is important to note that the previous sections present the classic explanation of appraisal processes and largely pertain to appraisal techniques used to estimate an overall value. However the same techniques can also be used or adapted to estimate partial interest values, e.g. “as if vacant” land values, real property improvement values, personal property values, intangible values, or business values.

A fundamental principle of appraisal theory is that the overall value of an asset can be determined by summing the values of a complete and properly matched set of the parts of the asset. This principle is sometimes expressed as “the whole is equal to the sum of the parts”, or the “principle of summation”. The whole is commonly known as the combination, aggregate, or the overall asset. The parts of an overall asset are also known as partial interests, components, or elements.

Good appraisal practice dictates that market value is fully defined. It is well established that the definition must include certain criteria, such as “ready, willing and able”, “reasonably informed”, “competency”, “without duress”, and a market-based expectation of the marketing/exposure time. The definition intrinsically assumes the highest and best use, and what is typical and reasonably probable in the market. Similarly, since market value intrinsically reflects the predominate combination of assets in the market, good appraisal practice requires that we explicitly state our opinion as to the combination of assets typically found in the market and what combination is under appraisal, especially when the two differ.

The concept of an economic unit³⁰ is critical in appraisal. It is meant to describe an elemental business or asset unit. Elemental implies that any division of the unit would change the character of the asset, and its utility, highest and best use, and its value and value contribution. Of course, an appraiser may define their value any way they want, so long as they have sound business reasons and fully disclose their definitions. However if their goal is to capture the market value of the economic unit, the business unit, then they should not use definitions that exclude some essential part of the economic unit, without which the economic unit cannot operate as it predominately does in the market.

²⁹ *The Appraisal of Real Estate*, 14th ed. Chicago: Appraisal Institute, 2013.

³⁰ The Dictionary of Real Estate Appraisal, 5th Ed., defines economic unit as: A combination of parcels in which land and improvements are used for mutual economic benefit. An economic unit may comprise properties that are neither contiguous nor owned by the same owner. However, they must be managed and operated on a unitary basis and each parcel must make a positive economic contribution to the operation of the unit.

The marketplace, not the appraiser, determines how things are sold or rented. If real property is typically sold in conjunction with personal property and business intangibles, the appraiser must accept the fact, and develop theory and practice that reflects the condition. If real property is typically sold in conjunction with personal property and business intangibles, then the overall value should include the personal property and business intangibles, and should not be used to designate the sum of merely the real property elements.

Among the three traditional approaches, the cost approach has the distinct advantage of usually including in its value indication only those assets explicitly included in its analysis. Further, given the cost approach's ability to isolate specific assets that roll up to comprise overall value, the cost approach is commonly employed, in conjunction with sales and/or income approaches, to complete residual and allocation techniques. The income and/or the sales approaches are used to determine the overall value, and the cost approach is used to determine the value of component assets to be excluded. The difference between the reconciled income or the sales approaches and the cost approach yields the value of the residual asset.

12.7 Reconciliation³¹

The last phase of any valuation assignment in which two or more value indications are concluded is the reconciliation phase. In this phase, the various value indications are reconciled into a final value opinion, which may be either a final range of value or a single point estimate.

12.8 Approaches Applied in this Appraisal

In conformity with market forces and appraisal doctrine, we have attempted to employ the three traditional approaches to value: the Sales Comparison; Income; and Cost Approaches in order to estimate the market value of the Facility.

We attempted to find data on sales of other similar co-generation power plants and analyze this sales data to draw conclusions of value for the Facility. We were only able to find limited data on these transactions and the sales included the value from existing electricity contracts, electric power purchase agreements, portfolio sales, and numerous other factors about which there was no public data available. We were therefore unable to complete a meaningful and reliable sales comparison approach.

We did complete a discounted cash flow (DCF) income approach (both after income taxes and as separate equity and debt after income taxes). Both of these approaches were concluded to indicate valid and reliable estimates of the Market Value of the Facility, and both were considered in the final reconciliation of value for the Plant.

We did not complete a cost approach for this Facility. The Subject is an older, special type of property, which are problematic for the cost approach. Estimating physical deterioration is difficult for such properties. Even more difficult, is estimating any functional and economic obsolescence at the property. While one appraisal theory allows the cost approach for special types of property, the income approach has proven to be soundly reliable and the cost approach is not utilized by market participants.

We also completed an analysis to value the salvage value of the electricity generation and steam and water equipment at the Facility.

³¹ *The Appraisal of Real Estate*, 14th ed. Chicago: Appraisal Institute, 2013.

13 Sales Comparison Approach

13.1 Introduction

The sales comparison approach is a traditional appraisal technique that is most useful when a number of similar properties have been sold in the marketplace. This approach arrives at an estimate of value for a subject property by comparing the fair value of comparable transactions. This is an example of the principle of substitution: when a purchaser has the opportunity to acquire a number of competing properties with similar utility and desirability, the purchaser will not choose to pay more to acquire the subject property than the reasonable fair value of a substitute property. Likewise, the seller of a property will understandably not accept an offer below the price obtained for similar properties.

Ideally, the search for comparable sales will yield transactions for properties identical to the subject property in all major value-impacting characteristics. As a practical matter, search results are rarely perfect. For dissimilar sales, standard appraisal practice requires the reconciliation of differences between the major value-impacting characteristics of the subject property and those of the comparables. This is known as the adjustment process.

13.2 Procedure³²

To apply the sales comparison approach, an appraiser follows a systematic procedure:

- Research the competitive market for information on sales transactions, listings, and offers to purchase or sell involving properties in terms of characteristics such as property type, date of sale, size, physical condition, location, and land use constraints. The goal is to find a set of comparable sales as similar as possible to the subject property.
- Verify the information by confirming that the data obtained is factually accurate and that the transactions reflect arm's-length market considerations. Verification may elicit additional information about the market.
- Select relevant units of comparison (e.g. price per acre, price per square foot, price per linear foot, seat or table, price per kW) and develop a comparative analysis for each unit. The goal is to define and identify a unit of comparison that explains market behavior.
- Identify differences between the comparable sale properties and the subject property using elements of comparison. The next step is to adjust the price of each sale property to reflect how it differs from the subject property or eliminate that property as a comparable. This step typically involves using the most comparable sale properties and then adjusting for any remaining differences.
- Reconcile the various value indications produced from the analysis of comparables into a single value indication or a range of values.

13.3 Comparable Sales

We attempted to find data on sales of other similar co-generation power plants and analyze this sales data to draw conclusions of value for the Facility. While we were able to find data on these transactions, the data was limited and the sales did not account for differences in steam and water supply agreements, electricity power purchase agreements, and numerous other factors about which there was no public data available. We were therefore unable to complete a meaningful and reliable sales comparison approach.

13.4 Conclusion – Sales Comparison Approach

Historically, the sales comparison approach has not been employed to value electric generating plants when the purpose is to determine the property value, primarily due to the lack of sales data and due the

³² *The Appraisal of Real Estate*, 14th ed. Chicago: Appraisal Institute, 2013.

Appraisal of CDECCA Co-generation Plant, Hartford, CT

inability to obtain all required information to adjust for terms of the sale (i.e. contracts and agreements). The available sales data often excludes the details necessary to perform a thorough and credible analysis. After researching the available market data, we have concluded that there is insufficient data on sales of comparable co-generation power plants to complete a meaningful sales comparison approach.

14 Income Approach

The basic principle underlying the income capitalization approach is that value is directly related to the benefits of ownership, specifically the benefit of receiving income from the Facility. The income capitalization approach is a set of procedures through which an appraiser derives a value indication for an income producing property by converting its anticipated benefits (income, cash flow and reversion) into value. This conversion can be accomplished in two ways. Income expectancy of one year can be capitalized at a rate that reflects a specified income pattern, the expected return on investment, and anticipated change in the value of the investment. Alternatively, the annual cash flows for the holding period (multiple years) and the reversion can be discounted at a specified yield rate.³³ The former is commonly known as direct capitalization, while the latter is known as yield capitalization or discounted cash flow analysis.

14.1 Direct Capitalization versus Yield Capitalization³⁴

Direct capitalization makes use of income from a single year and a capitalization rate ("cap rate"). Initially, the process appears rather simple; the appraiser need only estimate the income for the next year along with a cap rate. However, difficulties may arise when attempting to forecast a stabilized (representative long-term average) income level. Furthermore, appraisers must recognize that a cap rate is only applied to one characteristic of the property (i.e., net operating income from a single year), and must realize that the overall cap rate is valid only if it accounts for all characteristics of the property, including all associated risks of the investment, changes in income and expenses, and property appreciation or depreciation.

In contrast, the application of yield capitalization requires the practitioner to set forth explicit forecasts of income, expenses, and changes in income and expenditure levels over the holding period. In yield capitalization, the practitioner must draw specific conclusions about changes in net income, cash flow, and property value over the holding period. The net sale price of the property at the end of the holding period must also be estimated. These conclusions are set forth in forecasts of future income and property reversion. The yield rate is then applied to convert anticipated economic benefits, or cash flow, into a present value. Yield rates can be derived with the aid of formulas and factors obtained from financial tables or calculated and applied with financial calculators or personal computers.

Both direct capitalization and yield capitalization are market-derived and widely used by financial analysis professionals in many industries. With adequate information, and when applied correctly, both should result in similar value indications for a subject property. If differences arise, the appraiser should verify that the various techniques are being applied correctly and consistently. Remaining differences are explained in the reconciliation process.

14.2 Income Approach Calculations

Our income approach presents two analyses that estimate the market value of the Facility: a DCF analysis and a direct capitalization analysis. To complete any capitalization technique, an appraiser must work down from potential gross income to net operating income and cash flow. Then capitalize the income or cash flow. To accomplish this task, the appraiser will:

1. Research the income and expense data for the subject property and any comparables.
2. Estimate the potential gross income of the property by adding the production income and other potential income.
3. Estimate the vacancy, collection loss, production capacity, capacity utilization, and down time.
4. Subtract vacancy, collection loss, production capacity, capacity utilization, and down time from total potential gross income to arrive at the effective gross income of the subject property.
5. Estimate the total operating expenses for the subject by adding fixed expenses, variable expenses, and a replacement/capital repairs allowances.

³³The Appraisal Institute, *The Dictionary of Real Estate Appraisal*, Fifth Edition, Chicago, 2010

³⁴Excerpts from the *Appraisal of Real Estate*, 14th ed. Chicago: Appraisal Institute, 2013.

6. Subtract the estimate of total operating expenses from the estimate of effective gross income to arrive at net operating income or cash flow.
7. Apply one of the direct or yield capitalization techniques to this data to generate an estimate of value via the income capitalization approach.

14.3 Data Supplied by Property Owner

We requested an extensive amount of historical income and expense data from the property owners. We were only provided with minimal information regarding the Subject from the property owner. These documents included the historical production of electricity and chilled water from 2008 to March 2019. In addition, deliveries of steam and chilled water, natural gas consumptions, commodity and demand expense data from 2014 to March 2019 was also provided. Other documents provided included photographs of the Facility, site plans, old engineering drawings, permits, and tax bills. We did not receive any historical income nor expense data associated with operating the Plant. We were not provided with historical capacity nor cost breakdowns between electricity versus steam and chilled water.

The Client provided us with copies of the current Steam and Chilled Water Agreement that is set to expire March 31, 2021 and is not expected to be renewed.

14.4 Market Data for Analysis

We have referred to several databases for market information within our analysis. Sources include, but are not limited to, S&P Global/SNL, Duff & Phelps Cost Navigator, EIA, NE-ISO, Henry Hub, Yahoo Finance, and Costar.

14.5 Cash Flows

In order to forecast cash flows for the Subject, we have relied on historical data and industry data such as market data from the New England ISO and the Energy Information Agency ("EIA"). We have also considered forecasted prices from SM: Global, a nationally recognized publisher of such forecasts.

The projected cash flows can be seen in the income approach grids in the Appendix.

14.6 Holding Period and Reversion

Our DCF approach began with research and analysis to determine an appropriate holding (or analysis) period. The holding period is the time period for which investors (or analysts) expect to hold the investment. This is sometimes driven by physical considerations, legal/contractual obligations, and often is limited by whatever is common practice among market participants.

The holding period for our DCF is seven years with no reversion. The Facility first began its operations in 1988 and is currently 31 years old. As of the valuation date, the plant will be 33 years old. Most combined cycle power plants have an economic life of 30-35 years. We have assumed the Plant to have seven years of life remaining where its operations will cease by the end of the seven years.

14.7 Electricity Revenues

14.7.1 Installed Capacity

The installed capacity is the Facility's claimed capacity or the "nameplate capacity." Nameplate capacity is the maximum rated output of a generator, prime mover, or other electric power production equipment under specific conditions designated by the manufacturer or owner. We note that nameplate capacity is the amount of energy a power plant can produce instantaneously—not the amount it will generate over an extended period. According to property representatives and the nameplate capacity, the installed capacity of the Facility is 62.1 MW.

14.7.2 Capacity Factor

Capacity factor is defined as the electricity actually generated by a plant (less plant use), expressed as a percentage of the estimated maximum megawatt-hours that could potentially have been generated during

a given period if the plant were always available and producing at maximum output. The historical annual capacity factors for the Facility were not provided by the property owners.

Historical capacity factors are not a reliable source of data for this particular scope of work as the historical capacity factor and current capacity factors would incorporate generation of steam and chilled water. As of the appraisal date, only electricity will be generated and sold to the grid at the Plant going forward.

We have concluded on a stabilized capacity factor of one (1.0) percent for the Facility. In the last two years of the holding period, we have further reduced this capacity factor by 0.1% per year to account for a lower capacity in the last years of the Plant's economic life.

To further support our conclusion, we have conducted a capacity sensitivity study at the end of our analysis. Once the DCF model for the Subject has been completed, we tested several capacity factor inputs into our model to produce the highest value. Our capacity factor inputs ranged from 1 percent to 10 percent. Ten percent was the approximate capacity factor in 2017, 2018 and 2019 years, and would be the highest in the range if the Plant currently supplies both electricity and steam and chilled water. Naturally, the capacity factor would be less without the steam and chilled water component. Our sensitivity findings can be found as follows.

Figure 14-1 Capacity Sensitivity Study

Capacity Factor (%)	Value Indication
1.00	\$5,470,000
2.00	\$5,410,000
3.00	\$5,350,000
4.00	\$5,280,000
5.00	\$5,220,000
6.00	\$5,160,000
7.00	\$5,100,000
8.00	\$5,040,000
9.00	\$4,980,000
10.00	\$4,920,000

We have concluded that our 1.00% capacity factor conclusion provides the most accurate indication of value.

14.7.3 Analysis of the Price of Electricity

The Facility receives revenue from selling electricity into the grid. These closed hourly historical wholesale electricity prices are published on by NE-ISO and fluctuate due to supply and demand in the local market. The Facility operates in the NE-ISO – Connecticut region.

We have taken historical hourly pricing of electricity from 2014 to 2018 and calculated monthly and yearly averages and averages over the last three and five years. We have considered these averages when forecasting our dollar per megawatt-hour conclusion for electricity forecast prices. These historical and projected cash flows and forecasts are shown in the Appendix. Due the volume of data, some hourly price data, which was taken from public sources, is maintained in our appraisal file. We have also examined electricity price projections by S&P Global.

14.7.3.1 S&P Global

S&P Global Inc. specializes in financial information and analytics. It is a publicly traded company, parent company to S&P Global Ratings, S&P Global Market Intelligence, S&P Global Platts, and is the majority owner of S&P Dow Jones Indices. S&P Global ratings provides independent investment research including ratings on various investment instruments. Their databases provide expansive coverage with sector-specific analysis. S&P Global Ratings provides independent investment research including ratings on various investment instruments. S&P Global Market Intelligence is a provider of multi-asset class and real-time data, news and analytics to institutional investors, investment and commercial banks, investment advisors and wealth managers, corporations, and universities. S&P Dow Jones Indices is the world's largest global resource for index-based concepts, data, and research. It produces S&P 500 and the Dow Jones Industrial Average. S&P Dow Jones calculates over 830,000 indices, publishes benchmarks that provide the basis for 575 ETFs globally with \$387 billion in assets invested, and serves as the DNA for \$1.5 trillion of the world's indexed assets. S&P Global Platts is a provider of information and a source of benchmark price assessments for the commodities, energy, petrochemicals, metals, and agriculture markets.

S&P Global Market Intelligence publishes data in all energy markets, further analyzing the data and predicting their own forecasts. Specifically, data for the power markets, natural gas, utility rates, pipelines, capacity and generation, electric demand, nuclear and fossil fuels, and more. They provide extensive coverage of historical and forecasted global economic data, integrated with some of the industry's leading fundamental transactions and pricing data. The macroeconomic data includes both historical and forecast data on major economic indicators, covering inflation, employment, GDP, balance of payments, trade, retail, and industrial indicators, as well as currency and stock data.

In particular, we utilize S&P Global information on power plants and companies who purchase power plants. Much of their information is populated from publicly sourced data such as company 10K's, and other

company reports to government regulators. The financial data, power generation, and operations forecasts can be found for many of these plants, including the Subject. They provide industry-specific insights, and sector analysis.

Furthermore, we use S&P Global to search for Guideline Public Companies, where we can find detailed financial data such as revenue, long term and short-term debt, debt to capital, working capital, EBITDA, etc.

S&P Global also publishes their own plant-specific historical electricity prices and forecasts, which we have relied on in our analysis.

This price of electricity is then multiplied by the projected net production of MWh at the Plant to calculate our total electricity revenues during the 7-year holding period. Detailed prices and projections can be seen in our discounted cash flow calculations in the Appendix.

14.8 Capacity Revenue

Power plants sometimes have the potential to generate income from activities other than the obvious electricity generation. One other type of revenue is capacity revenue, which is revenue paid to generation plants in the system for providing backup or reserve power to the system. Capacity revenue is derived from the NEISO forward capacity markets. Each entity that serves NEISO load must own or acquire capacity resources to meet regulated capacity obligations. Capacity revenues were forecasted throughout the holding period based on capacity prices forecasted by the NEISO and our research.

The NEISO capacity market is based on its obligation to procure capacity to cover seasonal peak load, plus an additional Installed Reserve Margin. Also, NEISO generators are paid for siting units in New England based on UCAP - the net capacity the unit provides after adjustments to account for forced outages at the unit.

Starting Dec. 1, 2006, the NEISO implemented a Forward Capacity Market in which the NEISO forecasts power system needs three years in advance and then holds an annual auction to purchase sufficient resources. Historical FCM cleared auction prices, including closed capacity prices through May 31 of 2023 (capacity prices are decided 3 years in advance), and the corresponding calendar year annual average capacity prices can be seen in the following table. Note that these prices are published for a June 1st to May 31st date per year. In our cash flows, we have weighted the prices for a January 1st to December 31st date range to match our yearly cash flows in our DCF.

Figure 14-2: Forward Capacity Market Closed Auction Prices

AUCTION COMMITMENT PERIOD	TOTAL CAPACITY ACQUIRED (MW)	NEW DEMAND RESOURCES (MW) ¹	NEW GENERATION (MW) ²	CLEARING PRICE (\$/KW-MONTH)
FCA #1 in 2008 for CCP 2010/2011	34,077	1,188	626	\$4.50 (FLOOR PRICE)
FCA #2 in 2008 for CCP 2011/2012	37,283	448	1,157	\$3.60 (FLOOR PRICE)
FCA #3 in 2009 for CCP 2012/2013	36,996	309	1,670	\$2.95 (FLOOR PRICE)
FCA #4 in 2010 for CCP 2013/2014	37,501	515	144	\$2.95 (FLOOR PRICE)
FCA #5 in 2011 for CCP 2014/2015	36,918	263	42	\$3.21 (FLOOR PRICE)
FCA #6 in 2012 for CCP 2015/2016	36,309	313	79	\$3.43 (FLOOR PRICE)
FCA #7 in 2013 for CCP 2016/2017	36,220	245	800	\$3.15 (FLOOR PRICE) NEMA/Boston: \$14.99
FCA #8 in 2014 for CCP 2017/2018	33,712	394	30	\$15.00/new & \$7.025/existing
FCA #9 in 2015 for CCP 2018/2019	34,695	367	1,060	System-wide: \$9.55 SEMA/RI: \$17.73/new & \$11.08/existing
FCA #10 in 2016 for CCP 2019/2020	35,567	371	1,459	\$7.03
FCA #11 in 2017 for CCP 2020/2021	35,835	640	264	\$5.30
FCA #12 in 2018 for CCP 2021/2022	34,828	514	174	\$4.63
FCA #13 in 2019 for CCP 2022/2023	34,839	654	837 ³	\$3.80

We also obtained annualized capacity price projections for the Facility based on the March 31, 2021 valuation date from S&P Global. The initial S&P Global rates are based on the closed auction prices annualized to the valuation date for the years through the end of the closed auctions. We have concluded that the S&P Global projections are reasonable, and relied on them for our projection of capacity prices throughout the holding period. These projections can be seen in the DCF grids in the Appendix to this report.

14.9 Consumer Price Indices

We analyzed several different consumer price indices, namely the National-All Urban Consumers for All Items Less Food and Energy and the National-All Urban Consumers for Energy CPIs. This data provides an excellent source for forecasting electricity rates and the general rate of inflation. The CPIs are well documented and electric power generation market participants often rely upon them. The use of CPIs is acknowledged as a common forecasting standard for experts in valuation. Based on this data, we have concluded on a long-term inflation rate for revenues of 2.25% annually, and an inflation rate for general expenses of 2.5%. We forecast revenues to grow at a slightly slower long-term inflation rate than general expenses because revenues, namely electricity is a commodity, and commodities inflate over the long term at a slow pace than general expenses and cost in our economy.

Figure 14-3:
CPI Long-Term Growth
(Amounts in Percent Growth)

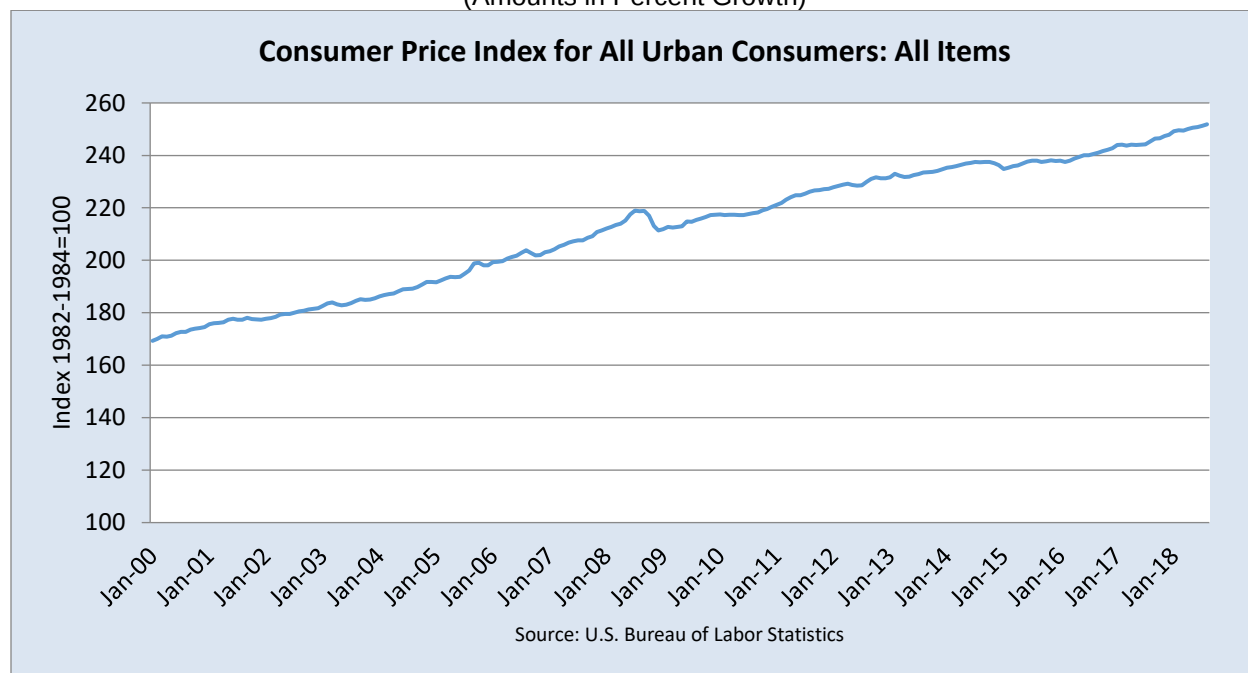
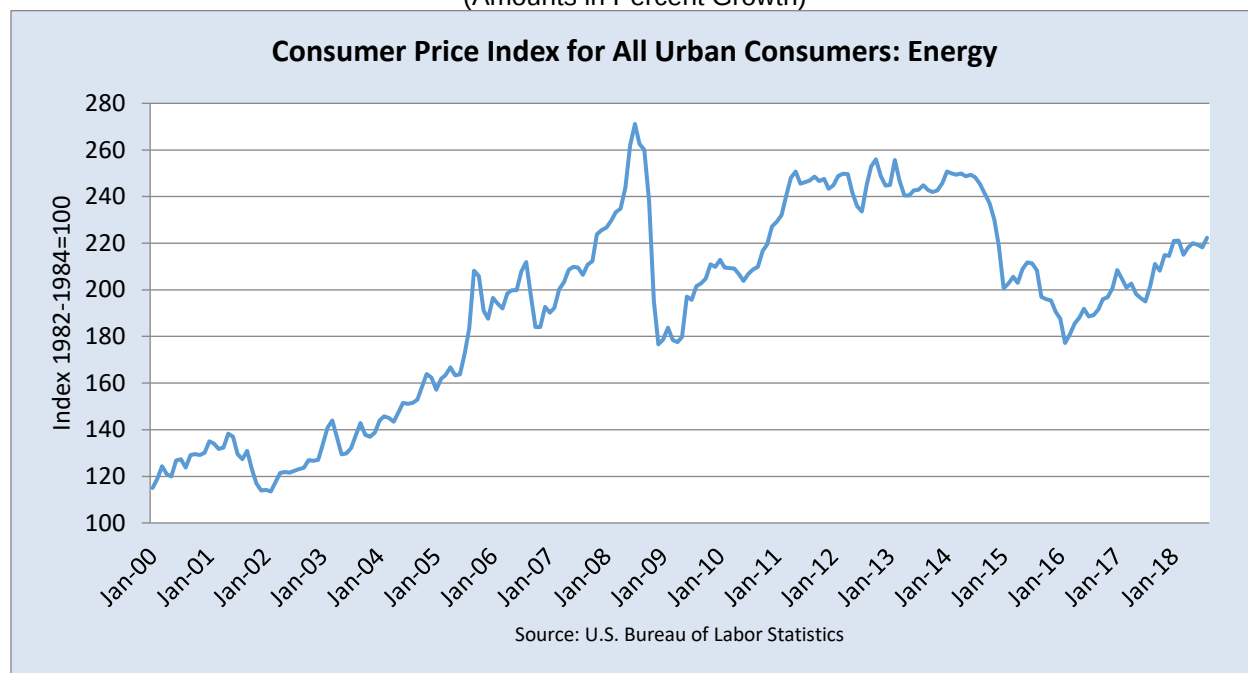


Figure 14-4:
CPI Long-Term Growth
 (Amounts in Percent Growth)



14.10 Expenses

We were not provided with historical expense data for the Facility. We were provided with some details of demand charges from 2014 to March 2019. We have considered these charges in our expense analysis. In addition, we have forecasted expenses that are typical of other natural gas combined-cycle co-generation power plants in the market. These expenses include: Fuel Expense, Emissions Expense, Demand Charges, Variable Operating & Maintenance, Fixed Operating & Maintenance Expenses, General and Administrative Expenses, and Capital Expenses. We analyzed projections from S&P Global and also compared our projections with EIA statistical expense information on combined cycle facilities, market experiences, and expectations. Note that any historical expense projections were not indicative of future cash flows as of the 2021 appraisal date, as the steam and chilled water agreement would have ended and not be renewed. Thus, not only would revenue be affected, expenses are also affected. Based upon this combination of analyses, we forecasted the expenses that are detailed in our DCF model.

14.11 Fuel Expenses

Our Subject plant consumes natural gas as fuel to generate electricity. We have referenced sources like EIA and Henry Hub, which are industry standards for pricing natural gas, in our projected natural gas price in dollar per MMBtu.

14.12 Emissions Expense

The Facility participates in the Regional Greenhouse Gas Initiative (RGGI) Trade-Cap Program, a market-based program designed to reduce power plant emissions. From the program website, it is summarized as, "The Regional Greenhouse Gas Initiative (RGGI) is the first mandatory market-based program in the United States to reduce greenhouse gas emissions. RGGI is a cooperative effort among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont to cap and reduce CO₂ emissions from the power sector.

Following a comprehensive 2012 Program Review, the RGGI states implemented a new 2014 RGGI cap of 91 million short tons. The RGGI CO₂ cap then declines 2.5 percent each year from 2015 to 2020. The RGGI CO₂ cap represents a regional budget for CO₂ emissions from the power sector."

Power plants such as the Facility are subject to these emissions expenses. Essentially, the program places a cap on the total emissions in the market, and power plants over 25 megawatts in size are required to buy a portion of that cap. In effect, the Subject pays a premium to emit greenhouse gases. The market cap for emissions generally reduces each year, effectively driving the up price of this charge every year.

The RGGI cap and RGGI adjusted cap for the years 2018-2020 are as follows.

2018: RGGI cap is 82,235,598, RGGI adjusted cap is 60,344,190

2019: RGGI cap is 80,179,708, RGGI adjusted cap is 58,288,301

2020: RGGI cap is 78,175,215, RGGI adjusted cap is 56,283,807

We have included this emissions expense in our analysis. This information can be seen in our DCF analysis shown in the Appendix.

14.13 Demand Charges

The property owner representatives provided historical demand charges for natural gas and electricity from 2014 to March 2019. Demand (measured in kW) is a measure of how much power a customer uses at a given time. Utilities apply demand charges based on the maximum amount of power that a customer used in any interval (typically 15 minutes) during the billing cycle. Demand charges usually apply to commercial and industrial customers, who tend to have higher peak loads (i.e., peak power demand) than residential customers. Most utility rates specify the maximum power demand a customer is allowed to have: exceeding the maximum power demand for consecutive months can result in being moved to a different rate with higher demand charges.

We have considered these demand charges in our analysis and forecasted a stabilized demand charge in our DCF analysis, further shown in the Appendix.

14.14 Operations and Maintenance Expenses

Operations and maintenance (O&M) expenses are expenses necessary to ensure the Facility is operational. Fixed O&M expenses include production expenses (supervising and engineering), and maintenance and operator fees. Variable O&M expenses include such things as fuel and electricity expenses. In this case, the Facility uses fuel as an expense for the process to generate electricity. It is important to note that projected O&M expenses for valuation purposes are cash expenses, and should not include financial accounting expenses like depreciation.

Additional information and analysis on the expenses is shown in the Appendix.

14.15 General & Administrative (G&A) Expenses

General and administrative expenses would include expenses incurred for day-to-day business operations. These generally include any legal fees, some employee salaries, office supplies, and corporate management expenses. We have input a forecast of \$75,000 starting in the first year of the DCF, and have grown it at the general inflation rate of 2.5 percent.

14.16 Capital Expenditures

We were not provided with the property owner's projections of capital expenses as of the valuation date. We have projected a higher-than-average five percent of income for our capital expense projections to account for the fact that the plant is older and is near the end of its economic life. These expenses were reduced by 50% per year in the last two years of the holding period, as the property owners would logically not spend more money on an asset that would not continue to run in future years.

14.17 Discount Rate

Value is calculated by discounting each of the projected cash flows, along with the net proceeds from a reversionary sale (if any) of the Facility, at an appropriate discount rate, which is also known as a yield rate. The sum of the discounted cash flows equals the net present value, or the market value of the Facility, as of a specific date.

There are several possible methods for estimating discount rates, including market surveys, market sales extraction and various mathematical formulas. We considered researching market sales for the extraction of yield rates but were unable to obtain adequate data. This was expected because even in highly active markets, such as office building or retail mall markets, such data is rarely available. We were able to successfully employ alternate methods.

Facilities such as the Subject are primarily traded as vehicles for investment, and therefore must be analyzed in light of the market's perception of the associated risks, and required returns in real estate in general, and the subject property in specific.

We completed a formula-based analysis of the discount rate for the Facility known as the Weighted Average Cost of Capital, or WACC. The basic elements of yield (or capitalization) rates are debt and equity investment. Specifically, these elements are the debt yield and the equity yield. When combined, they indicate the overall investment yield. This cost of capital analysis is "weighted" because it incorporates the percentage of the total investment that debt contributes and the percentage that equity contributes, which is a weighted average concept.

Algebraically the WACC analysis is expressed as shown in the following figure:

**Figure 14-5:
The Formulaic Derivation of the Discount Rate
Weighted Average Cost of Capital (WACC)**

$$Y_O = (M \times Y_M) + ((1 - M) \times Y_E)$$

Where,

Y_O	=	Overall Yield Rate
M	=	Debt to Value Ratio
Y_M	=	Debt Yield Rate
Y_E	=	Equity Yield Rate

14.17.1 Debt and Equity Ratio Analysis

In order to estimate the capital structure for the Facility, we research the capital structure of other energy companies, specifically many who own other combined-cycle co-generation power plants and natural gas plants, to use as a guideline. The data on these guideline companies can be seen in the following figure. Additional information and analysis on capital structure is shown in the Appendix.

Figure 14-6: Capital Structure of Guideline Companies

<u>Guideline Companies</u>	<u>Total Capital (\$,000,000)</u>	<u>Debt to Capital</u>	<u>Equity to Capital</u>	<u>Sales Revenue (\$,000,000)</u>	<u>Sales Revenue Multiplier</u>	<u>Working Capital (\$,000,000)</u>	<u>Working Capital Ratio</u>	<u>EBITDA (\$,000,000)</u>	<u>EBITDA Multiplier</u>
Data Source:				10K		10K		10K	
Date:				12/31/2018		12/31/2018		12/31/2018	
Sempra	\$51,414	42.39%	57.61%	\$11,687	4.40	(\$3,878)	-33.2%	\$3,927	13.09
Duke Energy	\$113,092	44.52%	55.48%	\$24,116	4.69	(\$5,327)	-22.1%	\$10,058	11.24
Xcel Energy, Inc.	\$41,130	38.42%	61.58%	\$11,458	3.59	(\$1,366)	-11.9%	\$3,632	11.32
NRG Energy, Inc.	\$17,681	36.47%	63.53%	\$9,478	1.87	\$1,202	12.7%	\$1,691	10.46
AES Corp	\$27,213	64.81%	35.19%	\$10,736	2.53	\$616	5.7%	\$3,375	8.06
Vistra Energy	\$22,196	49.14%	50.86%	\$9,144	2.43	(\$190)	-2.1%	\$2,012	11.03
First Energy	\$36,918	47.93%	52.07%	\$10,074	3.66	(\$2,242)	-22.3%	\$3,920	9.42
Average	\$44,235	46.2%	53.8%		3.31		-10.4%		10.66
Median	\$36,918	44.5%	55.5%		3.59		-11.9%		11.03
Average, without Outliers	\$35,774	43.1%	56.9%		3.05		-7.6%		10.69
Median, without Outliers	\$36,918	43.5%	56.5%		3.06		-11.9%		11.03

Based on this analysis, we have concluded on a market-oriented capital structure of 45 percent debt and 55 percent equity.

14.17.2 Equity Yield Analyses for WACC

There are several widely used and effective methods for estimating the equity cost of capital. In determining the equity rate for our WACC, we utilized the Capital Asset Pricing Model and the Cost of Equity Capital Build-Up Analysis.

The build-up method is an additive model in which the return on an asset is estimated as the sum of a risk-free rate and one or more risk premiums. The Equity Yield Build-Up Model, on the other hand, depicts long-term US government bond yields as well as Moody's Aaa and Baa bond ratings and adjusts for risk associated with risk premium, illiquidity, and managerial effort.

14.17.2.1 Duff & Phelps Reference Sources³⁵

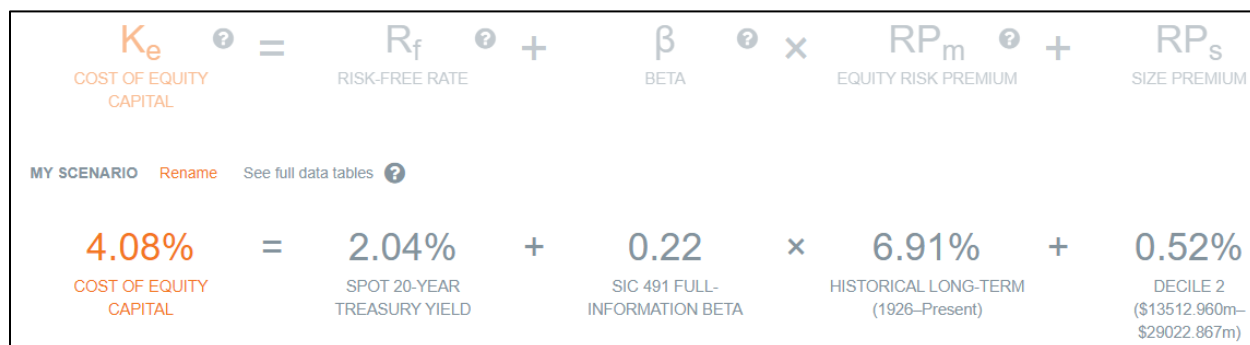
Duff & Phelps LLC is an advisory company that assists clients who work in valuation and corporate finance. They publish *The Duff & Phelps Valuation Handbook – US Guide to Cost of Capital*, which can be used to estimate cost of equity capital, using multiple cost of capital models. The book publishes applications and examples of the cost of capital, and the data to be used within the models. The Cost of Capital is a commonly used reference within the appraisal and finance industries. This book addresses developments related to estimating the cost of capital. The cost of capital is the expected rate of return required to attract capital to a particular investment or project as of a given date, reflecting economic and other factors surrounding the expected returns and the risk of the investment or project at that particular point in time.

14.17.2.2 Capital Asset Pricing Model (CAPM)

The Capital Asset Pricing Model (CAPM) is used to determine a theoretically appropriate required rate of return of an asset. The CAPM formula takes into account the sensitivities to non-diversifiable risk (also known as systematic risk or market risk), often represented as a beta coefficient, as well as the expected return of the market and the expected return of a theoretical risk-free asset.

In the CAPM model, the risk free rate we have utilized is the 20-year US Treasury Bond rate as of the valuation month. The Equity Risk Premium is provided by Duff & Phelps, and the Levered Equity Beta is the Full Information Beta for the Electric and Utility industries. The size premium is based on the average market capitalization of the guideline public companies. We have added a 14.0 percent facility specific risk premium to account for the additional risk associated with this facility as compared to other typical electric generation and combined cycle facilities. We have used a slightly higher than usual risk adjustment as all yield rates are reported as of October 2019, the date of the report, whereas we are projecting a rate as of the appraisal date, March 31, 2021.

Figure 14-7: CAPM Model



³⁵ Excerpts and paraphrases from the *Cost of Capital*, 5th ed. Hoboken, NJ: John Wiley & Sons, Inc., 2014.

Figure 14-8: Capital Asset Pricing Model

Capital Asset Pricing Model (CAPM)	
Risk Free Rate: 20-Year Treasury Bond	2.04%
Equity Risk Premium	6.91%
Levered Equity Beta	0.22
Cost of Base Equity Capital	3.56%
Unsystematic Risk Factors:	
Size Premium	0.52%
Facility-Specific Risk Adjustment and Time Adjustment, for CAPM	14.00%
Equity Rate, via CAPM	18.08%

14.17.2.3 Cost of Equity Build-Up Analysis

The Cost of Equity Buildup Analysis is comprised of a risk-free rate, a long-term US Treasury bond yield, an equity risk premium, industry risk premium and size premium, if necessary. The sources for the inputs are the same as in the CAPM analysis above, except that the Industry Risk Premium is also published by Duff & Phelps and is the IRP that corresponds to the Full Information Beta used in the CAPM model.

Figure 14-9: Build-Up Model

K_e	=	R_f	+	RP_m	+	RP_i	+	RP_s
COST OF EQUITY CAPITAL		RISK-FREE RATE		EQUITY RISK PREMIUM		INDUSTRY RISK PREMIUM		SIZE PREMIUM
MY SCENARIO Rename See full data tables								
4.08%	=	2.04%	+	6.91%	+	-5.39%	+	0.52%
COST OF EQUITY CAPITAL		SPOT 20-YEAR TREASURY YIELD		HISTORICAL LONG-TERM (1926–Present)		SIC INDUSTRY RISK PREMIUM		DECILE 2 (\$13512.960m–\$29022.867m)

Figure 14-10: Cost of Equity Build-Up Model
(Amounts in Percent)

Build-Up Model	
Risk Free Rate (20 Year Treasury Bond)	2.04%
Equity Risk Premium	6.91%
Size Premium	0.52%
Industry Risk Premium	-5.39%
Facility-Specific Risk Adjustment and Time Adjustment, for Build Up Model	14.00%
Equity Discount Rate, via Build-Up Model	18.08%
Equity Discount Rate, via CAPM	18.08%
Equity Discount Rate, via Build-Up Model	18.08%
Equity Discount, After Income Tax	18.08%

14.17.2.4 Equity Yield Conclusion

Based on the two equity yield analyses presented above, we have concluded on an after-income-tax equity rate of 18.08 percent.

14.17.3 Debt Yield Analysis

In determining the debt rates to be incorporated in the WACC analysis, we analyzed Moody's corporate bond yield rates. We concluded that the Baa corporate bond ratings best reflected the risk characteristics applicable to the Facility. We then, conservatively, added an additional risk adjustment of 3.0 percent to account for any additional risks associated with the Facility. We have used a slightly higher than usual risk adjustment as all yield rates are reported as of October 2019, the date of the report, whereas we are projecting a rate as of the appraisal date, March 31, 2021.

Figure 14-11: Debt Rate Analysis
(Amounts in Percent)

Debt Rate Build-Up Analysis	
Risk Free Rate: 20-Year Treasury Security	2.04%
Aaa Corporate Bond Yield	3.06%
Baa Corporate Bond Yield	3.98%
Market Debt Discount Rate, Before Income Tax	3.98%
Additional Subject Asset Risk Adjustment and Time Adjustment to Baa Bonds	3.00%
Debt Discount Rate, Before Income Tax	6.98%
Marginal Federal and State Income Tax Rate	26.93%
Debt Discount Rate, After Income Tax	5.10%

14.17.3.1 Debt Yield Conclusion

Based on the yield analyses presented above, we have concluded on an after-income-tax debt rate of 5.10 percent.

14.17.4 Discount Rate Calculation

Using steps highlighted in the previous sections of this report, we calculated the discount rate using the WACC method. The following figure summarizes our analysis.

Figure 14-12: Discount Rate Calculation
(Amounts in Percent)

Equity-to-Total Capital Ratio	55.00%
Equity Discount, After Income Tax	18.08%
Equity contribution to WACC	9.94%
Debt-to-Total Capital Ratio	45.00%
Debt Discount Rate, After Income Tax	5.10%
Debt Contribution to WACC	2.30%
WACC, After Income Tax After Property Tax	12.24%

14.18 Market Value Conclusion - DCF

A complete set of our DCF spreadsheets is included within the Appendix. The following figure summarizes the indicated market values for the Facility with electricity generation only.

Figure 14-13: Market Value Conclusions – DCF

Income Approach Conclusions, Electricity Generation Only	Value	\$/kW
DCF Value - After Income Taxes	\$5,470,000	\$88
DCF Value - Separate Equity and Debt, After Income Taxes	\$5,470,000	\$88

14.19 Income Approach Reconciliation

Due to the variability in electricity prices, capital repairs and other inputs, and because market participants strongly favor the DCF, we concluded that the DCF analysis is the most reliable income approach method for the valuation date. It has been our professional experience that market participants prefer the DCF method to the Direct Capitalization Method due to its more precise calculation methodology. Furthermore, the Subject plant is at or near the end of its economic life, and a direct capitalization approach would not be applicable as direct capitalization analysis assume the property in perpetuity. Our Subject only has a seven-year remaining holding period and economic life.

The following Figure summarizes our Income Approach analysis of the Facility, assuming electricity generation only and no steam or chilled water operations.

Figure 14-14: Income Approach Value – Final Conclusions

Income Approach Conclusions, Electricity Generation Only	Value	\$/kW
DCF Value - After Income Taxes	\$5,470,000	\$88
DCF Value - Separate Equity and Debt, After Income Taxes	\$5,470,000	\$88

15 Machinery & Equipment & Liquidation Valuation

The equipment related to the electricity generation at the Facility is all near the end of its economic life. Any salvage value left of most of the equipment is offset by the costs required to remove the equipment in place. This is due to the age and deterioration of the equipment, but also due to the costs that would be necessary to demolish all or part of the existing building in order to access and remove the equipment, the labor cost to remove the equipment, and the cost to test and re-license the equipment for any reuse. Due to the age and the cost and inconvenience of the configuration of the equipment, we have concluded that these assets are not desirable in the market, as newer and easier-to-remove second-hand equipment sold in the market would be preferred.

There are only four items of equipment at the Plant that have salvage value left (the "Subject Assets"), as shown in the following Figure.

Figure 15-1 Equipment at Subject

Item	Description	Make	Model	Capacity	Unit	Qty
1	Lithium Bromide Chiller	Trane	Absorption	900	tons	1
2	Centrifugal Chiller	Carrier	19CB8842XX	1800	tons	3
3	Boiler	Cleaver Brooks		28k or 800	lbs/hr or HP	1
4	Boiler	Zurn		150k or 4300	lbs/hr or HP	1

The Subject Assets with salvage value consist of four chillers and two boilers located at the CDECCA facility in Hartford, CT. Installed approximately 30 years ago, the other Subject Assets are effectively at the end of their useful lives.

We utilized the market approach to estimate the salvage value the Subject Assets. As part of our market approach analysis we investigated the secondary market of sales of similar assets. In order to provide an equivalent basis of comparison for sales of similar assets, we stated the proceeds as a percent of Replacement Cost New (RCN) with RCN referenced from vendor quotations and published price estimating guides. The grid later in this section details the RCN calculation and the total estimated RCN of \$5,190,000.

We identified the following comparable indications of value in the following Figure.

Figure 15-2 – Comparable Indications

Comp Number	Recovery Percentage	Reference
1	8%	MVS Refrigeration
2	10%	MVS Steam Power
3	6%	MVS Chemical
4	0%	MVS Note reads if unmarketable could go to zero
5	3%	Boilers, auction
6	4%	Cooling Towers, auction
7	1%	Chemical process plant appraisal, 2018, confidential, scrap
8	3%	Chemical process plant appraisal, 2018, confidential, salvage
9	5%	Chemical process plant appraisal, 2018, OLV

Comps 1 to 4 source from Marshal Valuation Services (MVS) published estimating guide. With a range of 0% to 10% these data points help set high and low parameters.

Comps 5 and 6 with a range of 3% to 4% source from published auction sales results for similar equipment. An auction sale represents a forced liquidation value. The assets sold at auction were aged at 10 to 20 years old rather than the 30 years old for the Subject Assets. Both the type of sale and age indicate Subject Assets salvage value will be lower than the comps.

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Comps 7 and 8 with a range of 1% to 3% source from an appraisal we completed last year for a chemical process plant aged 10 years.

Comp 9 at 5% is an orderly liquidation value (OLV) appraisal completed last year of another chemical process plant aged approximately 15 years.

The hierarchy of value ranges from high to low:

- Orderly liquidation value
- Forced liquidation value
- Salvage value
- Scrap value

Comps 5 and 6 then set the upper limit of value at 3% since salvage value must be less than forced liquidation value. Likewise comps 7 and 8 show an appraisal of newer, and therefore more valuable, equipment, indicating a range of 1% to 3%. Since the Subject Assets are older and near the end of their economic lives, we conclude salvage value at the low of the range at 1%.

1% of \$5 million gives us an estimated salvage value of \$50,000.

Figure 15-3 – Salvage Value Analysis

Item	Desc	Make	Model	Capacity	Unit	Qty	Total Replacement Cost New
1	Lithium Bromide Chiller	Trane	Absorption	900	tons	1	\$630,000
2	Centrifugal Chiller	Carrier	19CB8842XX	1800	tons	3	\$2,160,000
3	Boiler	Cleaver Brooks		28k or 800	lbs / hr or HP	1	\$400,000
4	Boiler	Zurn		150k or 4300	lbs / hr or HP	1	\$2,000,000
							\$5,190,000

1%	Salvage Percent
\$51,900	Salvage Value
\$50,000	Salvage Value Rounded

After rounding, we have concluded that the salvage, or liquidation, value of the equipment at the Subject to be seen below.

\$50,000

Salvage Value of Steam and Water Equipment at Subject (Liquidation Only)

We have concluded that the salvage, or liquidation, value of the electricity equipment at the Subject to be seen below.

\$0

Salvage Value of Electricity Equipment at Subject (Liquidation Only)

16 Reconciliation and Final Value Conclusion

There are two considerations one must weigh when applying various approaches to value. First, appraisers should use those approaches commonly utilized by market participants. In its Reconciliation section, The Appraisal of Real Estate, 14th Edition, published by the Appraisal Institute, Chicago, 2013, writes:

“Appropriateness, accuracy, and quantity of evidence are the criteria with which an appraiser forms a meaningful, defensible final value estimate.”

Second, the inadequate or insufficient supply of data within a sub-market, or within a particular time frame, may necessitate the exclusion of approaches commonly employed in the larger market or at different points in time.

In conformity with market forces and appraisal doctrine, we have attempted to employ the three traditional approaches to value: the Sales Comparison; Income; and Cost Approaches in order to estimate the market value of the Subject. As described above, we utilized the Income Approach and the Cost Approach to value the Subject, but relied on the Income Approach as the primary indication of value.

Based on our analysis, we have relied on the Income Approach, as assets like the Subject are typically purchased by investors to earn a return on their investment. We know this to be a fact based on conversations with market participants as well as by reading testimony given and comments published by market participants. The employed approaches indicate the following values for the Subject:

Table 16-1: Income Approach Conclusions

Income Approach Conclusions, Electricity Production Only	Value	\$/kW
DCF Value - After Income Taxes	\$5,470,000	\$88
DCF Value - Separate Equity and Debt, After Income Taxes	\$5,470,000	\$88

The market value that we have arrived at above assumes the Plant will be operating for electricity generation only, with no steam or chilled water production.

We have also considered all of the personal property and equipment at the Plant and concluded that the electricity equipment has no salvage value given the age of the equipment and the costs required to remove the equipment, service it, and install it in a new location. There were only four equipment items, related to the steam and chilled water generation, which were concluded to have a salvage value of \$50,000.

Table 16-2: Salvage Value Conclusions

Salvage Value of Steam Equipment/Liquidation Only	\$50,000
Salvage Value of Electricity Equipment/Liquidation Only	\$0
Salvage Value Conclusion, Assuming No Steam or Electricity Operations	\$50,000

The total market value conclusion of the Plant, assuming continued electricity production but no steam or chilled water operations, is the sum of the conclusion from the income approach plus the salvage equipment value of the steam and chilled water equipment. Our final conclusions are shown on the following table below:

Table 16-2: Market Value Conclusions

Market Value Conclusion (Going Concern, Electricity Production Only)	\$5,520,000
Market Value Conclusion (Assuming No Steam, Chilled Water nor Electricity Operations)	\$0
Salvage Value Conclusion, Assuming No Steam or Electricity Operations	\$50,000

16.1 Hypothetical or Extraordinary Assumptions

We have made the extraordinary assumption that the current steam and chilled water agreement in place will not be renewed as of the appraisal date, March 31, 2021 and that the Subject plant will only generate and sell electricity, not steam and chilled water. If this assumption proves to be untrue, it could have an

impact on our conclusions of value. No other hypothetical conditions or extraordinary assumptions were made in this appraisal.

17 Appendices

18 General Assumptions and Limiting Conditions

This Report and the services provided are subject to the following general assumptions, disclaimers and limiting conditions. Other assumptions, disclaimers and limiting condition may be included at other locations in this Report.

In this section, the term Report or Study or Services can mean study, appraisal, research or analysis and any report or work product, services or deliverable about the study, appraisal, research, services or analysis. Further, the term "Federal" means Federal Appraisal, LLC and its employees(s), consultant(s), appraiser(s), and service provider(s).

Information and Data Sources

1. **Confidentiality.** It is understood and agreed that Federal's Services will be provided in accordance with the requirements of USPAP of the Appraisal Foundation, and the Services will comply with the Appraisal Institute's Code of Professional Ethics and Standards of Professional Practice and with The American Society of Appraisers' Principles of Appraisal Practice and Code of Ethics. These standards include confidentiality standards.
2. **Cooperation** Client shall cooperate with Federal in the performance by Federal of its Services, including, without limitation, providing Federal with reasonable facilities and timely access to data, information and personnel, agents and representatives of Client. Client shall be responsible for the performance of its employees and agents and for the accuracy and completeness of all data and information provided to Federal for purposes of the performance by Federal of its Services.
3. **Client Representations.** The Client furnished or caused to be furnish to Federal such historical and other information as Federal may have requested. The Client recognizes and confirms that (a) Federal will use and rely on such information and on information available from generally recognized public sources (all such information being the "Information") in performing the Services without Federal having independently verified the same; (b) Federal does not assume responsibility for the accuracy or completeness of the Information; and (c) Federal will not make an appraisal of or conduct an audit of or otherwise provide any opinion, report, or other form of assurance with respect to such Information. In addition to providing required information, the Client will be responsible for providing historical and prospective financial statements and for providing information about and responding to document requests on a timely basis. Additionally, Federal may request and the Client agrees to supply a representation letter, in form and substance satisfactory to Federal which, among other things, confirming the Client's responsibility for the historical financial statements and for the underlying assumptions used in connection with any pro forma cash flows, the appropriateness of the prospective financial statements that the Client has prepared, and their active decision-making participation in the Service and the use of the Service.
4. The information on the financial, legal and physical condition of the subject property or assets provided by the client, the subject owner, or others, directly to Federal or to the public through various public disclosure methods is assumed to be reliable.
5. Other materials and information obtained from various professionally-appropriate public and private sources are assumed to be reliable.
6. The information contained within this study was obtained from sources deemed to be reliable. Reasonable efforts, given the purpose, use and scope of this study and work product, and the type and definition of value, have been made to verify such information as reliable. However, no warranty or certification by Federal is given as to its reliability.
7. If substantive issues are later discovered in reports, documents, information or data relied upon, then the reported opinions in this study may need to be revised accordingly.
8. Federal regularly utilizes numerous texts, manuals, documents, reports, and articles that are commonly utilized by its appraisal peers for services like those provided herein. Federal may not include all the

references to these utilized sources within the report or in the core work file. These references may include:

The Appraisal of Real Estate, published by the Appraisal Institute
The Dictionary of Real Estate Appraisal, published by the Appraisal Institute
Valuing a Business, Pratt, Reilly, Schweih, published by McGraw Hill
Cost of Capital, Pratt, Grabowski, published by Wiley
Uniform Standards of Professional Appraisal Practice
Marshall Valuation Service, Marshall & Swift
CoStar Realty Information, various reports
PWC Investor Survey (Korpacz)
Energy Information Agency, various reports
Federal Reserve, various reports
Bureau of Labor Statistics, various reports
Google Earth Pro
IBIS World, various reports
Site to Do Business (STDB), various reports
Duff & Phelps Cost of Capital
Environmental Systems Research Institute (Esri) GIS Data and Mapping
Garden State Multiple Listing Service (GSMLS)

Property Specific Assumptions, Disclaimers and Limiting Conditions

9. Federal does not provide legal, accounting, audit, engineering, architectural or environmental sciences services. Federal assumes no responsibility for matters of a legal nature, matters of title, or matters of audit, or matters of engineering, or matters of environmental science, or matters of architecture. All legal, engineering, architectural, environment, accounting and financial information provided to and utilized by Federal is assumed to be reliable.
10. It is assumed that the title to the studied interest is marketable. It is assumed that there are no deed restrictions or other limitation on title that would make the Subject substantially more or less valuable, other than those that are specifically noted in this study. It is assumed that the legal descriptions as obtained from public records or as furnished are reliable. Federal has made no land survey and has completed no title search or report of the Subject. It is assumed that there are no issues concerning subsurface, water, or mineral rights, or air or transferable development rights that would make the Subject substantially more or less valuable, other than any that are specifically noted in this study. It is assumed that there are no judgments, or pending or future litigation concerning the Subject, other than those that are specifically noted in this study.
11. Except as noted herein, Federal assumes that there are no hidden or unapparent conditions at the Subject land and/or improvements, which would render the Subject more or less valuable. Federal assumes no responsibility for such conditions, or for engineering, environmental, legal or architectural counseling which might be required to discover such conditions. We assume that there are no ADA issues sufficient to render the Subject significantly more or less valuable.
12. Typically competent and responsible management and ownership are assumed.
13. It is assumed that there are no zoning or building code issues, or other federal, state or local regulation compliance issues concerning the Subject that would significantly increase or decrease the value of the interest being appraised, unless noted in this study.
14. Since Federal is not an engineering or an architectural firm, Federal makes no representation as to quality, functionality, condition, limitations and size of the Subject, except that 1) Federal has relied upon what has been reported to Federal as the best available data where said data was provided by others to Federal who Federal believes to be an appropriate source of said data given the specific purpose, use and scope of work of this study, and the type and definition of value used in this study, and 2) if an visual inspection was conducted by Federal then Federal has relied upon the visual

inspection. Given the inherent limitations of Federal's visual inspection, if conducted, important issues at the Subject may not be uncovered. Federal's visual inspection of the Subject is not an engineering, architectural or environmental inspection, and does not test building operations and does not cover 100 percent of the building(s), machinery and equipment, or the site.

15. This study assumes that unless specifically noted elsewhere in the study, the Subject suffers no environmental or hazard issues, and that there are no contamination or health risks existing at or near the Subject.
16. If substantive issues are later discovered in any of the data relied upon, then the reported opinions in this study may need to be revised accordingly.
17. Clients and intended users are hereby notified that the use of hypothetical conditions or extraordinary assumptions, if any are utilized, might have affected the assignment results of this study.
18. Client agrees that Client has reviewed these Appraisal Conditions upon receipt of the report and that Client's use of the appraisal constitutes acceptance of these Appraisal Conditions.

Publication, Distribution, Use of Study

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 - a. The Client and other intended permitted users are both explicitly named herein. The Client and the other intended permitted users are the only parties to whom the appraisers and Federal Appraisal LLC have a professional responsibility to. The appraisers and Federal Appraisal LLC offer and assume no professional responsibility to any third parties that the Client and the other intended permitted users may choose to provide copies of our report to.
 - b. Any advice or recommendations, written or oral, provided by Federal in connection with this engagement is exclusively for the client and any intended users specifically named by Federal, and may not be disclosed to, or relied upon by, any third party (other than the client's legal and tax counsel for the client's stated purpose and use) without Federal's prior written consent;
 - c. Client will not refer to Federal by name or their services in any written materials relating to the Asset, including without limitation, any publicly filed documents without their prior written consent for each requested use or reference; and
 - d. Neither all nor part of the contents of this study, or copy thereof, shall be conveyed to the public through such forms or methods such as, but not limited to, advertising, public relations, news, sales or any other media without prior written consent of Federal.
 - e. Nor shall Federal or any professional organization of which Federal are a member or candidate, be identified without the prior written consent of Federal.
 - f. This study may not be utilized in any present or proposed, public or private syndication or public offering of any of the interests in the Subject unless prior written agreement has been obtained from Federal.
 - g. This study is intended to be utilized as a whole, and may not be used in parts.
20. Possession of this study, or a copy thereof, does not give the holder the right of publication.
21. Disclosure of the contents of this study by Federal is governed by the laws, by-laws and regulations of state appraisal regulatory bodies, the Appraisal Institute and the American Society of Appraisers and the Royal Institution of Chartered Surveyors. Federal is authorized by the client to disclose all or portions of this study and the work files to authorized representatives of the state appraisal regulatory bodies, the Appraisal Institute, the American Society of Appraisers, and the Royal Institution of Chartered Surveyors, if such disclosure is required to enable Federal to comply with their respective

by-laws and regulations now or hereafter in effect, or as may otherwise be required to be disclosed by Court Order or governing laws, rules and/or regulations.

22. Federal is not required to give testimony about this study, or to provide other services to the client concerning the Subject, without agreement between the parties for compensation to Federal.

Study Analysis Type and Format Conditions

23. This study has been prepared in accordance with the requirements of USPAP of the Appraisal Foundation, the Appraisal Institute, the American Society of Appraisers, and the Royal Institution of Chartered Surveyors. Jurisdictional exceptions may apply. This study will comply with and be subject to the Appraisal Institute's Code of Professional Ethics and Standards of Professional Practice and with The American Society of Appraisers' Principles of Appraisal Practice and Code of Ethics.
24. Federal has determined the scope of work for this study based on its discussions with the client, and their reported needs, their reported purpose and intended use of the study. The scope of the study is limited to the work necessary to provide for the client's purpose and use of the study, and as such this study is not recommended for any other use.

Limit of Liability

25. Federal warrants that it has performed the services hereunder in good faith and in a professional appraisal manner. Federal disclaims all other warranties, either express or implied, including, without limitation, warranties of merchantability and fitness for a particular purpose.
26. Federal's aggregate share of liability to the Client and any third parties shall not exceed the total fees collected for the portion of the Proposed Services giving rise to such liability.
27. Any forecasts of income and expenses in this study are not predictions of the future and are created for valuation purposes. No representation is made that the model will coincide with actual future events. There will usually be differences between the forecasts and actual results, because events and circumstances frequently do not occur as expected, and those differences may be material.
28. It is understood and agreed that client and Federal are independent of the other and that neither is, nor shall be considered to be, an agent, distributor or representative of the other. Neither party shall act or represent itself, directly or by implication, as an agent of the other or in any manner assume or create any obligation on behalf of, or in the name of, the other. Client acknowledges that the full independence and authority of Federal will be maintained throughout this engagement and that no assurances or guarantees of a value estimate or consulting recommendation have been made or are a condition of this engagement.
29. In providing this service, Federal establishes and the client understands and agrees that Federal assumes no responsibility for or ownership of the risks and rewards of the client's and user's decisions based on, or results that are consequential to, the use of this study.
30. The Client will indemnify and hold harmless Federal and its appraisers and personnel from all claims, liabilities, losses, costs, demands and reasonable expenses, such as reasonable legal fees, and management and administrative costs, relating to this engagement, except to the extent finally judicially determined to have resulted from the bad faith or intentional misconduct of Federal.

Statements of Qualifications and Personal Histories

31. Any statements of qualifications, resumes, and personal and/or company histories are presented in summary for marketing purposes and to assist the client and intended users of the study with understanding the professional competency and experience of Federal. These statements of qualifications, resumes, and personal and/or company histories are (1) not a complete listing of our

professional experiences and qualifications and (2) not a full disclosure of our professional, corporate, and personal interactions and relationships.

Ownership of Federal Properties.

32. Federal Technology and Copyrights. Federal has created, acquired or otherwise has rights in, and may, in connection with the performance of services hereunder, employ, provide, modify, create, acquire or otherwise obtain rights in, various concepts, ideas, methods, methodologies, procedures, processes, know-how, and techniques; (including, without limitation, models; templates; the generalized features of the structure, sequence and organization of software; user interfaces and screen designs; general purpose consulting and software tools, utilities and routines; and logic, coherence and methods of operation of systems) (collectively, the "Federal Technology and Copyrights").
33. Ownership and Use of Deliverables. Except as provided below, upon full and final payment to Federal hereunder, the tangible items specified as deliverables or work product in the proposal, engagement letter or contract to which these terms are attached (the "Deliverables") will become the property of client. To the extent that any Federal Technology and Copyrights are contained in any of the Deliverables, Federal hereby grants client, upon full and final payment to Federal hereunder, a royalty-free, fully paid-up, worldwide, non-exclusive license to use such Federal Technology and Copyrights in connection with the Deliverables, and only for the Deliverables, and only for the client's intended purpose and use as enumerated in the attached proposal, engagement letter or contract.
34. Ownership of Federal Properties. To the extent that Federal utilizes any of its property (including, without limitation, the Federal Technology and Copyrights, or any hardware or software of Federal in connection with the performance of services hereunder, such property shall remain the property of Federal and, except for the license expressly granted in Paragraph 26 above, client shall acquire no right or interest in such property. Notwithstanding anything herein to the contrary, the parties acknowledge and agree that (a) Federal will own all rights, title, and interest, including, without limitation, all rights under all copyright, patent and other intellectual property laws, in and to the Federal Technology and Copyrights and (b) Federal may employ, modify, disclose, and otherwise exploit the Federal Technology and Copyrights (including, without limitation, providing services or creating programming or materials for other clients). Federal does not agree to any terms that may be construed as precluding or limiting in any way its right to (a) provide consulting or other services of any kind or nature whatsoever to any person or entity as Federal in its sole discretion deems appropriate or (b) develop for itself, or for others, materials that are competitive with those produced as a result of the services provided hereunder, irrespective of their similarity to the Deliverables.

Extraordinary Assumptions and Hypothetical Conditions

35. Extraordinary Assumptions and Hypothetical Conditions, as defined by USPAP, will be disclosed at various points in this Study, if applicable in this Study.

State Specific Required Clauses

36. Appraisers in Michigan are required to be licensed and are regulated by the Michigan Department of Consumer and Industry Services, P.O. Box 30018, Lansing, Michigan 48909.

These general appraisal assumptions and limiting conditions were last updated September 16, 2019.

19 Definitions

19.1 USPAP

The following definitions were taken from the Uniform Standards for Professional Appraisal Practice, USPAP, 2014-2015 Edition, published by the Appraisal Foundation.

19.1.1 Market Value

A type of value, stated as an opinion, that presumes the transfer of a property (i.e., a right of ownership or a bundle of such rights), as of a certain date, under specific conditions set forth in the definition of the term identified by the appraiser as applicable in an appraisal.

19.1.2 Prospective Value Opinion

A forecast of the value expected at a specified future date. A prospective value opinion is most frequently sought in connection with real estate projects that are proposed, under construction, or under conversion to a new use, or those that have not achieved sellout or a stabilized level of long-term occupancy at the time the appraisal report is written.

19.1.3 Retrospective Value Opinion

An opinion of value that is likely to have applied as of a specified historic date. A retrospective value opinion is most frequently sought in connection with appraisals for estate tax, condemnation, inheritance tax, and similar purposes.

19.1.4 Marketing Time

1. The time it takes an interest in real property to sell on the market sub-sequent to the date of an appraisal.
2. Reasonable marketing time is an estimate of the amount of time it might take to sell an interest in real property at its estimated market value during the period immediately after the effective date of the appraisal; the anticipated time required to expose the property to a pool of prospective purchasers and to allow appropriate time for negotiation, the exercise of due diligence, and the consummation of a sale at a price supportable by concurrent market conditions. Marketing time differs from exposure time, which is always presumed to precede the effective date of the appraisal.

19.1.5 Exposure Time

1. The time a property remains on the market.
2. The estimated length of time the property interest being appraised would have been offered on the market prior to the hypothetical consummation of a sale at market value on the effective date of the appraisal; a retrospective estimate based on an analysis of past events assuming a competitive and open market. Exposure time is always presumed to occur prior to the effective date of the appraisal. The overall concept of reasonable exposure encompasses not only adequate, sufficient and reasonable time but also adequate, sufficient and reasonable effort. Exposure time is different for various types of real estate and value ranges and under various market conditions. Market value estimates imply that an adequate marketing effort and reasonable time for exposure occurred prior to the effective date of the appraisal. In the case of disposition value, the time frame allowed for marketing the property rights is somewhat limited, but the marketing effort is orderly and adequate. With liquidation value, the time frame for marketing the property rights is so severely limited that an adequate marketing program cannot be implemented.

19.2 Dictionary of Real Estate Appraisal, 5th Edition

The following definitions were taken from the Dictionary of Real Estate Appraisal, Fifth Edition, published by the Appraisal Institute.

19.2.1 Market Value

The most probable price that the specified property interest should sell for in a competitive market after a reasonable exposure time, as of a specified date, in cash, or terms equivalent to cash, under all conditions

requisite to a fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress.

Federal Register³⁶. The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:

8. Buyer and seller are typically motivated;
9. Both parties are well informed or well advised, and acting in what they consider their best interests;
10. A reasonable time is allowed for exposure in the open market;
11. Payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto; and
12. The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.

19.2.2 Fee Simple Estate

Absolute ownership unencumbered by any other interest or estate, subject only to the limitations imposed by the governmental powers of taxation, eminent domain, police power, and escheat.

19.2.3 Fee Simple Title

A title that signifies ownership of all the rights in a parcel of real property, subject only to the limitations of the four powers of government.

19.2.4 Improved Land

Land that has been developed for some use by the construction of improvements; also, land that has been prepared for development by grading, draining, installing streets and utilities, etc., as distinguished from raw land; also called finished land. 2. In agriculture, land prepared for cultivation and/or irrigation.³⁷

19.2.5 Leased Fee Estate

An ownership interest held by a landlord with the rights of use and occupancy conveyed by lease to others. The rights of the lessor (the leased fee owner) and the lessee are specified by contract terms contained within the lease.

19.2.6 Leasehold Estate

The interest held by the lessee (the tenant or renter) through a lease transferring the rights of use and occupancy for a stated term under certain conditions. See also negative leasehold and positive leasehold below.

19.2.7 Leasehold Improvements

Improvements or additions to leased property that have been made by the lessee.

19.2.8 Positive Leasehold

A lease situation in which the market rent is greater than the contract rent.

19.2.9 Negative Leasehold

A lease situation in which the market rent is less than the contract rent.

³⁶ (12 C.F.R. Part 34.42(g); 55 Federal Register 34696, August 24, 1990, as amended at 57 Federal Register 12202, April 9, 1992; 59 Federal Register 29499, June 7, 1994).

³⁷ Ibid.

19.2.10 Going Concern Value

The market value of all the tangible and intangible assets of an established and operating business with an indefinite life, as if sold in aggregate. The value of an operating business enterprise.

19.3 International Valuation Standards

The following definitions were taken from the International Valuation Standards, published by the International Valuation Standards Committee, 2011, London.

19.3.1 Market Value

The estimated amount for which an asset or liability should exchange on the date of valuation between a willing buyer and a willing seller in an arm's-length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently, and without compulsion.

20 Abbreviations

20.1 General Appraisal Abbreviations

ADA	Americans with Disability Act
AI	Appraisal Institute
AFUDC	Allowance for Funds Used During Construction
ASA	American Society of Appraisers or Accredited Senior Appraiser
Cap Rate	Capitalization Rate
DCF	Discounted Cash Flow
EGI	Effective Gross Income
FIRREA	Financial Institution Reform, Recovery, Enforcement Act of 1989
IRR	Internal Rate of Return
MACRS	Modified Accelerated Cost Recovery System
NOI	Net Operating Income
PGI	Potential Gross Income
RCN	Reproduction/Replacement Cost New
RCNLD	Reproduction/Replacement Cost New Less Depreciation
SF	Square Foot
TI	Tenant Improvement
TOC	Trended Original Cost
US	United States of America
USPAP	Uniform Standards of Professional Appraisal Practice
WACC	Weighted Average Cost of Capital
YTD	Year to Date

Power and Energy Abbreviations

AEO	Annual Energy Outlook
BTU	British Thermal Unit, a measure of heat
BWR	Boiling Water Reactor
APCE	Air Pollution Control Equipment
CCGT	Combined cycle gas turbine
CL&P	Connecticut Light and Power Company
DEP	Department of Environmental Protection
DPUC	Department of Public Utility Control
DOE	Department of Energy
EIA	Energy Information Agency
EPA Act	Energy Policy Act of 1992
ENR	Engineering News Record
ERO	Electric Reliability Organization
FERC	Federal Energy Regulatory Commission
HW	Handy – Whitman Index
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IEO	International Energy Outlook
ITC	Investment Tax Credits
IRR	Internal Rate of Return
km	Kilometer
kW	Kilowatt
kWh	Kilowatt-hour
kV	Kilovolt
The Law	The Electric Service Consumer Choice and Rate Relief Law
MW	Megawatt
MWh	Megawatt-hour
MW	Megawatt-electric
NEI	Nuclear Energy Institute
NERC	North American Electric Reliability Council
NOPR	Notice of Pending Regulation
NRC	Nuclear Regulatory Commission
PTC	Production Tax Credits
PURPA	Public Utility Regulatory Policy Act
PWR	Pressurized Water Reactor
REC	Renewable Energy Credit
SBC	Systems Benefit Charge

21 Professional Qualifications

The included resumes are presented in summary for marketing purposes and to assist the intended readers of the report with understanding the professional competency and experience of the appraisers. These resumes are not (1) a complete listing of our professional experiences and qualifications and (2) a full disclosure of our professional, corporate, and personal interactions.

21.1 Qualifications of Mark Pomykacz, MAI, ASA

Professional Background

Managing Partner

Federal Appraisal, LLC, New Jersey

Since 2001

General Appraisal and Advisory Qualifications

Mr. Pomykacz specializes in complex, non-traditional appraisal services, nationally and internationally for accountants, attorneys, the capital markets, corporations and governments concerning development, acquisitions & dispositions, financing, investor reporting, litigation, tax & audit issues, and asset management. Mr. Pomykacz has over 33 years experience in real estate and business appraisal and advisory services. He has worked on numerous asset and property types including closely held businesses and public companies, infrastructure, power plants, utilities, corporate and investment real estate, vacant land, and special purpose properties. Mark has participated in arbitrations, judicial, and condemnation proceedings. Mark has written special purpose and consulting reports, appraisals, market and feasibility studies. His work is used by many Fortune 1,000 companies, Wall Street banking firms, accounting and law firms, and various government agencies.

Power & Infrastructure Analysis and Valuation Qualifications

Over the last 15 years, Mr. Pomykacz has developed an expertise in the appraisal of electricity generation assets, refineries, and other infrastructure assets. His power appraisals include nuclear, fossil fuel-fired, hydro, wind, geo-thermal, solar and bio-mass and bio-gas, other types of power generation facilities in locations around the U.S. and the world. His other infrastructure appraisals include telecommunications assets, water and sewer assets, railroads, racetracks and petroleum, bio-diesel and ethanol refineries, and transmission assets around the U.S. His infrastructure appraisal and advisory services have been used by governments, corporations, and lenders and investors for development, acquisition and disposition planning, financing, and tax and investor reporting. Mark has appraised and advised on more than 300 infrastructure assets. He regularly testifies to his power and infrastructure appraisals.

Senior Manager / Chief Appraiser - Eastern Sector

Deloitte & Touche LLP, New York, NY

5 years

Led multi-discipline professional consulting group, managing national portfolios of investment-grade properties, and real estate-secured assets. Provided real estate and business valuation consulting services including banking support, mergers & acquisitions due diligence, capital markets services, valuation services for tax and audit issues, litigation support, appraisals, and other consulting services. Clients included many Fortune 1,000 companies, REITs, Wall Street banking firms, and law firms. Also provided real estate asset and investment management consulting, and property tax appeals and management. Developed new business and business lines for the group.

Vice President, Consultant and Appraiser
Jerome Haims Realty, Inc., New York, NY
5 years

Consulted and appraised on various property types including: office buildings; shopping malls; industrial, factory, warehouse, loft, and manufacturing buildings; rental, cooperative, and condominium apartment buildings; mixed use buildings; special purpose properties; and vacant land for subdivision and for major urban redevelopment; partial interests, easements, right-of-ways and air rights. Wrote appraisal reports, market and feasibility studies, and reviewed appraisals written by others. Participated in arbitration, judicial, and condemnation proceedings and provided various consultation services including mortgage underwriting, litigation support, rent-buy and pricing decisions, construction feasibility, and asset management.

Senior Real Estate Manager and Chief Appraiser
NYC Economic Development Corp. &
NYC Department of Real Property, New York, NY
3 years

Consulted and appraised on various property types for various city redevelopment projects, condemnation, public trusts, and tax incentive programs. Wrote appraisal, conducted market and feasibility studies, managed appraisal contractors, and reviewed appraisals. Provided asset management to projects with an aggregate value in excess of \$2 billion.

Professional Affiliations & Activities

MAI, Member of the Appraisal Institute
AI-GRS, General Review Appraiser

Leader in the Appraisal Institute Community:

- Member of the Board of Directors, National, 2002, 2004 – 2006
- President, Metropolitan New York Chapter, 2005
- Chair, Regional Committee, Region VI, 2006
- Officer, Metropolitan New York Chapter, 2001 – 2005
- Regional Director, Region VI, 2002, 2004 – 2006
- Member of Board of Directors, Metropolitan New York Chapter, 1998 - 2006
- International Relations Committee Member, National, 1997 - 2005
- Strategic Planning Committee, National, 2005 - 2006
- Education Chair, Metropolitan New York Chapter, 1999

ASA, Accredited Senior Appraiser, Business Valuation and Real Property; All Types, American Society of Appraisers

Licenses, State-Certified General Real Estate Appraiser

Alabama State-Certified General Real Estate Appraiser	G01411
Connecticut State-Certified General Real Estate Appraiser	RCG 00010448
Pennsylvania State-Certified General Real Estate Appraiser	GA001700R
Washington State-Certified General Real Estate Appraiser	1101976
Michigan State-Certified General Real Estate Appraiser	1201069583
Illinois State-Certified General Real Estate Appraiser	553.001871
Texas State-Certified General Real Estate Appraiser	TX 1380478 G
Delaware State-Certified General Real Estate Appraiser	X1-0000701
New York State-Certified General Real Estate Appraiser	46000000871
New Jersey State-Certified General Real Estate Appraiser	42RG00144500
Montana State-Certified General Real Estate Appraiser	REA-RAG-LIC-7541
Virginia State-Certified General Real Estate Appraiser	4001017013
California State-Certified General Real Estate Appraiser	AG043987
Massachusetts State-Certified General Real Estate Appraiser	103483
Minnesota State-Certified General Real Estate Appraiser	40620869
New Hampshire State-Certified General Real Estate Appraiser	NHCG-853
Maryland State-Certified General Real Estate Appraiser	10807
Florida State-Certified General Real Estate Appraiser	RZ3225
Utah State-Certified General Real Estate Appraiser	9137815-CG00
South Carolina State-Certified General Real Estate Appraiser	7775
Maine State-Certified General Real Estate Appraiser	CG3503
Nevada State-Certified General Real Estate Appraiser	A.0207866-CG
Georgia State-Certified General Real Estate Appraiser	358368

Education Background

Bachelor of Arts

Political Science

Rutgers University, New Brunswick, New Jersey

Appraisal Institute

Completed all courses and examinations required to obtain and maintain the MAI designation.

Royal Institution of Chartered Surveyors

Completed all courses and examinations, or equivalents, required to obtain the MRICS designation. Mr. Pomykacz was granted the MRICS designation. Due to a lack of need, Mr. Pomykacz no longer remains a dues paying member of RICS.

Institute for Professionals in Taxation

Completed all courses and examinations required to obtain the CMI designation. Mr. Pomykacz was granted the CMI designation. Due to a lack of need, Mr. Pomykacz no longer remains a dues paying member of IPT.

Instructorships & Speaking Engagements

University/Institutional Lectures/Presentations

Mr. Pomykacz taught “Income Capitalization Theory and Techniques” (AKA Course #310), and “Uniform Standards of Professional Appraisal Practice (AKA USPAP), Part A”. These courses are required for designation from the Appraisal Institute and for state licensing and certification, and were offered at the following institutions.

Adjunct Assistant Professor, New York University
Instructor, Baruch College, CUNY, The Newman Real Estate Institute
Qualified Appraisal Institute Instructor, Appraisal Institute

Mr. Pomykacz also has lectured at Appraisal Institute seminars.

Business Lectures/Presentations

Mr. Pomykacz also regularly speaks at various accounting, assessor and other professional seminars and conferences. Several presentations follow.

American Bar Association/Institute for Professionals in Taxation
Advanced Property Tax Seminar
Impact of Millennials on Industrial Real Estate & The Go Dark Hypothesis
New Orleans, LA, 2017

NRAAO, Annual Conference
Impact of Millennials on Real Estate
Mystic, CT, 2017

New Jersey State Bar Association Annual Conference
Borgata Decision! Appraisal Implications
Atlantic City, NJ, 2014

PEI Infrastructure Investor: New York
Managing Infrastructure Assets: In a Post-Cheap Deb World
New York, NY, 2009

Power & Electricity World: Latin America Conference
Creating and Measuring Value: A Power Plant Development
Coral Gables Florida, 2009

Corpbanca Seminar Invitation
Fair Value Appraisal for the Real Estate Industry in Chile
Santiago, Chile, 2008

The Pan Pacific Valuation Conference
The Effects of Deregulation/Privatization on the Selection of Valuation Methodology
23rd Pan Pacific Valuation Conference,
San Francisco, 2006

Baruch College (CUNY),
“Exuberant Bubble” or “Fundamentally Sound”: Where are Real Estate Prices Going?
New York, September, 2005

The Center for Business Intelligence, now Platts, a division of McGraw-Hill
Valuing Generation Assets – Employing Effective Due Diligence
Power Asset Mergers and Acquisitions Conference, 2004

Methodologies for Portfolio Valuation of Power Plant Assets

6th Annual Electric Asset Valuation Conference, 2004

Sophisticated Valuation Techniques – Theory and Practice

5th Annual Electric Asset Valuation Conference, 2003

The International Association of Assessing Officers (IAAO)

Reconciling the Reconciliation, Power Plants and Utilities

IAAO Public Utility Section, Charleston, 2006

Recognizing & Separating Real Property, Personal Property, and Intangible Values in Common Indications of Value

IAAO Public Utility Section, Milwaukee, 2006

Cell Towers and Telecommunications Property

IAAO Legal Update, San Francisco, 2006

Valuing Complex Properties, Power Plants

IAAO Public Utility Section, Boston, 2004

Preparation and Trial Seminar (Mock Trial)

IAAO, Las Vegas, May, 2007

Preparing for the Big One – The Trial of a \$1 Billion Case; How a Complex Case Illustrates Basic Principles of Valuation and Trial Practice

CAAO 14th Fall Symposium, 2008

The Wichita State University Annual Conference on the Appraisal for Ad Valorem Taxation of Communications, Energy and Transportation Properties

Preparing for the Big One – The Trial of a \$1 Billion Case; How a Complex Case Illustrates Basic Principles of Valuation and Trial Practice

37th Annual Conference, 2007

Rate Basics – Back to the Basics for Experts, Finding a Common Language

40th Annual Conference, 2010

When Obsolescence is Accelerating

46th Annual Conference 2016

Rutgers University, Office of Continuing Education

Brownfields: Emerging Issues, The Economics of Green

Rutgers University, New Brunswick, New Jersey, 2008

The Long Island Society of Certified Public Accountants

Understanding Key Appraisal Concepts: Methodologies and Procedures, and Capitalization Rates

Real Estate Committee, October, 2005

The Society of Professional Assessors

**Dark Store v the Force of Market Value
Big Box, Little Box and the Dark Store Hypothesis**

Hasbrouck Heights, NJ, April, 2016

Borgata Decision - Separating Real, Personal and Intangible Property
Hasbrouck Heights, NJ, April, 2014

A Case Study in Complex Litigation: Wheelabrator v City of Bridgeport
Haddam, CT, November, 2013

Appraising Complex Properties for Property Taxes: A Power Plant Case Study
Mystic, CT, October, 2005

How low can you go? Capitalization and Yield Rates Methodologies, Procedures, Market Cycle, and Current Issues
Rutherford, NJ, April, 2006

The Institute for Professionals in Taxation, IPT, Annual Property Tax Symposium
Valuation of Electric Generating Stations Owned by Independent Power Producers
Austin, Texas, November 2, 2010

Connecticut Association of Assessing Officers
Dark Store v the Force of Market Value
Big Box, Little Box and the Dark Store Hypothesis
University of Connecticut, CT, June, 2016

The Appraisal and Assessment of Big Box and Large Owner-Occupied Properties
September, 2011

New Jersey County Tax Board Association
Appraising Solar Power Assets for Property Taxation
September, 2011

South Jersey Chapter of the Appraisal Institute
Appraising Solar Power Assets
September, 2011

Articles and Publications

"Benford's Law in Appraisal"
The Appraisal Journal, Fall 2018

"The Appraisal of Power Plants"
The Appraisal Journal, Summer 2014
This article won the 2014 Swango Award. The *Appraisal Journal's* Editorial Board presents the Swango Award to the best article published during the previous year on residential, general, or technology-related topics, or for original research of benefit to real estate analysts and valuers.

"Options in Real Estate Valuation"
The Appraisal Journal, Summer 2013

Reviewer for the "Real Estate Valuation in Global Markets", Second Edition
The Appraisal Institute, 2010, ISBN 978-1-935328-12-4

"Defining and Supporting Entrepreneurial Profit and Incentive, and External Obsolescence"
The Appraisal Journal, Winter 2010

"Relationships between the Overall Property and Its Parts, and the Three Approaches to Value"
The Appraisal Journal, Winter 2009

Appraisal of CDECCA Co-generation Plant, Hartford, CT

"The Energy for Change: Building Our Alternative Energy Future"

Property World, Royal Institution of Chartered Surveyors, Winter 2009

"Corridor Valuation, the ATF Method, and Maximally Productive Uses, Recent Observations from the Rail Line"

Right of Way Journal, International Right of Way Association, September 2008

"Correcting Property Taxes on High-Value Properties"

Unpublished, July 2004

"A Generalized Analysis to Determine Three Unknowns; Value, Real Estate Taxes and Real Estate Tax Recoveries"

Assessment Journal, Summer 2003

"Property Taxes, A Silver Lining"

Energy Pulse, July 2003

"Considerations for Valuation and Litigation"

Deloitte & Touche Real Estate Newsletter, New York, April 2000

"Reducing Property Taxes in a Rising Market"

Real Estate New York, February 1998

Resume last revised October 23, 2019

22 Income Approach Analyses, Subject Information, and Additional Market Data

Appendix – Market Data for Facility

New England ISO Day-Ahead Electricity Prices (in Dollars)							
	2014	2015	2016	2017	2018	2019	Average per Month
January	166.43	69.90	38.35	40.04	107.21	55.81	79.62
February	153.89	121.31	29.89	30.24	39.34	35.01	68.28
March	109.08	60.61	20.57	36.04	35.22	37.82	49.89
April	45.00	27.97	28.11	29.71	44.56	26.85	33.70
May	37.26	25.21	21.24	27.56	24.19	23.92	26.56
June	38.12	21.89	22.94	26.02	27.22	21.82	26.33
July	37.89	26.88	31.50	27.92	32.87	29.30	31.06
August	30.51	30.27	35.62	25.14	38.65	25.19	30.90
September	34.47	30.78	29.07	23.90	33.33		30.31
October	32.90	35.78	21.86	29.55	37.76		31.57
November	47.16	27.85	24.83	33.56	56.08		37.90
December	42.12	22.26	52.78	69.59	45.87		46.52
Average per Year	64.57	41.73	29.73	33.27	43.53	31.97	
Average last 3 years						36.25	

Henry Hub Natural Gas Prices	
Year	\$/million Btu
2014	4.39
2015	2.63
2016	2.52
2017	2.99
2018	3.17

EIA Natural Gas Prices		
Average per year	\$/Thousand Cubic FT	\$/MMBTU
2002	3.70	3.57
2003	5.61	5.42
2004	6.12	5.91
2005	8.45	8.15
2006	7.23	6.98
2007	7.40	7.15
2008	9.11	8.79
2009	5.03	4.85
2010	5.30	5.12
2011	4.89	4.72
2012	3.58	3.45
2013	4.51	4.36
2014	5.29	5.10
2015	3.42	3.30
2016	3.00	2.89
2017	3.55	3.43
2018	3.73	3.60

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Table 8.4. Average Power Plant Operating Expenses for Major U.S. Investor-Owned Electric Utilities, 2007 through 2017 (Mills per Kilowatthour)

Year	Operation				Maintenance			
	Nuclear	Fossil Steam	Hydro-electric	Gas Turbine and Small Scale	Nuclear	Fossil Steam	Hydro-electric	Gas Turbine and Small Scale
2007	9.54	3.63	5.44	3.26	5.79	3.37	3.87	2.42
2008	9.89	3.72	5.78	3.77	6.20	3.59	3.89	2.72
2009	10.00	4.23	4.88	3.05	6.34	3.96	3.50	2.58
2010	10.50	4.04	5.33	2.79	6.80	3.99	3.81	2.73
2011	10.89	4.02	5.13	2.81	6.80	3.99	3.74	2.93
2012	12.49	4.38	6.71	2.46	7.32	4.48	4.63	2.76
2013	12.51	4.57	6.56	2.56	6.64	4.41	4.32	2.80
2014	12.41	4.55	7.30	2.63	6.67	5.11	4.59	2.90
2015	11.17	5.16	8.37	2.34	7.06	5.41	5.06	2.68
2016	10.90	5.05	6.65	2.49	7.01	5.53	4.34	2.74
2017	10.27	5.01	6.33	2.45	6.63	5.13	3.96	2.83

Year	Fuel				Total			
	Nuclear	Fossil Steam	Hydro-electric	Gas Turbine and Small Scale	Nuclear	Fossil Steam	Hydro-electric	Gas Turbine and Small Scale
2007	4.99	23.88	--	58.75	20.32	30.88	9.32	64.43
2008	5.29	28.43	--	64.23	21.37	35.75	9.67	70.72
2009	5.35	32.30	--	51.93	21.69	40.48	8.38	57.55
2010	6.68	27.73	--	43.21	23.98	35.76	9.15	48.74
2011	7.01	27.08	--	38.80	24.70	35.09	8.88	44.54
2012	7.61	28.34	--	30.45	27.42	37.20	11.34	35.67
2013	8.14	28.94	--	32.56	27.29	37.92	10.88	37.92
2014	7.71	29.39	--	37.06	26.79	39.04	11.90	42.60
2015	7.48	26.70	--	28.22	25.71	37.26	13.42	33.24
2016	7.45	25.50	--	24.97	25.36	36.08	10.98	30.19
2017	7.47	25.27	--	26.48	24.38	35.41	10.29	31.76

Hydroelectric category consists of both conventional hydroelectric and pumped storage.

Gas Turbine and Small Scale category consists of gas turbine, internal combustion, photovoltaic, and wind plants.

Notes: Expenses are average expenses weighted by net generation. A mill is a monetary cost and billing unit equal to 1/1000 of the U.S. dollar (equivalent to 1/10 of one cent).

Total may not equal sum of components due to independent rounding.

Sources: Federal Energy Regulatory Commission, FERC Form 1, "Annual Report of Major Electric Utilities, Licensees and Others via Ventyx Global Energy Velocity Suite.

The dollar per megawatt-hour in 2017 for operating expenses was \$5.28 for gas turbine and small-scale power plants.

The dollar per megawatt-hour in 2017 for operating expenses and fuel is \$31.76 for gas turbine and small-scale power plants.

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Appendix – Grids for Income Approach, Discounted Cash Flow Analysis of Facility

Facility DCF Analysis – Production and Revenue – Historical and Averages

Year of Cash Flow	-6	-5	-4	-3	-2	-1	
Year Ending 03/30	2016	2017	2018	2019	2020	2021	Average
Commodity Inflation Rate							
General Annual Inflation							
Analysis of Production							
Total Gross Installed Capacity (MW)	62	62	62	62	62	62	62
Total Hours Per Year (h)	8,784	8,760	8,760	8,760	8,784	8,760	8,784
Gross Potential Generation (MWh)	545,486	543,996	543,996	543,996	545,486	543,996	544,493
S&P Historical Net Generation & Projected (MWh)	106,651	50,173	53,254	22,464	30,017	13,687	46,041
Capacity Factor (%) S&P Historical Report	20.86%	9.34%	9.92%				13.4%
S&P Global Energy Capacity Factor Projection				3.37%	2.82%	1.31%	
Capacity Factor (%)							
Net Production (MWh) Plant Output	100,993	49,649	52,772	22,464	30,017	13,687	44,930
Analysis of Electricity Revenues							
S&P Global Energy Revenue Prices (\$/MWh) Projection				\$36.70	\$42.96	\$41.21	\$36.70
Historical Average NEISO (\$/MWh) RTC (Around the clock price)	\$29.73	\$33.27	\$43.53	\$31.97			\$34.62
Forecast Prices (\$/MWh)							
Year Over Year % Change							
S&P Global Energy Revenue Projection							
Electricity Revenues							
Analysis of Capacity Revenue							
Closed Capacity Auctions (\$/kW-Month)							
Market Historical Capacity Price (\$/kW-month) June 1 - May 31	\$3.43	\$3.15	\$7.03	\$9.55	\$7.03	\$5.30	\$5.91
Market Historical Capacity Price (\$/kW-month) Jan 1 - Dec 31 Weight	\$3.31	\$4.76	\$8.08	\$8.50	\$6.31	\$5.02	\$6.00
S&P Global Capacity Revenue per kW-Year (\$/kW-year)				\$14.43	\$5.42	\$4.42	\$8.09
Availability/Reliability Factor (S&P Global)							
Capacity Payment (\$/kW-Month)							
Year Over Year % Change							
S&P Global Capacity Revenue Projection							
Capacity Revenue							
Analysis of Steam & Chilled Water Revenue							
Steam & Chilled Water Revenue							
Steam & Chilled Water Revenue (\$/Mwh)							
Analysis of Total Revenue							
S&P Global Total Revenue Projection				\$6,176,924	\$5,276,572	\$3,815,366	
Total Revenues							
Total Revenue / MWh							
Year Over Year % Change							

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Facility DCF Analysis – Production and Revenue – Forecast

Year of Cash Flow	1	2	3	4	5	6	7
Year Ending 03/30	2022	2023	2024	2025	2026	2027	2028
Commodity Inflation Rate		2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
General Annual Inflation		2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Analysis of Production							
Total Gross Installed Capacity (MW)	62	62	62	62	62	62	62
Total Hours Per Year (h)	8,760	8,760	8,784	8,760	8,760	8,760	8,784
Gross Potential Generation (MWh)	543,996	543,996	545,486	543,996	543,996	543,996	545,486
S&P Historical Net Generation & Projected (MWh)	5,325	2,056	3,038	3,130	4,726	2,577	4,940
Capacity Factor (%) S&P Historical Report							
S&P Global Energy Capacity Factor Projection	0.99%	0.38%	0.56%	0.58%	0.88%	0.48%	0.92%
Capacity Factor (%)	1.0%	1.0%	1.0%	1.0%	1.0%	0.9%	0.8%
Net Production (MWh) Plant Output	5,440	5,440	5,455	5,440	5,440	4,896	4,418
Analysis of Electricity Revenues							
S&P Global Energy Revenue Prices (\$/MWh) Projection	\$39.28	\$38.36	\$41.79	\$43.64	\$44.02	\$46.47	\$48.66
Historical Average NEISO (\$/MWh) RTC (Around the clock price)							
Forecast Prices (\$/MWh)	\$39.28	\$38.36	\$41.79	\$43.64	\$44.02	\$46.47	\$48.66
Year Over Year % Change		-2.34%	8.92%	4.43%	0.88%	5.57%	4.70%
S&P Global Energy Revenue Projection	\$209,184	\$78,878	\$126,953	\$136,586	\$208,045	\$119,763	\$240,375
Electricity Revenues	\$213,700	\$208,703	\$227,950	\$237,387	\$239,474	\$227,534	\$214,996
Analysis of Capacity Revenue							
Closed Capacity Auctions (\$/kW-Month)							
Market Historical Capacity Price (\$/kW-month) June 1 - May 31	\$4.63	\$3.80					
Market Historical Capacity Price (\$/kW-month) Jan 1 - Dec 31 Weight	\$4.28						
S&P Global Capacity Revenue per kW-Year (\$/kW-year)	\$3.73	\$2.47	\$1.78	\$1.80	\$1.83	\$1.86	\$1.93
Availability/Reliability Factor (S&P Global)	85.6%	85.6%	85.6%	85.6%	85.6%	77.0%	69.3%
Capacity Payment (\$/kW-Month)	\$4.28	\$4.00	\$4.09	\$4.18	\$4.28	\$4.37	\$4.47
Year Over Year % Change		-6.63%	2.25%	2.25%	2.25%	2.25%	2.25%
S&P Global Capacity Revenue Projection	\$2,746,476	\$1,820,286	\$1,305,624	\$1,321,858	\$1,345,103	\$1,370,014	\$1,417,376
Capacity Revenue	\$2,732,832	\$2,551,565	\$2,608,975	\$2,667,677	\$2,727,700	\$2,510,166	\$2,309,980
Analysis of Steam & Chilled Water Revenue							
Steam & Chilled Water Revenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Steam & Chilled Water Revenue (\$/Mwh)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Analysis of Total Revenue							
S&P Global Total Revenue Projection	\$2,955,660	\$1,899,164	\$1,432,577	\$1,458,444	\$1,553,148	\$1,489,777	\$1,657,751
Total Revenues	\$2,946,532	\$2,760,268	\$2,836,925	\$2,905,064	\$2,967,174	\$2,737,700	\$2,524,976
Total Revenue / MWh	\$541.65	\$507.41	\$520.07	\$534.02	\$545.44	\$559.17	\$571.46
Year Over Year % Change		-6.3%	2.8%	2.4%	2.1%	-7.7%	-7.8%

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Facility DCF Analysis – Expenses – Fuel Expenses – Historical

Year of Cash Flow	-6	-5	-4	-3	-2	-1	
Year Ending 03/30	2016	2017	2018	2019	2020	2021	Average
Commodity Inflation Rate							
General Annual Inflation							
Net Production (MWh)	100,993	49,649	52,772	22,464	30,017	13,687	44,930
Total Revenue							
Analysis of Fuel Expenses							
Heat Rate Analysis							
Fuel Type							
S&P Global Historical & Projected Heat Rate (BTU/kWh)	10,130	11,364	11,554	10,349	10,304	10,345	10,674
Concluded Plant Heat Rate (BTU/kWh)							
S&P Global Heat Rate Projection (BTU/kWh)							
Natural Gas							
EIA Price National Price(\$/MMBTU)	\$2.89	\$3.43	\$3.60				\$3.31
Henry Hub (\$/MMBTU)	\$2.52	\$2.99	\$3.17				\$2.89
S&P Global Price Forecast (\$/MMBTU)							
S&P Global Price Forecast per MWh							
Year Over Year % Change							NA
S&P Global Historical Fuel Expense & Projection	\$3,495,273	\$2,298,166	\$3,421,550	\$631,733	\$944,130	\$437,942	\$1,871,466
S&P Global Historical Fuel Expense (\$/MWh)	\$34.61	\$46.29	\$64.84	\$28.12	\$31.45	\$32.00	\$39.55
Year Over Year % Change		33.7%	40.1%	-56.6%	11.8%	1.7%	
Concluded Fuel Expense for Electricity Only							
Fuel Expense (\$/MWh)							
Fuel / Total Rev							
Fuel / Total Op Exp							
Year Over Year % Change							
S&P Global Total Operating Margin (Revenue less fuel cost)				\$5,010,189	\$3,221,958	\$2,375,708	\$3,535,952
S&P Global Spark Spread (\$/MWh)				\$223.03	\$107.34	\$173.57	\$78.70
FA Total Operating Margin (Revenue less fuel cost)							
Total Fuel Expense							
Total Fuel Expense (\$/MWh)							
Spark Spread (\$/MWh)							
Total Fuel / Total Rev							
Total Fuel / Total Op Exp							
Year Over Year % Change							

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Facility DCF Analysis – Expenses – Fuel Expenses – Forecast

Year of Cash Flow	1	2	3	4	5	6	7
Year Ending 03/30	2022	2023	2024	2025	2026	2027	2028
Commodity Inflation Rate		2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
General Annual Inflation		2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Net Production (MWh)	5,440	5,440	5,455	5,440	5,440	4,896	4,418
Total Revenue	\$2,946,532	\$2,760,268	\$2,836,925	\$2,905,064	\$2,967,174	\$2,737,700	\$2,524,976
Analysis of Fuel Expenses							
Heat Rate Analysis							
Fuel Type	Natural Gas						
S&P Global Historical & Projected Heat Rate (BTU/kWh)	10,380	10,423	10,452	10,396	10,399	10,449	10,471
Concluded Plant Heat Rate (BTU/kWh)	9,200						
S&P Global Heat Rate Projection (BTU/kWh)							
Natural Gas							
EIA Price National Price(\$/MMBTU)							
Henry Hub (\$/MMBTU)							
S&P Global Price Forecast (\$/MMBTU)	\$3.09	\$3.20	\$3.22	\$3.36	\$3.46	\$3.60	\$3.70
S&P Global Price Forecast per MWh	\$28.43	\$29.44	\$29.62	\$30.91	\$31.83	\$33.12	\$34.04
Year Over Year % Change	NA	3.6%	0.6%	4.3%	3.0%	4.0%	2.8%
S&P Global Historical Fuel Expense & Projection	\$174,288	\$181,572	\$183,593	\$189,785	\$195,812	\$183,930	\$171,318
S&P Global Historical Fuel Expense (\$/MWh)	\$32.04	\$33.38	\$33.66	\$34.89	\$36.00	\$37.57	\$38.77
Year Over Year % Change	0.1%	4.2%	0.8%	3.7%	3.2%	4.4%	3.2%
Concluded Fuel Expense for Electricity Only	\$174,288	\$181,572	\$183,593	\$189,785	\$195,812	\$183,930	\$171,318
Fuel Expense (\$/MWh)	\$32.04	\$33.38	\$33.66	\$34.89	\$36.00	\$37.57	\$38.77
Fuel / Total Rev	5.9%	6.6%	6.5%	6.5%	6.6%	6.7%	6.8%
Fuel / Total Op Exp	13.6%	13.8%	13.6%	13.8%	13.9%	12.9%	11.9%
Year Over Year % Change		4.2%	1.1%	3.4%	3.2%	-6.1%	-6.9%
S&P Global Total Operating Margin (Revenue less fuel cost)	\$1,829,817	\$881,245	\$347,831	\$346,073	\$341,977	\$348,149	\$371,342
S&P Global Spark Spread (\$/MWh)	\$336.37	\$161.99	\$63.77	\$63.62	\$62.86	\$71.11	\$84.04
FA Total Operating Margin (Revenue less fuel cost)	\$2,772,244	\$2,578,696	\$2,653,332	\$2,715,279	\$2,771,362	\$2,553,770	\$2,353,658
Total Fuel Expense	\$174,288	\$181,572	\$183,593	\$189,785	\$195,812	\$183,930	\$171,318
Total Fuel Expense (\$/MWh)	\$32.04	\$33.38	\$33.66	\$34.89	\$36.00	\$37.57	\$38.77
Spark Spread (\$/MWh)	\$7.24	\$4.99	\$8.13	\$8.75	\$8.03	\$8.91	\$9.89
Total Fuel / Total Rev	5.9%	6.6%	6.5%	6.5%	6.6%	6.7%	6.8%
Total Fuel / Total Op Exp	13.6%	13.8%	13.6%	13.8%	13.9%	12.9%	11.9%
Year Over Year % Change		4.2%	1.1%	3.4%	3.2%	-6.1%	-6.9%

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Facility DCF Analysis – Expenses – Emissions Expense & Demand Charges – Historical

Year of Cash Flow	-6	-5	-4	-3	-2	-1	
Year Ending 03/30	2016	2017	2018	2019	2020	2021	Average
Commodity Inflation Rate							
General Annual Inflation							
Net Production (MWh)	100,993	49,649	52,772	22,464	30,017	13,687	44,930
Total Revenue							
Analysis of Emissions Expense - RGGI Trade-Cap Program							
S&P Global Emissions Expense Projection Cost							
S&P Global Emissions Expense \$/MWh							
Total Emissions Expense							
Total Emissions Expense (\$/MWh)							
Total Emissions Expense / Total Rev							
Year Over Year % Change							
Total Emissions Expense							
Analysis of Demand Charges (Historicals provided by Hull Street)							
Natural Gas Demand Charge							
CNG Demand Charge, \$ (CNG = Connecticut Natural Gas)	\$28,452	\$15,756	\$34,721				\$26,310
TGP Capacity Release, \$ (TGP = Tennessee Gas Pipeline)	\$38,467	\$36,622	\$35,625				\$36,905
SCG Demand Charge, \$ (SCG = South Connecticut Gas)	\$0	\$0	\$0				\$0
Total Natural Gas Demand Charge, \$	\$66,919	\$52,378	\$70,346				\$63,214
Electricity Demand Charges - based on highest 15 min of energy consumed							
Transmission/Distribution Demand Charge, \$	\$0	\$0	\$0				\$0
Total Electricity Demand Charges, \$	\$102,511	\$128,754	\$124,213				\$118,492
Total Demand Charges	\$169,429	\$181,132	\$194,559				\$181,707
Total Demand Charges (\$/MWh)	\$1.68	\$3.65	\$3.69				\$4.04
Total Charges / Total Rev							
Year Over Year % Change							

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Facility DCF Analysis – Expenses – Emissions Expense & Demand Charges – Forecast

Year of Cash Flow	1	2	3	4	5	6	7
Year Ending 03/30	2022	2023	2024	2025	2026	2027	2028
Commodity Inflation Rate		2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
General Annual Inflation		2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Net Production (MWh)	5,440	5,440	5,455	5,440	5,440	4,896	4,418
Total Revenue	\$2,946,532	\$2,760,268	\$2,836,925	\$2,905,064	\$2,967,174	\$2,737,700	\$2,524,976
Analysis of Emissions Expense - RGGI Trade-Cap Program							
S&P Global Emissions Expense Projection Cost	\$37,546	\$14,922	\$22,662	\$23,803	\$36,849	\$20,696	\$40,749
S&P Global Emissions Expense \$/MWh	\$7.05	\$7.26	\$7.46	\$7.60	\$7.80	\$8.03	\$8.25
Total Emissions Expense	\$38,357	\$39,482	\$40,691	\$41,370	\$42,416	\$39,320	\$36,447
Total Emissions Expense (\$/MWh)	\$7.05	\$7.26	\$7.46	\$7.60	\$7.80	\$8.03	\$8.25
Total Emissions Expense / Total Rev	1.30%	1.43%	1.43%	1.42%	1.43%	1.44%	1.44%
Year Over Year % Change		2.93%	2.78%	1.95%	2.53%	3.00%	2.71%
Total Emissions Expense	\$38,357	\$39,482	\$40,691	\$41,370	\$42,416	\$39,320	\$36,447
Analysis of Demand Charges (Historicals provided by Hull Street)							
Natural Gas Demand Charge							
CNG Demand Charge, \$ (CNG = Connecticut Natural Gas)	\$27,000						
TGP Capacity Release, \$ (TGP = Tennessee Gas Pipeline)	\$38,000						
SCG Demand Charge, \$ (SCG = South Connecticut Gas)	\$0						
Total Natural Gas Demand Charge, \$	\$65,000	\$66,463	\$67,958	\$69,487	\$71,050	\$72,649	\$74,284
Electricity Demand Charges - based on highest 15 min of energy consumed							
Transmission/Distribution Demand Charge, \$	\$0						
Total Electricity Demand Charges, \$	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Demand Charges	\$65,000	\$66,463	\$67,958	\$69,487	\$71,050	\$72,649	\$74,284
Total Demand Charges (\$/MWh)	\$11.95	\$12.22	\$12.46	\$12.77	\$13.06	\$14.84	\$16.81
Total Charges / Total Rev	2.21%	2.41%	2.40%	2.39%	2.39%	2.65%	2.94%
Year Over Year % Change		2.25%	2.25%	2.25%	2.25%	2.25%	2.25%

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Facility DCF Analysis – Expenses – Operating & Maintenance (O&M) Charges and General & Administrative (G&A) Expenses – Historical

Year of Cash Flow	-6	-5	-4	-3	-2	-1	
Year Ending 03/30	2016	2017	2018	2019	2020	2021	Average
Commodity Inflation Rate							
General Annual Inflation							
Net Production (MWh)	100,993	49,649	52,772	22,464	30,017	13,687	44,930
Total Revenue							
Analysis of Operating & Maintenance (O&M) and General & Administrative (G&A) Expenses							
S&P Global Variable Operations & Maintenance Expense Historical & Projections (\$/MWh)	\$8.22	\$8.41	\$8.60	\$1.24	\$1.26	\$1.29	\$1.26
Variable Operating & Maintenance Expenses							
Variable O&M (\$/MWh)							
Variable O&M / Total Rev							
Variable O&M / Total Op Exp							
Year Over Year % Change							
S&P Global Fixed Operations & Maintenance Expense Historical & Projections (\$/kW/year)	\$26.37	\$26.97	\$27.59	\$13.88	\$14.23	\$14.52	\$20.59
Fixed Operating & Maintenance Expenses							
Fixed O&M (\$/MWh)							
Fixed O&M (\$/kW/year)							
Fixed O&M / Total Rev							
Fixed O&M / Total Op Exp							
Year Over Year % Change							
Total Operating & Maintenance Expenses							
Total O&M (\$/MWh)							
Total O&M / Total Rev							
Total O&M / Total Op Exp							
Year Over Year % Change							
General & Administrative Expenses (G&A)							
Total G&A (\$/MWh)							
Total G&A / Total Rev							
Total G&A / Total Op Exp							
Year Over Year % Change							
Total O&M and G&A Expenses							
Total O&M and G&A Exp (\$/MWh)							
Total Expense / Rev							
Year Over Year % Change							

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Facility DCF Analysis – Expenses – Operating & Maintenance (O&M) Charges and General & Administrative (G&A) Expenses – Forecast

Year of Cash Flow	1	2	3	4	5	6	7
Year Ending 03/30	2022	2023	2024	2025	2026	2027	2028
Commodity Inflation Rate		2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
General Annual Inflation		2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Net Production (MWh)	5,440	5,440	5,455	5,440	5,440	4,896	4,418
Total Revenue	\$2,946,532	\$2,760,268	\$2,836,925	\$2,905,064	\$2,967,174	\$2,737,700	\$2,524,976
Analysis of Operating & Maintenance (O&M) and General & Administrative (G&A) Expenses							
S&P Global Variable Operations & Maintenance Expense Historical & Projections (\$/MWh)	\$1.32	\$1.35	\$1.39	\$1.42	\$1.45	\$1.48	\$1.52
Variable Operating & Maintenance Expenses	\$7,199	\$7,364	\$7,556	\$7,708	\$7,885	\$7,261	\$6,703
Variable O&M (\$/MWh)	\$1.32	\$1.35	\$1.39	\$1.42	\$1.45	\$1.48	\$1.52
Variable O&M / Total Rev	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
Variable O&M / Total Op Exp	0.7%	0.7%	0.7%	0.7%	0.7%	0.6%	0.6%
Year Over Year % Change	NA	2.3%	2.6%	2.0%	2.3%	-7.9%	-7.7%
S&P Global Fixed Operations & Maintenance Expense Historical & Projections (\$/kW/year)	\$14.86	\$15.20	\$15.59	\$15.90	\$16.27	\$16.64	\$17.07
Fixed Operating & Maintenance Expenses	\$922,806	\$943,920	\$968,139	\$987,390	\$1,010,367	\$1,033,344	\$1,060,047
Fixed O&M (\$/MWh)	\$169.63	\$173.52	\$177.48	\$181.51	\$185.73	\$211.06	\$239.91
Fixed O&M (\$/kW/year)	\$14.86	\$15.20	\$15.59	\$15.90	\$16.27	\$16.64	\$17.07
Fixed O&M / Total Rev	31.3%	34.2%	34.1%	34.0%	34.1%	37.7%	42.0%
Fixed O&M / Total Op Exp	91.8%	91.8%	91.8%	91.8%	91.8%	91.8%	91.9%
Year Over Year % Change	NA	2.3%	2.6%	2.0%	2.3%	2.3%	2.6%
Total Operating & Maintenance Expenses	\$930,005	\$951,284	\$975,695	\$995,098	\$1,018,252	\$1,040,605	\$1,066,750
Total O&M (\$/MWh)	\$170.96	\$174.87	\$178.87	\$182.92	\$187.18	\$212.54	\$241.43
Total O&M / Total Rev	31.6%	34.5%	34.4%	34.3%	34.3%	38.0%	42.2%
Total O&M / Total Op Exp	92.5%	92.5%	92.5%	92.5%	92.5%	92.5%	92.5%
Year Over Year % Change	NA	2.3%	2.6%	2.0%	2.3%	2.2%	2.5%
General & Administrative Expenses (G&A)	\$75,000	\$76,875	\$78,797	\$80,767	\$82,786	\$84,856	\$86,977
Total G&A (\$/MWh)	\$13.79	\$14.13	\$14.45	\$14.85	\$15.22	\$17.33	\$19.69
Total G&A / Total Rev	2.5%	2.8%	2.8%	2.8%	2.8%	3.1%	3.4%
Total G&A / Total Op Exp	7.5%	7.48%	7.47%	7.51%	7.52%	7.54%	7.54%
Year Over Year % Change	NA	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Total O&M and G&A Expenses	\$1,005,005	\$1,028,159	\$1,054,492	\$1,075,865	\$1,101,038	\$1,125,461	\$1,153,727
Total O&M and G&A Exp (\$/MWh)	\$184.74	\$189.00	\$193.31	\$197.77	\$202.40	\$229.88	\$261.12
Total Expense / Rev	34.1%	37.2%	37.2%	37.0%	37.1%	41.1%	45.7%
Year Over Year % Change	NA	2.3%	2.6%	2.0%	2.3%	2.2%	2.5%

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Facility DCF Analysis – Expenses – Total Operating Expenses and Capital Expenses – Historical

Year of Cash Flow	-6	-5	-4	-3	-2	-1	
Year Ending 03/30	2016	2017	2018	2019	2020	2021	Average
Commodity Inflation Rate							
General Annual Inflation							
Net Production (MWh)	100,993	49,649	52,772	22,464	30,017	13,687	44,930
Total Revenue							
Analysis of Total Operating Expenses (Fuel, O&M, G&A)							
Total S&P Global Fuel, Emissions, Variable and Fixed O&M Expenses	\$6,102,437	\$4,397,783	\$5,602,440	\$1,166,735	\$2,054,614	\$1,439,658	\$3,460,611
EIA Average Operating Expenses and Fuel Cost (\$/MWh)		\$31.76					
Total Fuel, O&M and G&A Expenses							
Total Fuel, O&M and G&A Exp (\$/MWh)							
Total Fuel, Emissions, Demand Charges, O&M and G&A Expenses	\$169,429	\$181,132	\$194,559				\$181,707
Total Fuel, O&M and G&A Exp, Emissions, Demand Charges (\$/MWh)	\$1.68	\$3.65	\$3.69				\$4.04
Total Expense / Rev							
Year Over Year % Change							
Analysis of Capital Expenses (Cap Ex)							
Capital Expenses							
Rate of Decline in Cap Exp in Last Years							
Capital Expenses (\$/MWh)							
Capital Expenses / Total Rev							
Year Over Year % Change							

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Facility DCF Analysis – Expenses –Total Operating Expenses and Capital Expenses – Forecast

Year of Cash Flow	1	2	3	4	5	6	7
Year Ending 03/30	2022	2023	2024	2025	2026	2027	2028
Commodity Inflation Rate		2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
General Annual Inflation		2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Net Production (MWh)	5,440	5,440	5,455	5,440	5,440	4,896	4,418
Total Revenue	\$2,946,532	\$2,760,268	\$2,836,925	\$2,905,064	\$2,967,174	\$2,737,700	\$2,524,976
Analysis of Total Operating Expenses (Fuel, O&M, G&A)							
Total S&P Global Fuel, Emissions, Variable and Fixed O&M Expenses	\$1,125,843	\$1,017,919	\$1,084,746	\$1,112,371	\$1,211,171	\$1,141,628	\$1,286,409
EIA Average Operating Expenses and Fuel Cost (\$/MWh)							
Total Fuel, O&M and G&A Expenses	\$1,179,293	\$1,209,730	\$1,238,084	\$1,265,650	\$1,296,850	\$1,309,391	\$1,325,045
Total Fuel, O&M and G&A Exp (\$/MWh)	\$216.78	\$222.38	\$226.97	\$232.66	\$238.39	\$267.44	\$299.89
Total Fuel, Emissions, Demand Charges, O&M and G&A Expenses	\$1,282,650	\$1,315,675	\$1,346,733	\$1,376,507	\$1,410,316	\$1,421,360	\$1,435,776
Total Fuel, O&M and G&A Exp, Emissions, Demand Charges (\$/MWh)	\$235.78	\$241.85	\$246.89	\$253.04	\$259.25	\$290.31	\$324.95
Total Expense / Rev	43.5%	47.7%	47.5%	47.4%	47.5%	51.9%	56.9%
Year Over Year % Change	NA	2.6%	2.4%	2.2%	2.5%	0.8%	1.0%
Analysis of Capital Expenses (Cap Ex)							
Capital Expenses	\$147,327	\$138,013	\$141,846	\$145,253	\$148,359	\$68,442	\$31,562
Rate of Decline in Cap Exp in Last Years						50%	50%
Capital Expenses (\$/MWh)	\$27.08	\$25.37	\$26.00	\$26.70	\$27.27	\$13.98	\$7.14
Capital Expenses / Total Rev	5.0%	5.0%	5.0%	5.0%	5.0%	2.5%	1.3%
Year Over Year % Change	NA	-6.3%	2.8%	2.4%	2.1%	-53.9%	-53.9%

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Facility DCF Analysis – Depreciation Analysis – Depreciation for Income Taxation

Year of Cash Flow	1	2	3	4	5	6	7
Year Ending 03/30	2022	2023	2024	2025	2026	2027	2028
Market Value							
\$5,470,000	Analysis of Discounted Cash Flow, after Income Taxes						
\$88 /kW							
Analysis of Depreciation for Income Taxation							
Tangible Assets							
Purchase Price Guestimate (\$,000,000)	5.470						
Purchase Price Guestimate	\$5,470,000	100.00%					
3- Year Assets	\$0	0.00%					
5-Year Assets	\$4,469,050	81.70%					
7-Year Assets	\$0	0.00%					
10-Year Assets	\$0	0.00%					
15- Year Assets	\$164,100	3.00%					
20-Year Assets	\$0	0.00%					
39-Year Assets	\$27,350	0.50%					
Land - Non Depreciable	\$809,500	14.80%					
Depreciation Rate							
3- Year Assets	58.330%	27.780%	12.350%	1.540%			
5-Year Assets	35.000%	26.000%	15.600%	11.010%	11.010%	1.380%	
7-Year Assets	25.000%	21.430%	15.310%	10.930%	8.750%	8.740%	8.750%
10-Year Assets	17.500%	16.500%	13.200%	10.560%	8.450%	6.760%	6.550%
15- Year Assets	8.750%	9.130%	8.210%	7.390%	6.650%	5.990%	5.900%
20-Year Assets	6.563%	7.000%	6.482%	5.996%	5.546%	5.130%	4.476%
39-Year Assets	2.564%	2.564%	2.564%	2.564%	2.564%	2.564%	2.564%
3- Year Assets	\$0	\$0	\$0	\$0			
5-Year Assets	\$1,564,168	\$1,161,953	\$697,172	\$492,042	\$492,042	\$61,673	
7-Year Assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10-Year Assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0
15- Year Assets	\$14,359	\$14,982	\$13,473	\$12,127	\$10,913	\$9,830	\$9,682
20-Year Assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0
39-Year Assets	\$701	\$701	\$701	\$701	\$701	\$701	\$701
Depreciation Expense	\$1,579,228	\$1,177,637	\$711,346	\$504,871	\$503,656	\$72,204	\$10,383
Assets Installed During Holding Period							
Capital Expenditures	\$147,327	\$138,013	\$141,846	\$145,253	\$148,359	\$68,442	\$31,562
Average Depreciation Rate (5-Yr SL)	20.000%						
Depreciation Expense for Assets Installed	\$29,465	\$57,068	\$85,437	\$114,488	\$144,160	\$128,383	\$107,093
Total Depreciation Expense	\$1,608,693	\$1,234,705	\$796,783	\$619,359	\$647,816	\$200,587	\$117,476

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Facility DCF Analysis – Debt & Interest Expenses and Bond Ratings

Year of Cash Flow	1	2	3	4	5	6	7
Year Ending 03/30	2022	2023	2024	2025	2026	2027	2028
Market Value							
\$5,470,000	Analysis of Discounted Cash Flow, after Income Taxes						
\$88 /kW							
Analysis of Debt and Interest Expenses							
Purchase Price	\$5,470,000						
Loan-to-Value Ratio	45%						
Loan Amount	\$2,461,500						
Compounding Periods (Per Year)	12.000000						
Loan Maturity (Years)	5						
Total Payment Periods	63						
Annual Interest Rate	6.98%						
Periodic Interest Rate	0.58%						
Principal, BOP	\$2,461,500	\$2,059,260	\$1,628,029	\$1,165,715	\$670,079	\$138,720	\$0
Payment	\$561,346	\$561,346	\$561,346	\$561,346	\$561,346	\$561,346	\$0
Interest Expense	\$159,106	\$130,114	\$99,032	\$65,710	\$29,986	\$422,626	\$0
Principal Payment	\$402,240	\$431,232	\$462,314	\$495,636	\$531,360	\$138,720	\$0
Principal, EOP	\$2,059,260	\$1,628,029	\$1,165,715	\$670,079	\$138,720	\$0	\$0
Analysis of Bond Ratings							
Pre-Debt Cash Flow, after income taxes	\$1,562,112	\$1,277,134	\$1,165,846	\$1,136,458	\$1,161,876	\$954,365	\$878,133
Debt Coverage Ratio (CF/ADS)	278%	228%	208%	202%	207%	170%	
Interest Expense Coverage Ratio (CF/Interest)	982%	982%	1177%	1730%	3875%	226%	
Probable Credit Rating, Lower Risk	AAA	AAA	AAA	AAA	AAA	BB+	
Estimated Cost of Debt (Default Spread + Safe Rate)	2.58%	2.58%	2.58%	2.58%	2.58%	4.02%	
Probable Credit Rating, Higher Risk	AA	AA	AA	AAA	AAA	B	
Estimated Cost of Debt (Default Spread + Safe Rate)	2.76%	2.76%	2.76%	2.58%	2.58%	5.61%	

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Facility DCF Analysis – Discounted Cash Flow Analysis – EBITDA and Income Taxes Calculations

Year of Cash Flow	1	2	3	4	5	6	7
Year Ending 03/30	2022	2023	2024	2025	2026	2027	2028
Analysis of Earnings before Interest, Taxes, and Depreciation and Amortization (EBITDA)							
Total Revenues	\$2,946,532	\$2,760,268	\$2,836,925	\$2,905,064	\$2,967,174	\$2,737,700	\$2,524,976
Total Production Expenses	<u>\$1,282,650</u>	<u>\$1,315,675</u>	<u>\$1,346,733</u>	<u>\$1,376,507</u>	<u>\$1,410,316</u>	<u>\$1,421,360</u>	<u>\$1,435,776</u>
EBITDA	\$1,663,882	\$1,444,593	\$1,490,192	\$1,528,558	\$1,556,858	\$1,316,340	\$1,089,201
EBITDA (\$ / MWh)	\$305.86	\$265.55	\$273.19	\$280.99	\$286.19	\$268.86	\$246.51
As % of Revenue	56.5%	52.3%	52.5%	52.6%	52.5%	48.1%	43.1%
Change, Year over Year		-13.2%	3.2%	2.6%	1.9%	-15.4%	-17.3%
Discount Rate Weighted Average		-10.46%	2.23%	1.62%	1.04%	-7.73%	-7.69%
Analysis of Income Taxes							
EBITDA	\$1,663,882	\$1,444,593	\$1,490,192	\$1,528,558	\$1,556,858	\$1,316,340	\$1,089,201
EBITDA Adjustments for Income Taxes							
Interest Expense	\$159,106	\$130,114	\$99,032	\$65,710	\$29,986	\$422,626	\$0
Depreciation Expense	<u>\$1,608,693</u>	<u>\$1,234,705</u>	<u>\$796,783</u>	<u>\$619,359</u>	<u>\$647,816</u>	<u>\$200,587</u>	<u>\$117,476</u>
Pretax Income	(\$103,917)	\$79,774	\$594,377	\$843,489	\$879,056	\$693,127	\$971,725
Loss Carry Forward (max 20 years)	(\$103,917)	(\$24,142)	\$0	\$0	\$0	\$0	\$0
Taxable Income	\$0	\$0	\$570,235	\$843,489	\$879,056	\$693,127	\$971,725
Marginal Federal & State Income Tax Rate	26.93%	26.93%	26.93%	26.93%	26.93%	26.93%	26.93%
Income Taxes	\$0	\$0	\$153,536	\$227,109	\$236,686	\$186,624	\$261,637

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Facility DCF Analysis – Discounted Cash Flow Analysis – Analysis of Cash Flow, After Income Taxes

Year of Cash Flow	1	2	3	4	5	6	7
Year Ending 03/30	2022	2023	2024	2025	2026	2027	2028
Analysis of Cash Flow, after Income Taxes							
EBITDA	\$1,663,882	\$1,444,593	\$1,490,192	\$1,528,558	\$1,556,858	\$1,316,340	\$1,089,201
Income Taxes	\$0	\$0	\$153,536	\$227,109	\$236,686	\$186,624	\$261,637
Taxes on interest expense	\$42,839	\$35,033	\$26,664	\$17,692	\$8,074	\$113,792	\$0
Capital Expenditures	\$147,327	\$138,013	\$141,846	\$145,253	\$148,359	\$68,442	\$31,562
Initial Working Capital Investment	\$88,396						
Working Capital to Revenue Ratio	3.0%						
Annual Increase (Decrease) in Working Capital	NA	(\$5,588)	\$2,300	\$2,044	\$1,863	(\$6,884)	(\$6,382)
Reversion of Working Capital							(\$75,749)
Total EBITDA Adjustments	\$101,770	\$167,459	\$324,346	\$392,099	\$394,982	\$361,975	\$211,068
Cash Flow, after Income Taxes	\$1,562,112	\$1,277,134	\$1,165,846	\$1,136,458	\$1,161,876	\$954,365	\$878,133
Cash Flow/EBITDA	94%	88%	78%	74%	75%	73%	81%
Change, Year over Year		-18.2%	-8.7%	-2.5%	2.2%	-17.9%	-8.0%
Average Change, Year over Year	-8.85%						
Discount Rate Weighted Average	-9.20%						
Effective Income Tax Rate (IT/(CF + IT))	0.00%	0.00%	11.64%	16.66%	16.92%	16.36%	22.96%
Average Effective Income Tax Rate	12.08%						
Discount Rate Weighted Aver Eff Inc Tax Rate	10.3%						
Analysis of Discounted Cash Flow, after Income Taxes							
Cash Flow, after Income Taxes	\$1,562,112	\$1,277,134	\$1,165,846	\$1,136,458	\$1,161,876	\$954,365	\$878,133
After Income Tax, After Property Tax Discount Factor	12.24%						
Discount Factor	0.890948	0.793788	0.707224	0.630100	0.561386	0.500166	0.445622
Discounted Cash Flow	\$1,391,761	\$1,013,774	\$824,514	\$716,082	\$652,261	\$477,341	\$391,315
Present Value of Cash Flows	\$5,467,049						

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Facility DCF Analysis – Discounted Cash Flow Analysis – Analysis of Separated Equity and Debt Cash Flows, After Income Taxes: Equity Cash Flow

Year of Cash Flow	1	2	3	4	5	6	7
Year Ending 03/30	2022	2023	2024	2025	2026	2027	2028
Analysis of Separated Equity and Debt Cash Flows After Income Taxes							
Analysis of Equity Cash Flow							
Analysis of Equity Income Taxes							
EBITDA, combined Equity and Debt	\$1,663,882	\$1,444,593	\$1,490,192	\$1,528,558	\$1,556,858	\$1,316,340	\$1,089,201
Interest Expense to Equity (-I)	\$159,106	\$130,114	\$99,032	\$65,710	\$29,986	\$422,626	\$0
Depreciation for Equity Income (DA)	\$1,608,693	\$1,234,705	\$796,783	\$619,359	\$647,816	\$200,587	\$117,476
Equity Income, Before Income Tax (EBT)	(\$103,917)	\$79,774	\$594,377	\$843,489	\$879,056	\$693,127	\$971,725
Loss Carry Forward (max 20 years)	(\$103,917)	(\$24,142)	\$0	\$0	\$0	\$0	\$0
Taxable Equity Income	\$0	\$0	\$570,235	\$843,489	\$879,056	\$693,127	\$971,725
Marginal Federal & State Income Tax Rate	26.93%	26.93%	26.93%	26.93%	26.93%	26.93%	26.93%
Equity Income Taxes (Te)	\$0	\$0	\$153,536	\$227,109	\$236,686	\$186,624	\$261,637
Analysis of Equity Cash Flow, after Income Taxes							
EBITDA, combined Equity and Debt	\$1,663,882	\$1,444,593	\$1,490,192	\$1,528,558	\$1,556,858	\$1,316,340	\$1,089,201
EBITDA Adjustments for Equity							
Interest Expense to Equity (-I)	\$159,106	\$130,114	\$99,032	\$65,710	\$29,986	\$422,626	\$0
Equity Income Taxes (Te)	\$0	\$0	\$153,536	\$227,109	\$236,686	\$186,624	\$261,637
Debt Principal Payment	\$402,240	\$431,232	\$462,314	\$495,636	\$531,360	\$138,720	\$0
Capital Expenditures	\$147,327	\$138,013	\$141,846	\$145,253	\$148,359	\$68,442	\$31,562
Initial Working Capital Investment	\$88,396						
Working Capital to Revenue Ratio	3.0%						
Annual Increase (Decrease) in Working Capital	NA	(\$5,588)	\$2,300	\$2,044	\$1,863	(\$6,884)	(\$6,382)
Reversion of Working Capital							(\$75,749)
Total EBITDA Adjustments for Equity	\$620,276	\$693,771	\$859,027	\$935,753	\$948,254	\$809,528	\$211,068
Equity Cash Flow after Income Taxes	\$1,043,606	\$750,822	\$631,165	\$592,805	\$608,605	\$506,811	\$878,133

Appraisal of CDECCA Co-generation Plant, Hartford, CT

Facility DCF Analysis – Discounted Cash Flow Analysis – Analysis of Separated Equity and Debt Cash Flows, After Income Taxes: Debt Cash Flow

Year of Cash Flow	1	2	3	4	5	6	7
Year Ending 03/30	2022	2023	2024	2025	2026	2027	2028
Analysis of Debt Cash Flow							
Analysis of Debt Income Taxes							
Interest Income to Debt (+I)	\$159,106	\$130,114	\$99,032	\$65,710	\$29,986	\$422,626	\$0
Marginal Federal & State Income Tax Rate	26.93%	26.93%	26.93%	26.93%	26.93%	26.93%	26.93%
Income Taxes on Debt Income	\$42,839	\$35,033	\$26,664	\$17,692	\$8,074	\$113,792	\$0
Analysis of Debt Cash Flow, after Income Taxes							
Interest Income to Debt (+I)	\$159,106	\$130,114	\$99,032	\$65,710	\$29,986	\$422,626	\$0
Income Taxes on Debt Income (Td)	\$42,839	\$35,033	\$26,664	\$17,692	\$8,074	\$113,792	\$0
Debt Principal Payment	<u>\$402,240</u>	<u>\$431,232</u>	<u>\$462,314</u>	<u>\$495,636</u>	<u>\$531,360</u>	<u>\$138,720</u>	<u>\$0</u>
Debt Cash Flow after Income Taxes	\$518,506	\$526,313	\$534,681	\$543,653	\$553,272	\$447,554	\$0
Analysis of Re-combined Equity & Debt Cash Flows, after Income Taxes							
Equity Cash Flow after Income Taxes	\$1,043,606	\$750,822	\$631,165	\$592,805	\$608,605	\$506,811	\$878,133
Debt Cash Flow after Income Taxes	\$518,506	\$526,313	\$534,681	\$543,653	\$553,272	\$447,554	\$0
Recombined Cash Flows, After Income Taxes	\$1,562,112	\$1,277,134	\$1,165,846	\$1,136,458	\$1,161,876	\$954,365	\$878,133
Change, Year over Year		-18.2%	-8.7%	-2.5%	2.2%	-17.9%	-8.0%
Average Change, Year over Year	-8.85%						
Discount Rate Weighted Average	-9.20%						
Analysis of Discounted Cash Flow, After Income Taxes							
Recombined Cash Flows, After Income Taxes	\$1,562,112	\$1,277,134	\$1,165,846	\$1,136,458	\$1,161,876	\$954,365	\$878,133
After Income Tax, After Property Tax Discount Factor	12.24%						
Discount Factor	0.890948	0.793788	0.707224	0.630100	0.561386	0.500166	0.445622
Discounted Cash Flow	\$1,391,761	\$1,013,774	\$824,514	\$716,082	\$652,261	\$477,341	\$391,315
Present Value of Cash Flows	\$5,467,049						

Unofficial Property Record Card - City of Hartford, CT

General Property Data

Parcel ID **202-416-020**
 Prior Parcel ID
 Property Owner **CDECCA PROPERTY CO LLC**
 Mailing Address **490 CAPITOL AVE**
 City **HARTFORD**
 Mailing State **CT** Zip **06106**
 ParcelZoning **CX-1**

Account Number
 Property Location **490 CAPITOL AVE HARTFORD**
 Property Use **OTHER UTILITY**
 Most Recent Sale Date **10/19/2001**
 Legal Reference **04451-0120**
 Grantor **AETNA LIFE INSURANCE CO**
 Sale Price **928,000**
 Land Area **53,968.000 square feet**

Current Property Assessment

Card 1 Value Building Value **168,490** Xtra Features Value **757,750** Land Value **566,650** Total Value **1,492,890**

Building Description

Building Style **MFG/PROCESS**
 # of Living Units **0**
 Year Built **1988**
 Building Grade **Excellent**
 Building Condition **N/A**
 Finished Area (SF) **38280**
 Number Rooms **0**
 # of 3/4 Baths **0**

Foundation Type **Concrete**
 Frame Type **Steel**
 Roof Structure **GABLE/HIP**
 Roof Cover **Metal**
 Siding **Brick**
 Interior Walls **MINIMUM**
 # of Bedrooms **0**
 # of 1/2 Baths **0**

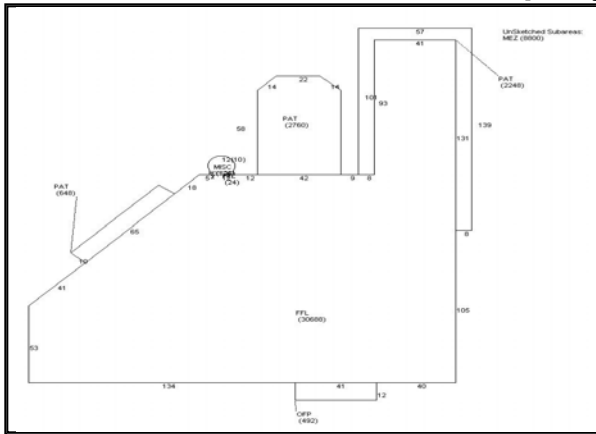
Flooring Type **CONCRETE**
 Basement Floor **FFL**
 Heating Type **Steam**
 Heating Fuel **Gas**
 Air Conditioning **0%**
 # of Bsmt Garages **0**
 # of Full Baths **0**
 # of Other Fixtures **0**

Legal Description

Narrative Description of Property

This property contains 53,968.000 square feet of land mainly classified as OTHER UTILITY with a(n) MFG/PROCESS style building, built about 1988 , having Brick exterior and Metal roof cover, with 0 commercial unit(s) and 0 residential unit(s), 0 room(s), 0 bedroom(s), 0 bath(s), 0 half bath(s).

Property Images



Disclaimer: This information is believed to be correct but is subject to change and is not warranted. The Property Use designation depicted on this website is for assessment purposes only, it does not guarantee or imply rights to such use or approval of the premises for such use. Any questions regarding the approved or allowed use of a property should be confirmed with the Planning & Economic Development Division of the City of Hartford.

The following list of equipment at the Subject plant that was provided by property owner representatives is shown as follows:

GE frame 6 dual fuel turbine Natural gas or #2 low sulfur fuel rated for 40MW.
 Two main lube pumps and a DC lube oil pump
 GE steam turbine rated at 22 MW.
 Two lube oil pump and a DC lube oil pump
 Condensor
 Two vacuum pump
 HRSG duct burner fire accounts for 10 MW
 Main DA
 Two Bingham feed pumps

CHILLERS

Two 1800 ton chillers one Trane and one Carrier both electric.
 One 900 ton Trane absorber steam driven chiller.
 One Electric Trane 900 ton chiller.
 Total 5400 tons / HR
 Air handler

AUX BOILERS

Cleaver brooks 28 lbs / hr
 Zurn boiler 150 LBS/ hr
 10 pound DA
 Two Goulds feed pumps

BOP

AUXILIARY BOILER 1

Manufacturer:	ZURN
Model	
Type:	SP. 22M Keystone
Capacity:	Watertube
Boiler Water Capacity - Normal	162,000 LBSTMHR SAT
	4682 Gal.
MAX	6960 Gal.
Economizer	145 Gal.
Furnace tubes	776
Economizer Tubes	96
Fuel	Natural Gas or #2 Fuel
	Oil
Fuel gas burner output	204,000,000 BTU/HR
Fuel Oil Supply Flow – MAX	22 gpm @ 150 psi
Min	5.5 GPM
Fuel Gas Supply Flow – MAX	3454 SCFM
Min	30 SCFM

AUXILIARY BOILER 2

Manufacturer :	Cleaver Brooks
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LITHIUM BROMIDE CHILLER (1)

Manufacturer:	Trane
Type:	Absorption
Design Output (Rated):	900 Ton
Maximum steam pressure	123 PSI
Steam requirements	11,700#/hr steam
Evap-	5 pass tube 7 shell Hx
Absorber	3 pass T&S Hx
Condenser	Single pass T&S Hx
1st stage concentrator	Single pass T&S Hx
Min/Norm/Max Temp.:	32 / 52 / 77 °F
Head (Rated/Shutoff):	136 ft / 166 ft
Minimum Flow Requirement:	None
Motor HP:	350 HP

Centrifugal Chillers (3)

Chillers	3550 rpm, 4160/3/60, 241 amps, 1597 kw
Chiller L.O. pmps	.5 HP, 1.1 amps
Chiller FLA	241 amps.
Chiller Capacity	1800 tons
Chilled Water pmp	50 HP, 480 VAC, 3300 gpm
Air Eliminator Tank	6300 gpm
Refrigerant Charge	5400 lbs.

CONDENSATE RETURN TANK

Manufacturer: RECO Company
Capacity 30,000 gallon

CONDENSER

Manufacturer: ECOLAIRE Heat Transfer Company
Type Surface
Model 50E-RG-17.3
Capacity 110,570 lb/hr
Design Backpressure 1.5 In. HgA

COOLING TOWER

Manufacturer: BAC-Pritchard
Type: 4 cell, mechanical draft, counterflow
Design (Rated): (Non Plume Abatement) 36,000 GPM
Design (Rated): (Plume Abatement) 21,800 GPM
Fans 480 vac, 60 hz, 3 phase, 2 speed, 135/90 rpm, High/Slow, 200/50 hp, 223/93 amps.
Cooling Tower motor operated valves 1 HP, 1.8 amps
Plume Abatement Air cooled Hx, 8 coils, 9600 gpm
Fan Mfg. Hudson

DEAERATOR FEED PUMP

Manufacturer: Worthington
Type 12 Stage Centrifugal,
Vertical, Can type
Capacity 850 GPM @ 400 psig
Min Flow 200 GPM
Run-out Flow 1280 GPM
Motor 250 HP, 4160 VAC, 3 Ph, 60 Hz, 34 amps, 1770 RPM

CONDENSATE PUMP

Manufacturer: ?
Type ? Stage, Centrifugal,
Vertical, Can type
Capacity 530 GPM
Motor 40 HP,

CHU CONDENSATE RETURN PUMPS

Manufacturer:
Type:
Capacity: GPM
Motor 10 HP, 34 amps

Absorption CHILLER COND PUMPS

Manufacturer:	
Type:	Centrifugal
Design (Rated)	3300 GPM
Motor	1770 rpm, 100 HP, 3

phase, 60 hz, 460VAC, 120 amps.

Centrifugal CHILLER COND PUMPS

Manufacturer:	
Type:	Centrifugal
Design (Rated)	3465 GPM
Motor	1780 rpm, 125 HP, 3

phase, 60 hz, 460VAC, 128 amps.

AUXILIARY FUEL OIL FORWARDING PUMPS

Manufacturer:	Roper
Type:	Horizontal Rotary Gear
Capacity:	25 gpm @ 175 psig
Motor HP:	7.5 HP, 1200 rpm

AUXILIARY BOILER FEED PUMPS

Manufacturer:	Wilson/Power "D"
Model	8196MT
Type:	Centrifugal
Capacity:	345 GPM
Motor	100 HP, 3500 RPM, 460

VAC 3 Phase, 60 HZ

MAIN CIRCULATING WATER PUMPS

Manufacturer:	
Type:	Centrifugal
Design Output (Rated):	10,097 GPM
Motor	1180 rpm, 250 HP, 4160

VAC, 3 phase, 60 hz

AUXILIARY COOLING WATER PUMPS

Manufacturer:	
Type:	Centrifugal
Design (Rated):	2560 GPM
Motor	1780 rpm, 150 HP, 3

phase, 60 hz, 460 VAC, 773 amps.

CARBON FILTER

Manufacturer:	U.S Filter
Type	Carbon Media
Design Pressure	
Normal Operating Pressure	
Allowable Pressure Drop Across Filters – MAX	10 PSI
MIN	5 PSI
Capacity	60ft ³

CATION VESSEL

Manufacturer:	
Capacity	27ft ³

ANION VESSEL

Manufacturer:	
Capacity	38ft ³

ACID STORAGE TANK

Manufacturer:	
Capacity	1300 Gallons

CAUSTIC STORAGE TANK

Manufacturer:	
Capacity	1300 Gallons

CAUSTIC STORAGE TANK HEATER

Manufacturer:	
Type:	Electric Immersion
Rating	4kw, 480 VAC
Maintained Temp	100°F

DEMIN TANK

Manufacturer:	
Capacity	30,000 Gallons

NEUT. TANK

Manufacturer:

Capacity

6850 Gallons

NEUT TANK RECIRC PUMPS

Manufacturer:

Type:

Design (Rated):

Motor

Centrifugal

150 GPM @ 18 – 20 psig

3 HP, 3 phase, 60 hz, 460

VAC

Capacity

30 minutes to recirc.

entire capacity

MAKEUP PUMPS

Manufacturer:

Type:

Design (Rated):

Motor

Centrifugal

300 GPM

15 HP, 3 ph, 60 hz, 460

VAC, 1760 RPM, 19.5 amps

FEEDWATER PUMPS

Manufacturer:

Type

Model

Motor

Capacity

BINGHAM

Centrifugal, Horizontal,

12 stage, Split Case

4X8X10 1/2 BMSD

1250 HP

HP – 705 GPM @ 2307 –

2013 psig

IP – 295 GPM @ 694 –

635 psig

GAS Comp AUXILIARY OIL PUMP

Manufacturer:

Type:

Capacity:

Motor

Design Pres. and Temp.:

Head (Rated/Shutoff):

Minimum Flow Requirement:

Motor HP:

GPM

X HP, X FLA, X LRA

psig, °F

X ft / X ft

None

X HP

DC OIL PUMP

Manufacturer:
Type:
Capacity: GPM
Motor X HP, X FLA, X LRA
Design Pres. and Temp.: psig, °F
Head (Rated/Shutoff): X ft / X ft
Minimum Flow Requirement: None
Motor HP: X HP

MAIN HYDRAULIC OIL PUMP

Manufacturer: Hartmann Controls, Inc.
Type: Variable Displacement,
Axial Piston

AUXILIARY HYDRAULIC OIL PUMP

Manufacturer: Hydraulic Products Inc./Div.
W.H. Nichols Co. (Delavan Mfg.
Co.)
Type: Gerotor
Model P2B-169-12T20V
Motor GE,

FARM AVE DESUPERHEATER SPRAY PUMPS

Manufacturer: Goulds
Model 3935
Type: Centrifugal, 12 Stage
Motor 10 HP, 480VAC
Discharge Press.:
Capacity 32 GPM

CHU CONDENSATE RETURN TANK PUMPS

Manufacturer: Sterling
Type: PACO TY LC
Motor 10 HP, 480VAC
Discharge Press.:
Capacity 140 GPM

VACUUM PUMPS

Manufacturer: Siemens
Type
Capacity – (Holding) 7.5 SCFM
(Hogging) 250 SCFM
Motor 60 HP, 480 VAC, 3 Ph, 60
Hz, 75 amps, 12000 RPM

FUEL OIL STORAGE TANKS

Manufacturer:	Clawson
Quantity	4 Tanks
Capacity	60,900 Gallons each

SUMP PUMP

Manufacturer:	
Type:	
Design (Rated):	GPM
Motor	HP, 3 phase, 60 hz

WASTE OIL TANK

Manufacturer:	
Capacity	500 Gallons

AUX. F. O. PUMP

Manufacturer:	
Type:	
Design (Rated):	150 GPM
Motor	7.5 HP, 3 phase, 60 hz, 460 VAC, 1200 RPM

F. O. STORAGE TANK ISOL. VALVES

Manufacturer:	Crane
Type:	Ball
Actuator Mfg.	Rotork
Motor	1 HP, 1.8 amps

FUEL OIL UNLOADING PUMPS

Manufacturer:	Viking
Quantity	2 Pumps
Type:	Sliding Vane, 520 RPM
Design (Rated):	300 GPM, 53 psig
Motor	25 HP, 3 phase, 60 hz, 460 VAC, 1800RPM
Internal Relief	85 psig

FUEL OIL UNLOADING PUMP SUCTION STRAINER

Manufacturer:	Viking
Model	F-1040 – FIRN-4
Filter Media	10" Mesh S.S. Basket

FUEL OIL UNLOADING PUMP DISCHARGE STRAINER

Manufacturer:	Viking
Model	F-1040 – FIRN-4
Filter Media	40" Mesh S.S. Basket

AIR ELIMINATION TANK

Manufacturer:	Daniels
Model	1505-40-A FG
Control Switch	1815-40-C3-OAG

FUEL OIL TRANSFER PUMPS

Manufacturer:	Red-Jacket
Model	P500H3-2K
Quantity	4 Pumps
Type:	Submersible
Design (Rated):	105 GPM
Motor	5 HP, 3 phase, 60 hz, 230 VAC, 17.2 amps

HOWDEN GAS COMPRESSOR

Manufacturer:	Howden
Type:	Flooded Screw
Model	WRVH 321/132 26l
Motor	1500 HP, 4160 VAC motor
Design Max. Flow	9270 SCFM
Normal Flow	7590 SCFM
Design Max. Discharge Press.	300 PSIG
Normal Discharge Press.	285 PSIG
Temp	300°F

GENERATOR No. 335X465

2 Poles, 3 Phase, Wye Connected, 60 hertz, 3600 RPM
Total Temp. at Rating Guaranteed not to exceed: 130°C on Armature by Detector
140°C on Field by Resistance
Maximum Cold Air Temperature 40°C
Rating
KVA (0ft) 44180
Armature Amps 1848
Armature Volts 13800
Field Amps 360
Exciter Volts 250
Powerfactor 0.90

1.1.1 HEAT RECOVERY STEAM GENERATOR

HIGH PRESSURE SECTION

DESIGN STEAM PRESSURE 1525 PSIG
OPERATING STEAM PRESSURE 1340 PSIG
OPERATING STEAM TEMPERATURE 960°F
CAPACITY
Weight @ Normal Level 34,400 LB
Weight, Full 47,700 LB
Volume @ Normal Level 4122 GALLONS
Volume Full 5715
GALLONS

H.P. DRUM DATA

TYPE: 2

YEAR BUILT
HEATING SURFACE

SERIAL #
NATIONAL BOARD #
MAX. ALLOWABLE WORKING PRESS
RATED STEAMING CAPACITY

CONSOLIDATED RELIEF VALVES (2)

Set Pressure

Size

DRUM
BENT TUBE

1987

60714

SQ/FT.

101075

19321

1525 LBS.

247500

LBS/HR.

1525 &

1540PSI

1.5 " & 2"

HP ECONOMIZER DATA

HEATING SURFACE

SERIAL #
YEAR BUILT
MAX. AVAILABLE WORKING PRESS
RATED ABSORPTION

58226

SQ/FT.

101075

1987

1750 LBS.

78407

KBTU/HR.

HP SUPERHEATER DATA

SERIAL #

YEAR BUILT:

MAX. ALLOWABLE WORKING PRESS:

HEATING SURFACE:

101075

1987

1525 LBS.

33270

SQ/FT.

CONSOLIDATED RELIEF VALVE

Set Pressure

Size

1400 PSI

1.5 "

INTERMEDIATE PRESSURE SECTION

DESIGN STEAM PRESSURE
OPERATING STEAM PRESSURE
OPERATING STEAM TEMPERATURE
CAPACITY

350 PSIG

315 PSIG

470°F

Weight @ Normal Level

Weight, Full

Volume @ Normal Level

Volume Full

17,700 LB

47,600 LB

2120 GALLONS

5703

GALLONS

IP DRUM DATA

TYPE:

YEAR BUILT:

HEATING SURFACE:

SERIAL #

NATIONAL BOARD #

MAX. ALLOWABLE WORKING PRESS:

RATED STEAMING CAPACITY:

CONSOLIDATED RELIEF VALVES (2)

Set Pressure

Size

2 DRUM
BENT TUBE

1987

37379

SQ/FT.

101069

19315

350 LBS

38148

LBS/HR.

350 & 340PSI

1.5 "

IP ECONOMIZER DATA

HEATING SURFACE

SERIAL #

YEAR BUILT

MAX. AVAILABLE WORKING PRESS

RATED ABSORPTION

7188 SQ/FT.

101069

1987

475 LBS.

7321

KBTU/HR.

IP SUPEHEATER DATA

SERIAL #

YEAR BUILT:

MAX. ALLOWABLE WORKING PRESS:

HEATING SURFACE:

CONSOLIDATED RELIEF VALVE

Set Pressure

Size

101069

1987

350 LBS.

1438 SQ/FT.

320 PSI

1.5 "

LOW PRESSURE SECTION

OPERATING STEAM PRESSURE

OPERATING STEAM TEMPERATURE

CAPACITY

Weight @ Normal Level

Weight, Full

Volume @ Normal Level

Volume Full

200 PSIG

SATURATED

23,500 LB

34,800 LB

2815 GALLONS

4169

GALLONS

LP DRUM DATA

TYPE:

YEAR BUILT:

HEATING SURFACE:

SERIAL #

NATIONAL BOARD #

MAX. ALLOWABLE WORKING PRESS:

RATED STEAMING CAPACITY:

CONSOLIDATED RELIEF VALVES (2)

Set Pressure

Size

DEAREATOR

MANUFACTURER

TYPE

CAPACITY

Volume @ Normal Level

Volume Full

#1 AIR COMPRESSOR

Manufacturer:

Model/Series

Quantity

Type:

Motor

Capacity

2 DRUM
BENT TUBE

1987

23362

SQ/FT.

101070

19316

200LBS.

12985

LBS/HR.

190 & 195 PSI

3"

GRAVER
TRAY

4796 GALLONS

6675

GALLONS

Sul-air

K-40

1 Compressor

oil screw compressor

40 HP, 3 phase, 60 hz,

480 VAC, 45.6 amps,

3560 RPM, 50 amp

162 CFM @ 100 psig

#2 AIR COMPRESSOR

Manufacturer:	Sul-
	air
Model/	K-40
Quantity	1 Compressor
Type:	Oil screw compressor
Motor	40 HP, 3 phase, 60 hz,
	480 VAC, 45.6 amps, 1750 RPM
Compressor RPM	705

1 AIR DRYER

Manufacturer:	
Design Capacity	40°C Dewpoint air - 110 psig @ 100 SCFM

2 AIR DRYER

Manufacturer:	Anderson Industrial Products
Model	MHP-100
Design Capacity	-40°C Dewpoint air - 110 psig @ 100 SCFM
Heaters:	2.5 kw
Heat Activated Prefilter	0.5 Microns
After filter	0.5 Microns

#1 AIR RECIEVER

Manufacturer:	Manchester
Model	302421
Capacity	120 gallon
Rating	200psig
Relief Valve Setting	125 psig

#2 AIR RECIEVER

Manufacturer:
Capacity
Operating Pressure
Relief Valve Setting
Relief Valve Capacity

Gardner Denver
16 Cubic Feet
110 psig
125 psig
152 SCFM

STEAM TURBINE

Manufacturer:
Type

General Electric
17 Stage, Single Axial
Flow, Condensing (Extraction at the
9th stage)

Rating
Steam Requirements:

22,260 KW, 3600 RPM
1250 PSI Steam @ 250,000
PSI/HR

Design Steam Conditions:

Initial pressure **1250** psig
Initial temperature **950** °F
Back pressure **1.5** inches Hg Abs

Speed:

Rated **3600** rpm
Pre-emergency trip **3780** rpm
Primary trip **3960** rpm
Emergency trip **4032** rpm

Extraction:

Automatic extraction at
design pressure 1 @5 psig
Operating pressure range
162.8/131.7 psig

Thermodynamic Design:

Exhaust red line set at **175** °F

Mechanical Design:

Turning gear in turbine front
standard

STEAM TURBINE GENERATOR

Manufacturer:
Type:

General Electric
Air Cooled, 2 Pole, 3
Phase, 60 HZ, WYE connection,
.9PF

Rating:

33,000 KVA, Air Cooled,
Static Exciter

TURNING GEAR

Manufacturer:
Capacity
Motor

3 HP, 1200RPM, 460/3/60

LUBE OIL TANK HEATER -

Manufacturer:
Rating

3000 WATTS, 460 VAC,
1 PHASE

HYDRAULIC PUMP

Manufacturer:
Capacity
Motor

15 HP, 3600 RPM,
460/3/60

LUBE OIL PUMP

Manufacturer:
Capacity
Motor

15 HP, 3600 RPM,
460/3/60

EMERGENCY LUBE OIL

Manufacturer:
Capacity
Motor

1.5 HP, 3600 RPM,
125VDC

GLAND EXHAUSTER

Manufacturer:
Capacity
Motor

2 HP, 3600 RPM,
460/3/60

VAPOR EXTRACTOR

Manufacturer:
Capacity
Motor

1 HP, 3600 RPM,
460/3/60

LUBE OIL TANK

Capacity

925 GAL

STEAM TURBINE LUBE OIL CONDITIONER

Manufacturer:
Capacity

Bowser
7 FILTER BAGS

STEAM TURBINE LUBE OIL CONDITIONER BYPASS PUMP

Manufacturer:
Motor

Bowser
.75 HP

2.0 DISTRICTS

TABLE OF DISTRICTS

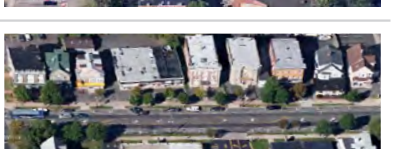
TABLE OF DISTRICTS		
DISTRICT TYPE & INTENT	DISTRICT NAME & DESCRIPTION	
Downtown (DT) The DT districts are intended to regulate for the highest intensity of development in the city, while respecting the historic building scale of the downtown and the adjacent blocks. Each district permits a mix of uses and is intended to create an active atmosphere throughout the day and into the evening. Classification of Primary and Secondary Streets (refer to Zoning Map) in these districts defines building orientation and prioritizes a high-quality pedestrian realm.	DT-1 The highest-intensity DT district allows the tallest buildings and defines the iconic core of the downtown. Primary streets, including Main Street, Trumbull Street, and Columbus Boulevard, are the major pedestrian routes, lined with Storefronts with commercial uses required in the ground story.	
	DT-2 Designated on the edges of downtown, the DT-2 district allows mid-scale high-rise buildings, providing transitional urban neighborhoods and work environments. Primary streets, including Church Street, Jewell Street, Sheldon Street, and Charter Oak Avenue, may include Storefront Buildings, but a variety of uses are permitted.	
	DT-3 The DT-3 district is intended to preserve and complement the scale of existing buildings, extending out of downtown along Main Street. Major pedestrian routes are defined along primary streets with required groundfloor storefront retail uses, including Allyn Street, Main Street, Trumbull Street, Pratt Street, and Lewis Street.	
Main Street (MS) The MS districts continue the pattern of traditional mixed-use main street development with ground floor storefronts in neighborhood centers, at interior neighborhood nodes and along major corridors.	MS-1 Located along historic main streets and at neighborhood nodes, the MS-1 district is characterized by low-scale Storefront Buildings and houses converted to commercial uses, all fronting pedestrian-friendly sidewalks. Ground floor storefronts contain a mix of retail and service uses, while upper stories may include office and residential uses.	
	MS-2 While similar in many ways to the MS-1 district, the MS-2 district includes a wider mix of building types and ground story uses. In addition to Storefront Buildings, Cottage Commercial, General, and Apartment Building Types are also permitted, introducing a mix of retail, service, residential, and office uses at the ground floor.	
	MS-3 The MS-3 district is similar to the MS-2 district in its mix of building types and uses, but also introduces a limited number of vehicle-oriented buildings and uses, including the Commercial Center Building Type. It is intended for commercial corridors that balance the needs of pedestrians and vehicles by limiting driveways and orienting building entrances to the sidewalk.	
Commercial-Industrial Mix (CX) The CX districts are situated along commercial corridors that are transitioning from a historically industrial past. Flexible regulations encourage the re-use of traditional warehouse and factory buildings.	CX-1 The CX-1 district is intended to allow an innovative mix of office, residential, and low intensity industrial uses, along with supporting retail and service uses. The form of the area includes large-scale traditional warehouse and factory buildings (General Building Type), and the smaller-scale Workshop/Warehouse Buildings.	
	CX-2 The CX-2 district is intended to allow a highly flexible mix of larger scale, more intensive uses without proximity to residential uses. A wide range of permitted building forms and permitted outdoor storage accommodates such uses as outdoor sales lots, commercial equipment and supply uses, and bars and nightclubs.	

Figure 2.2-A Table of Districts

3.0 USES

TABLE OF PRINCIPAL USES

USES	DISTRICTS																	
	DT-1	DT-2	DT-3	MS-1	MS-2	MS-3	CX-1	CX-2	ID-1	ID-2	MX-1	MX-2	NX-#	N-#-1	N-#-2	N-#-3	OS	Reference
Residential & Lodging Category																		3.3.1
Household Living																		3.3.1.A.
One-Unit Dwelling	●	●	●	●	●	●	●				●	●	●	●	●	●		3.3.1.A.
2-Unit Dwelling	●	●	●	●	●	●	●				●	●	●		●	●		3.3.1.A.
3-Unit Dwelling	●	●	●	●	●	●	●				●	●	●			●		3.3.1.A.
Multi-Unit Dwelling (4+ Units)	●	●	●	●	●	●	●				●	●	●					3.3.1.A.
Efficiency/Micro Unit	●	●	●									●						3.3.1.A.
Bed & Breakfast											●							3.3.1.B.
Group Living							○				○	○	○					3.3.1.C.
Group Living for Health Reasons	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		3.3.1.D.
Hotel/Apartment Hotel	●	●	●	●	●	●	●				●	●						3.3.1.E.
Residential Care, Large	●	●	●								●	●	●					3.3.1.F.
Residential Care, Small	●	●	●				●				●	●	●					3.3.1.F.
Roominghouse/Boardinghouse									○	○								3.3.1.G.
Temporary Shelter Facility									●	●								3.3.1.H.
Civic & Institutional Category																		3.3.2
Assembly, Neighborhood	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	3.3.2.A.
Assembly, General	○	○	○	○	○	○	○	○	○	○		○					○	3.3.2.A.
Government/Higher Education/Hospital	○	○	○				○	○	○		○	○						3.3.2.B.
Library/Museum	○	○	○	○	○	○	○	○			○	○	○					3.3.2.C.
Police/Fire	○	○	○	○	○	○	○	○	○	○	○	○	○					3.3.2.D.
School: Pre-K, Elementary, Intermediate	○	○	○	○	○	○	○	○			○	○	○	○	○	○		3.3.2.E.
School: High School	○	○	○	○	○	○	○	○			○	○						3.3.2.F.
Stadium/Arena	○	○	○				○	○	○	○		○						3.3.2.G.
Transit Station	○	○	○	○	○	○	○	○	○	○	○	○	○					3.3.2.H.
KEY: ● = Permitted ● = Permitted in Upper Stories Only ● = Permitted Subject to Use-Specific Conditions ○ = Requires a Special Permit																		

Figure 3.2-A Table of Principal Uses

3.0 USES

TABLE OF PRINCIPAL USES

USES	DISTRICTS																	
	DT-1	DT-2	DT-3	MS-1	MS-2	MS-3	CX-1	CX-2	ID-1	ID-2	MX-1	MX-2	NX-#	N-#-1	N-#-2	N-#-3	OS	Reference
Open Space Category																		3.3.3
Community Garden	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.3.3.A.
Honey Beekeeping	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.3.3.B.
Intensive Park Uses									○								○	3.3.3.C.
Park	○	○	○	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.3.3.D.
River Uses	○						○		○	○							○	3.3.3.E.
Urban Farm						○	○	○	○	○	○	○	○	○	○	○	○	3.3.3.E.
Retail Use Category																		3.3.4
Neighborhood Retail	●	●	●	●	●	●		●				●						3.3.4.A.
General Retail	●	●	●			●		●										3.3.4.B.
Beer/Wine/Liquor Sales	○	○	○	○	○	○		○										3.3.4.C.
Commercial Equipment & Supply						●	○	●	●	●								3.3.4.D.
Convenience Store	●	●	●	●	●	●		●	●	●								3.3.4.E.
Discount Variety Store									●	●								3.3.4.F.
Outdoor Sales Lot								●	●									3.3.4.G.
Service Use Category																		3.3.5
Neighborhood Service	●	●	●	●	●	●		●			●	●						3.3.5.A.
General Service	●							●										3.3.5.B.
Adult Day Care	●	●	●	●	●			●			●	●						3.3.5.C.
Automobile Fueling & Limited Service						○			●									3.3.5.D.
Automobile Service/Car Wash								○	●									3.3.5.E.
Automobile, Truck, Limousine Rental	●							●	●	●								3.3.5.F.
Child Day Care	●	●	●	●	●	●	●	●			●	●						3.3.5.G.
Community Service							●	●	●									3.3.5.H.
Drinking Places	○	○	○	○	○	○		○										3.3.5.I.
Eating Places	●	●	●	●	●	●		●	●	●		●						3.3.5.J.
Entertainment Assembly	○	○						○										3.3.5.K.
Pawn Shop/Check Cashing Establishment									●									3.3.5.L.
Private Club	●	●	●	●	●	●	●	●				●						3.3.5.M.
Smoking Places	○	○	○	○	○	○		○										3.3.5.N.
Tattoo/Piercing Parlor									●									3.3.5.O.
KEY: ● = Permitted ● = Permitted in Upper Stories Only ● = Permitted Subject to Use-Specific Conditions ○ = Requires a Special Permit																		

Figure 3.2-A Table of Principal Uses (continued)

3.0 USES

TABLE OF PRINCIPAL USES

USES	DISTRICTS																	
	DT-1	DT-2	DT-3	MS-1	MS-2	MS-3	CX-1	CX-2	ID-1	ID-2	MX-1	MX-2	NX#	N-#-1	N-#-2	N-#-3	OS	Reference
Adult Use Category																		3.3.6
Adult Establishment									○									3.3.6
Employment Use Category																		3.3.7
Office	●	●	●	●	●	●	●	●	●	●	●	●						3.3.7.A.
Craftsman Industrial	●	●	●	●	●	●	●	●	●	●		●						3.3.7.B.
Infrastructure Use Category																		3.3.8
Parking as a Principal Use				○	○	○	○	○	●	●	○	○	○					3.3.8.A.
Transportation & Utilities	○	○	○	○	○	○	○	○	○	○	○	○					○	3.3.8.B.
Transmission Towers	○	○	○	○	○	○	○	○	○	○	○	○	○				○	3.3.8.C.
Industrial Use Category																		3.3.9
Heavy Industry									●	●								3.3.9.A.
Light Industry							●	●	●	●								3.3.9.B.
Outdoor Storage Yard									●	●								3.3.9.C.
Transportation Facilities									●	●								3.3.9.D.
Warehouse/Distribution									●	●								3.3.9.E.
KEY: ● = Permitted ● = Permitted in Upper Stories Only ● = Permitted Subject to Use-Specific Conditions ○ = Requires a Special Permit																		

Figure 3.2-A Table of Principal Uses (continued)

campuses or similar institutional settings, in new subdivisions, or on an historic industrial site.

3.3.4 RETAIL USES

A category of uses involving the sale of goods and provision of services to the general public for personal or household consumption. Visibility and accessibility are important to these uses, as most businesses typically rely heavily on walk-in customers or clients and rarely utilize scheduled appointments.

A. Neighborhood Retail. A retail use with a gross floor area of less than 8,000 square feet and outdoor sales limited to no more than 10 percent of the indoor gross floor area of the retail use. Neighborhood retail includes such uses as those listed in Figure 3.3-A Typical Retail Uses.

- (1) **Medical Marijuana Dispensary.** A place of business where marijuana may be dispensed or sold at retail to qualifying patients and primary caregivers and for which the Connecticut Department of Consumer Protection has issued a dispensary permit.
- (2) When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.2-A Table of Principal Uses, the retail use is limited to a maximum of 25 percent of the ground floor area and shall be located at the entrance or on a corner of the building.

B. General Retail. A retail use with a gross floor area of 8,000 square feet or greater and outdoor sales limited to no more than 25 percent of the indoor gross area of the retail use. General retail includes such uses as those listed in Figure 3.3-A Typical Retail Uses.

- (1) **Grocery Store.** Any store commonly known as a supermarket, food store, or grocery store, with at least 60 percent of gross square footage dedicated to the retail sale of fresh and/or frozen meat, seafood, poultry, fruits, and vegetables; and dairy and bakery products.
- (2) **Public Market.** An indoor or covered, open-air permanent structure dedicated to the sale of local and regional food, flowers, baked goods, and small crafts, excluding secondhand goods.

C. Beer/Wine/Liquor Sales. A use involving the sale of alcoholic liquor not to be consumed on the premises, with such sales to be made only in sealed bottles or other containers. Includes sale of beer and wine.

When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.2-A Table of Principal Uses, the following regulations apply:

Neighborhood Retail

Antique Shop
Apparel, Shoes, &/or Accessory Store
Small Appliance Store
Art Gallery & Sales
Art &/or Education Supplies
Bakery with no distribution
Bicycle & Accessory Sales
Book &/or Video Store
Camera & Photo Supply Store
China &/or Glassware
Cigar, Cigarettes, Tobacco Shop
Coin &/or Philatelic Store
Craft Store
Drug &/or Cosmetics Store, including Medical Marijuana Dispensary
Electronics Sales
Fabric & Sewing Supply Store
Florist
Framing Shop
Furrier Shop, no storage
Garden Supply &/or Nursery
Gift, Novelty, & Souvenir Shop
Grocery Store
Hardware Store
Home Furnishings & Accessories
Jewelry &/or Gem Store
Luggage &/or Leather Goods
Magazine &/or Newspaper Store
Music &/or Musical Instruments

Office Machines & Supply
Optical Goods
Paint & Wallpaper Store
Party Supply Shop
Pet &/or Pet Supplies Shop
Secondhand sales of any item permitted for sale new
Specialty Food (Candy, Fish, Produce, Prepared Foods, etc.)
Sporting Goods
Stationary & Paper Store
Toy &/or Baby Supplies

General Retail

All Neighborhood Retail 8,000 sf and over
Appliance Sales
Automotive Supply (no service)
Computer Software Sales & Leasing
Department Store
Medical Supply Store
Motorcycle & Motor Scooter Sales, limited outdoor display
Nursery
Outdoor Recreation Equipment
Public Market

Figure 3.3-A Typical Retail Uses

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Retail Uses

(1) **Proximity to Other Beer/Wine/Liquor Sales.**

No beer/wine/liquor sales use shall be located within a 1,500 foot radius in any direction of any lot where beer/wine/liquor sales are located, except that these dispersion requirements shall not apply to prohibit new beer/wine/liquor sales uses: in the DT districts; on a university campus where a university permit or a non-profit theater permit is duly obtained; for beverage and/or food production-related craftsman industrial places in the ID and CX districts, as identified in 3.3.7.B.; or in a full-service grocery store as defined in 3.3.4.B.(1).

(2) **Proximity to Certain Uses.** No beer/wine/liquor sales use shall be located within a 500-foot radius of any part of a lot used or reserved to be used for the purposes of a school, library, park, hospital, funeral home, and assembly, except that these dispersion requirements shall not apply to prohibit new beer/wine/liquor sales uses: in the DT districts; on a university campus where a university permit or a non-profit theater permit is duly obtained; for beverage and/or food production-related craftsman industrial places in the ID and CX districts, as identified in 3.3.7.B.; or in a full-service grocery store as defined in 3.3.4.B.(1).

(3) **Grocery Store/Convenience Store Beer Permit.**

A grocery store or convenience store selling beer under a grocery beer permit shall have no more than 5 percent of its net floor area dedicated to the sale of beer.

(4) **University Permit.** The sale of beer and wine under a university permit issued pursuant to the provisions of the general statutes shall be permitted as an accessory use on a university or college campus. Such use shall be located a minimum of 100 feet from any residential property adjacent to such campus.

(5) **Non-profit Theater Permit.** The sale of alcoholic beverages under a non-profit theater permit issued under the provisions of general statutes section 30-35a (relating to non-profit theater alcohol permits) shall be permitted in connection with a theater located on a university campus and operated by either the university, or a non-profit organization under a lease agreement with the university.

(6) **Non-profit Public Museum Permit.** The sale of alcoholic beverages under a non-profit museum permit issued under the provisions of general statutes section 30-37a shall be permitted in connection with a museum as defined by the above section on land and in buildings that are subject to the care, custody and control of the museum board of trustees, or similar, to be consumed on the premises by museum patrons.

D. Commercial Equipment & Supply. A use involving the large scale sale of goods to residents or businesses within the region. The goods or merchandise sold may be of the same type or a variety of types and typically occupy a space greater than 20,000 square feet. This use may include bulk sales and typically involves frequent commercial vehicle and consumer traffic. This use is primarily located indoors, but may also include accessory outdoor storage of goods. This includes such uses as those listed in Figure 3.3-B Typical Commercial Equipment & Supply Uses.

When noted as subject to conditions ("O") or requires a special permit ("O") in Figure 3.2-A Table of Principal Uses, the following regulations apply:

- (1) Commercial vehicles shall be limited to no more than 2 deliveries per day, no more than 2 trucks.
- (2) Loading docks shall be fully screened from any residential uses. Refer to 6.12 Screening of Necessary Appurtenances.

E. Convenience Store. Any retail store with a wide mix of goods typically used on a daily basis, including household goods, personal health items, cosmetics, candy, and tobacco products, and food.

When noted as subject to conditions ("O") or requires a special permit ("O") in Figure 3.2-A Table of Principal Uses, the following regulations apply:

- (1) At least 5 percent of the net floor area of the retail space dedicated to each of the following products:

Commercial Equipment & Supply Uses

Bottled Gas (such as propane) Sales & Supply	Heating & Air Conditioning Supply, Sales & Service
Building Materials, Hardware, & Lumber Supply	Machine Sales & Rental
Cabinet Supply (display only)	Marine & Aircraft Supply
Electrical Supply	Plumbing Sales & Service
Farm Equipment & Supply	Wholesale Trade

Figure 3.3-B Typical Commercial Equipment & Supply Uses

- (a) Both fresh fruits and vegetables, with no more than one variety of fruit or vegetable comprising 50 percent of the respective category.
 - (b) Both whole grains (including whole grain bread, corn tortillas, brown rice, or oatmeal, but not including popcorn or white flour tortillas) and whole grain cereal.
 - (c) Dairy products (including both milk and cheese, but not ice cream) and eggs.
 - (d) Canned or dried goods, without added fats, oils, meats, or seasoning including canned beans (but not baked beans), canned legumes, dried peas, dried beans, and dried legumes, and excluding soup mixes.
- (2) No convenience store over the size of 3,500 square feet of floor area shall be permitted.
 - (3) No convenience store shall be located within 1,500 feet of another convenience store or grocery store, except such dispersion requirement shall not apply in the DT district.
 - (4) Any combination of tobacco and beer sales shall not equal more than 15 percent of the floor area.

F. Discount Variety Store. A use involving the sale of a wide variety of daily consumer retail goods typically at a discount price, especially multiple items for one dollar, and commonly known as dollar stores or five and dime stores.

When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.2-A Table of Principal Uses, the following regulations apply:

- (1) Discount variety stores shall not be located less than 1,500 feet from another discount variety store.

G. Outdoor Sales Lot. A use involving the sale of goods or merchandise to businesses and/or the general public, where the majority of the goods are stored or displayed outdoors. Outdoor sales lots include such uses as: the sale and rental of automobiles, trucks, trailers, boats, and recreational vehicles; and the outdoor sale of building materials, landscape materials, and garden supplies.

- (1) For the purposes of off-street parking requirements per 7.2 Parking Requirements, the net floor area devoted to retail space of an outdoor sales lot is the net floor area of the building containing the sales counter, service area, and other related functions.

- (2) When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.2-A Table of Principal Uses, the following regulations apply:
 - (a) Outdoor sales lots are not permitted on corner parcels, except in the ID-1 district.
 - (b) Outdoor sales lots are allowed only on lots fronting Boulevards or Avenues.
 - (c) Outdoor sales lots must include permanent construction of a building utilizing one of the permitted building types in the district.

Neighborhood Service

Arcades & Billiards
 Barber Shop, Beauty Salon, & Spa
 Coffee Shop
 Dry Cleaning (pick-up/outlet only)
 Financial Depository Institutions/
 Banks, chartered and excluding
 Check Cashing Establishments
 Fitness Club, Athletic Club, Dance
 Studio, Yoga Studio, & Gym
 Funeral Home
 Home Furniture & Equipment
 Repair
 Laundromat
 Locksmith
 Mailing & Delivery Services
 Medical Clinic
 Pet Grooming
 Phone Sales & Service
 Photocopying & Printing
 Photography Studio with Supplies
 Post Office, limited distribution
 Rental of any good permitted to
 be sold in the district
 Repair &/or servicing of of any
 good permitted to be sold in the
 district
 Tailor or Seamstress
 Tanning Salon
 Therapeutic Massage
 establishment, licensed proprietor
 Travel Agency, Ticketing, & Tour
 Operator
 Veterinary Services/Animal
 Hospital (no outdoor kennels)

General Service

All Neighborhood Services over
 8,000 square feet
 Animal Boarding, Daycare, &
 Training (interior only)
 Aquatic Facilities
 Archery Ranges (indoor only)
 Batting Cages
 Bowling Alleys
 Miniature Golf Courses
 Motion Picture Theaters
 Recreation, Commercial Indoor
 Rental of any good permitted to
 be sold in the district
 Repair of of any good permitted to
 be sold in the district
 Skating Rink

Figure 3.3-C Typical Service Uses

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Industrial Uses

to blighting or deterioration of the surrounding neighborhood.

- (iv) In locations that do not mitigate such visual and operational effects.
- (5) **Building Type.** Transmission towers are not required to satisfy a building type.

3.3.9 INDUSTRIAL USES

A category of uses for businesses involving assembly, production, storing, transferring and disposal of goods or products, and which may also include associated facilities such as offices, maintenance facilities, and fuel pumps and both indoor and outdoor activities and storage of goods. All outdoor storage associated with industrial uses shall adhere to the provisions in 3.5.2.D. Outdoor Storage.

A. Heavy Industry. An industrial use with the potential for significant external effects, including noise, odor, and/or other noxious by-products and may involve frequent commercial vehicle access and outdoor storage of materials or products. Heavy Industry includes such uses as:

Light Industry	Warehousing/ Distribution
Any Craftsman Industrial Use with or without retail outlet and with significant distribution	Air Freight
Agricultural Processing, unless otherwise listed	Contractor – Landscape & Construction
Aircraft Assembly & Testing	Exterminating & Disinfecting Service
Apparel, Finished Products from Fabric	Food Distribution Facility, with or without public market
Automobile, Truck, Boat, RV & Trailer Manufacturing	Freight Forwarding Service
Bicycle Manufacturing	Fuel Distribution
Biomaterials	Mail & Parcel Sorting & Distribution
Cotton Wadding	Mail Order House & Warehousing
Electrical Fixtures	Newspaper Distribution Facilities
Electronic/Electrical Equipment/Component Manufacturing	Packing & Crating
Engines & Motors Manufacturing/Rebuilding	Personal Storage
Lasers & Optics	Petroleum Bulk Station
Laundering, Dry Cleaning, Dyeing	RV & Large Equipment Storage Yard
Lumber Mill	Recycling Center (Collection & Sort)
Machinery Manufacturing	Tow or Impound Lot
Medical Equipment Manufacturing	Truck Terminal or Parking Facilities
Metal Products Manufacturing	Vehicle Staging & Storage (Ambulance, Bus, Limousine, Livery, Taxi, etc.)
Mobile/Manufactured Homes Manufacturing	Warehousing & Storage (Refrigeration or General)
Motor Testing	Water Distribution
Pharmaceuticals	Wholesale Trade of Goods
Plumbing & Heating Products	
Printing, Publishing & Allied Industries	
Stone Cutting & Distribution	
Tool & Die Shop	

Figure 3.3-E Typical Industrial Use Categories

- (1) **Waste.** Waste means a heavy industrial use involving the sorting, storage and disposal of goods and by-products. Facilities may have large-scale outdoor storage; buildings for administrative offices, storage, processing waste or service of machinery and frequent commercial vehicle access. Waste related industries include composting facilities, garbage grinding and extraction, recycling facilities (with or without collection and sorting), refuse disposal, and refuse incineration, but shall not include sanitary landfills.
- (2) **Crematory Services.** Crematory services means a structure containing a furnace used or intended to be used for the cremation of human remains. The location of a crematory within the city shall be in accordance with the provisions of general statutes section 19a-320 (relating to erection and maintenance of crematories).

B. Light Industry. A use involving the production of goods from raw materials or the assembly of finished products that can result in limited negative external effects, noise, and other non-noxious by-products. Light Manufacturing Uses include all Craftsman Industrial Uses and those uses identified in [Figure 3.3-E Typical Industrial Use Categories](#).

- (1) When noted as subject to conditions ("●") or requires a special permit ("○") in [Figure 3.2-A Table of Principal Uses](#), the following regulations apply:
 - (a) **Additional Application Information.** The zoning administrator may request additional information to ensure proper evaluation of such application. Such information may include ventilation plans, materials characteristics, drainage plans, waste disposal plans, and chemical disposition plans.

C. Outdoor Storage Yard. A lot used primarily for the outdoor storage of construction equipment parts, materials and supplies, and parking of wheeled construction equipment. This use does not include associated on-site offices.

When noted as subject to conditions ("●") or requires a special permit ("○") in [Figure 3.2-A Table of Principal Uses](#), the following regulations apply:

- (1) An owner's office shall be located within a quarter mile of the outdoor storage yard location.

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Industrial Uses

- (2) Frontage, side, and rear buffers are required per 6.0 Sitework & Landscape.

D. Transportation Facilities. A facility that functions either as: a depot for train, bus, or limousine service, which may include maintenance facilities and vehicle storage; or an airport. This is a distinct use from 3.3.2.H. Transit Station, which is primarily dedicated to passenger boarding and alighting. It is also distinguished from 3.3.8.B. Transportation & Utilities, which primarily relates to rights-of-way. Transportation facilities includes such uses as bus or rail terminals, rail yards, and bus or limousine fleet storage.

When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.2-A Table of Principal Uses, the following regulations apply:

- (1) All airports, airfields, runways, hangars, beacons and other facilities involved with aircraft operations, where permitted, shall be developed in accordance with the rules and regulations of the Federal Aviation Administration and the state department of transportation, which agencies shall approve the preliminary plans submitted to the city. Land beneath all aircraft approach lanes, as established by appropriate aeronautical authorities or airport zoning, which is not part of any airport, shall be so developed as not to endanger safe flight conditions to and from an established airport. This provision is supplemental to any adopted airport zoning plan, ordinance, or regulation.

E. Warehouse/Distribution. A use involving large-scale indoor or outdoor storage of goods, packaging of goods, and distribution typically between production and the market. May include a small ancillary retail facility. Warehouse, Packing and Distribution uses also include substantial commercial vehicle access, storage, and intermodal exchanges. Warehousing, Packing and Distribution includes such uses as those identified in Figure 3.3-E Typical Industrial Use Categories.

When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.2-A Table of Principal Uses, the following regulations apply:

- (1) **Transportation Study.** A transportation study is required to determine truck access and paths and address any potential disruptions of surrounding businesses.

3.4 Accessory Uses

3.4.1 ACCESSORY USES: GENERAL PROVISIONS

A. Accessory Uses Allowed. Accessory uses are allowed only in connection with lawfully established principal uses. Accessory uses for nonconforming principal uses and structures are treated under 1.5.3.

B. Allowed Uses. Allowed accessory uses are limited to those expressly regulated in this chapter as well as those that, in the determination of the zoning administrator, satisfy all of the following criteria:

- (1) They are customarily found in conjunction with the subject principal use(s) or principal structure;
- (2) They are subordinate and clearly incidental to the principal use(s) of the property; and

- (3) They serve a necessary function for the comfort, safety or convenience of occupants of the principal use(s).

C. Accessory Structures. Refer to 4.20 Accessory Structures.

D. Time of Construction and Establishment. Accessory uses may be established only after the principal use of the property is in place.

E. Location. Accessory uses must be located on the same lot as the principal use to which they are accessory, unless otherwise expressly stated.

ACCESSORY USES	DISTRICTS																	
	DT-1	DT-2	DT-3	MS-1	MS-2	MS-3	CX-1	CX-2	ID-1	ID-2	MX-1	MX-2	NX-#	N-#-1	N-#-2	N-#-3	OS	Reference
Accessory Residential Uses																		3.5.1
Accessory Dwelling Unit											●	●	●	●	●	●		3.5.1.A.
Home Childcare														●	●	●		3.5.1.B.
Home Occupation	●	●	●	●	●	●	●	●			●	●	●	●	●	●		3.5.1.C.
Room Rental - Long-Term					●						●	●	●	●	●	●		3.5.1.D.
Room Rental - Short-Term	●	●	●	●	●	●	●				●	●	●	●	●	●		3.5.1.E.
Sleeping Quarters for a Caretaker									●	●								3.5.1.F.
Accessory Commercial Uses																		3.5.2
Drive-Through Facility						○		○	●									3.5.2.A.
Incidental Entertainment	●	●	●	●	●	●		●		●								3.5.2.B.
Outdoor Cafe	●	●	●	●	●	●	●	●	●	●	●	●						3.5.2.C.
Outdoor Display	●	●	●	●	●	●		●										3.5.2.D.
Outdoor Storage								●	●	●								3.5.2.E.
Parking	●	●	●	●	●	●	●	●	●	●	●	●	●				○	3.5.2.F.

- Permitted
- Permitted subject to Use-Specific Conditions
- Requires a Special Permit

Figure 3.4-A Table of Accessory Uses

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Table of Accessory Uses

3.4.2 TABLE OF ACCESSORY USES

Figure 3.4-A Table of Accessory Uses presents a listing of expressly allowed accessory uses. Each of the listed accessory uses is given one of the following designations.

- A. Permitted ("●").** These accessory uses are permitted by right in the districts in which they are listed.
- B. Permitted Subject to Conditions ("◐").** These accessory uses are permitted by right in the districts in which they are listed, provided that they comply with the use-specific conditions of 3.5. Accessory Use Definitions & Use-Specific Conditions.
- C. Requires a Special Permit ("○").** These accessory uses are allowed only if reviewed and approved in accordance with the Special Permit procedures of 1.3.4. In addition, they must comply with all applicable conditions associated with the use and comply with the requirements of the Special Permit.

3.5 Accessory Use Definitions & Use-Specific Conditions

3.5.1 ACCESSORY RESIDENTIAL USES

A. Accessory Dwelling Unit. A dwelling unit that is associated with and is incidental to another dwelling unit on the same lot which serves as the lot's principal use.

When noted as subject to conditions ("◐") or requires a special permit ("○") in Figure 3.4-A Table of Accessory Uses, the following regulations apply:

- (1) A property owner must file a zoning permit for an accessory dwelling unit prior to its recognition as an accessory dwelling unit. The property proposed for an accessory dwelling unit must contain one, but no more than one, residential structure occupied as a one-unit dwelling.
- (2) The property must be owner-occupied, either in the principal structure or principal dwelling unit, or in the accessory dwelling unit.
- (3) No property shall contain more than one accessory dwelling unit.
- (4) The accessory dwelling unit shall be located either: in a detached accessory structure occupied, or formerly occupied, on the first floor by a garage, barn, or similar accessory use; or in a principal structure, provided that there is a separate entrance to the exterior or to an unconditioned porch type space.
- (5) The usable floor area of the accessory dwelling unit shall not exceed 50 percent of the usable floor area of the principal dwelling unit or 1,000 square feet, whichever is less. Exterior patios, decks, porches, and staircases providing interior access from the principal unit to the accessory dwelling unit will not be counted toward the usable floor area of the accessory dwelling unit.
- (6) Parking for the accessory dwelling unit must be provided on-site in accordance with the requirements in Figure 7.2-A for a 2-Unit Dwelling. No additional curb cuts shall be allowed beyond those permitted by the building type and zoning district.
- (7) The orientation of the proposed accessory dwelling unit shall, to the maximum extent practical, maintain the privacy of residents in adjacent dwellings as determined by the physical characteristics surrounding the accessory dwelling unit including landscaped screening,

fencing, and window and door placement. The exterior entrance of an accessory dwelling unit located in a principal structure shall not be visible from the front right of way. A separate numeric address for the accessory apartment is prohibited.

- (8) No new, separate utility connection may be installed for the accessory dwelling unit in a principal structure, unless more than one utility connection already serves the lot, to the location of the proposed accessory dwelling unit, at the time of the application for the accessory dwelling unit.
- (9) The lot size must be a minimum of 7,500 square feet.
- (10) At any one time, the number of dwellers in an accessory dwelling unit shall be limited to: (a) 1 adult and minor children related to said adult by blood, marriage, adoption, custodianship, or guardianship, (b) 2 adults (in total) and minor children related to at least one of the adults by blood, marriage, adoption, custodianship, or guardianship.
- (11) Only 12 accessory dwelling units are allowed in the N-1-1 district.
- (12) Long-term room rentals (as defined in 3.5.1.D.) and short-term room rentals (as defined in 3.5.1.E.) are not permitted on the same lot as an accessory dwelling unit.

B. Home Child Care. Supplementary, temporary care of children, unrelated to the caregiver, on a regularly recurring basis for a portion of one or more days in the week, and provided in the home of the caregiver.

When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.4-A Table of Accessory Uses, the following regulations apply:

- (1) **Limited Attendees.** More than 6 and fewer than 12 children may be cared for at a time. Six or fewer children is considered a Home Occupation (refer to 3.5.1.C.). Twelve or more children is considered principal use (refer to 3.3.5.G. Child Day Care Center).
- (2) **Outdoor Play Area.** Home Child Care shall include a fenced outdoor play area.
- (3) **Accessory Use.** Home Child Care may only be an accessory use to the principal use of Household Living.

- (4) **State Licensing Requirements.** All applicable State of Connecticut licensing requirements shall be met.
- (5) **Revocation.** The zoning administrator shall have discretion to revoke any permit for home child care if such use is a nuisance to neighboring properties.
- (6) **The N-1-1 District.** Home Child Care may not operate in the N-1-1 district.
- (7) **Limited Number.** The number of home child care uses on any zoning lot shall not exceed one.

C. Home Occupation. A use that is clearly subordinate to the principal use as a residence, is customarily conducted within the dwelling unit by one or more members of the occupying household, and does not alter the exterior of the building or its appearance.

- (1) **Included Uses.** Home Occupation includes the following and other uses deemed similar by the zoning administrator: accountant, artist, attorney, author, computer operator or programmer, child care of 6 or fewer children, designer (computer, graphic, architect, interior, etc.) home crafts, seamstress or tailor, sales person or representative (no on-site retail or wholesale transactions), tutoring, and instruction of craft and fine art.
- (2) **Excluded Uses.** Home Occupation excludes such uses, as otherwise defined in these regulations, as Civic & Institutional Uses; Retail Uses; Service Uses other than photography studio, tailor or seamstress, therapeutic massage establishment (licensed proprietor), travel agency, ticketing & tour operator; Industrial Uses; and Warehouse/ Distribution Uses.
- (3) When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.4-A Table of Accessory Uses, the following regulations apply:
 - (a) **Advertisement.** Offering, displaying or advertising any commodity or service for sale on the premises is prohibited, except that an identification sign is permitted in accordance with the regulations of 8.14.2.L Signs for Home Occupations.
 - (b) **Outside Storage.** No materials or products shall be stored outside of a building.
 - (c) **Area.** The customary home occupation shall not occupy more than 25 percent of the usable floor area of a dwelling unit in which the home occupation is operated.

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Accessory Residential Uses

- (d) **Employees.** Employment is limited to any member of the immediate household residing in the dwelling unit plus one person not residing in the dwelling unit.
- (e) **Hours of Operation.** Permitted hours of operation are 7 AM to 8 PM.
- (f) **Limited Attendees.** Up to 4 attendees may be served or instructed at a time, except as provided for in Home Child Care.
- (g) **Residence.** The operator of the Home Occupation shall reside in the dwelling unit in which the home occupation operates.
- (h) **Physical Appearance.** The appearance of the structure shall conform to the character of the area.
- (i) **Vehicles.** No more than one motor vehicle shall be used in connection with a Home Occupation.
 - (i) The vehicle shall be of a type ordinarily used for conventional private passenger transportation, such as a passenger automobile, van, or pickup truck not exceeding a payload capacity of one ton.
 - (ii) The vehicle shall not be designed to carry more than 12 persons.
 - (iii) Parking of the vehicle must be accommodated on site.
- (j) **The N-1-1 District.** Home Occupations may not operate in the N-1-1 district.

D. Room Rental - Long-Term. The temporary rental of a room to a roomer or boarder for a minimum of 3 months during a 1-year period by a private property owner residing within an on-site, principal residence.

When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.4-A Table of Accessory Uses, the following regulations apply:

- (1) At any one time, the number of persons occupying a room or rooms in a long-term room rental on a lot shall be limited to: (a) 1 adult roomer or boarder and minor children related to him or her by blood, marriage, adoption, custodianship, or guardianship, or (b) 2 adult roomers or boarders (in total) and minor children related to at least one of the adults by blood, marriage, adoption, custodianship, or guardianship.

- (2) Such accessory use shall be permitted only in detached or semi-detached one-unit dwelling structures.
- (3) Such accessory use shall not be permitted in the N-1-1 district.
- (4) Room rentals of a duration of less than 3 months shall be prohibited unless they satisfy the terms of 3.5.1.E.).
- (5) Short-term room rentals (as defined in 3.5.1.E.) are not permitted on the same lot as a long-term room rental. Long-term room rentals are not allowed in a dwelling unit occupied by a household that includes 3 adults, of which at least one is unrelated to the others by blood, marriage, adoption, custodianship, or guardianship.

E. Room Rental - Short-Term. The temporary rental of part or all of a property to any temporary renters for no more than 21 cumulative days during any 6 month period, with no property being used for such temporary rental more than 3 times during any 6 month period.

When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.4-A Table of Accessory Uses, the following regulations apply:

- (1) Operators of a short-term room rental offering a portion or all of their property for short-term room rentals must file a zoning permit prior to offering their properties for short-term room rentals. As short-term room rentals are conducted on a temporary and periodic basis, no nonconforming use rights will be recognized for short-term room rentals existing at the time of the passage of these regulations. The zoning permit application must include either (a) in the case of lots in the N-#-1 districts, the name of the property owner residing on the premises, or, (b) in the case of lots outside of the N-#-1 districts, the name and contact information of the property manager who must live or work within 10 miles of the site and the express written consent of the property owner for such temporary rental.
- (2) At any one time, the number of persons occupying a room or rooms in a single dwelling unit authorized for short-term room rentals shall be limited to 4 adults (in total) and minor children related to at least one of the adults by blood, marriage, adoption, custodianship, or guardianship, subject to a minimum square

footage of usable floor area of 70 square feet for one person and 50 square feet for each additional person, including children one year of age or older.

- (3) If a short-term room rental occurs in a N-#-1 district, or if it occurs in any other district on a lot containing only a one-unit dwelling (and no additional dwelling units or other nonresidential uses), then the property owner must reside on the premises during the duration of the short-term room rental.
- (4) Notwithstanding Figure 3.4-A Table of Accessory Uses, an operator of a short-term room rental may submit a special permit application for permission to conduct short-term room rentals in excess of the number of days and frequency required by this section.
- (5) Any zoning permit or special permit issued pursuant to this section shall expire within 3 years of approval and may be revoked if the zoning administrator receives information showing that such temporary rentals have imposed a nuisance on neighbors. A special permit issued pursuant to this section may be conditioned on a limitation on the number of days during which temporary rentals may occur.
- (6) The requirements in this section shall not apply to sublets or assignments of a possessory interest in the entire portion of a dwelling unit pursuant to a written lease agreement of one month or more in duration.

- (7) Accessory dwelling units (as defined in 3.5.1.A.) and long-term room rentals (as defined in 3.5.1.D.) are not permitted on the same lot as a short-term room rental.

F. Sleeping Quarters for a Caretaker. Sleeping quarters for a caretaker of an industrial facility, which shall not include a full kitchen or constitute a dwelling unit.

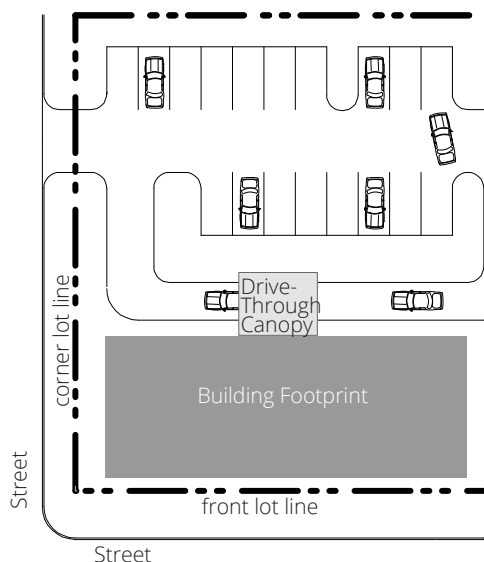


Figure 3.5-A Drive-Through Facility

3.0 USES

Accessory Commercial Uses

3.5.2 ACCESSORY COMMERCIAL USES

A. Drive-Through Facility. A type of drive-in establishment related to a Coffee Shop, Eating Place, Financial Depository Institution/Bank, and Laundromat & Dry Cleaning subject to 3.3.5 or to a Drug or Cosmetic Store allowed pursuant to 3.3.4, where part of its retail or service character is dependent on providing a driveway approach or parking spaces for motor vehicles to either serve patrons food or beverage while in the motor vehicle or else intended to permit consumption in the motor vehicle of food or beverage obtained by a patron from such business establishment.

When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.4-A Table of Accessory Uses, the following regulations apply:

- (1) **Layout.** Refer to Figure 3.5-A Drive-Through Facility for one illustration of the following requirements.
 - (a) **Structure/Canopy.** Drive-through structures or canopies shall be located on the rear facade of the building or in the rear of the lot behind the building, where permitted by use. The structure shall not be visible from the front lot line or any primary street.
 - (b) **Stacking Lanes.** Stacking lanes shall be located perpendicular to the front lot line or behind the building.
 - (c) **Materials.** The canopy and structure shall be constructed of the same materials utilized on the building.
 - (d) **Drive Locations.** There shall be a minimum distance of 40 feet between any 2 curb cuts and a minimum distance of 25 feet between any curb cut and the corner of any corner lot which is at the intersection of 2 streets.
- (2) **Recommendations.** A recommendation in support of the drive-through is required from the director of the department of public works and the chief of police, subject to the conditions of this section. The department of public works shall specifically approve each entrance and exit to any facility.
- (3) **Lot Requirements.** There shall be a minimum lot area of 15,000 square feet and a minimum lot width of 120 feet;
- (4) **Front Yard Landscape.** The area between the building line and the front lot line not utilized for driveways shall be landscaped with year-round

plantings so as to prohibit parking over the building line.

- (5) **Proximity to Residential.** The drive-through facility shall not be located directly abutting any lot in a residential district or any lot containing a dwelling.
- (6) **Proximity to Schools.** The drive-through facility shall not be located within 1,000 feet of a school.
- (7) **Proximity to Other Drive-Through Facilities.** The drive-through facility shall not be located within 300 feet of another drive-through facility.
- (8) **Pedestrian Convenience & Safety.** The drive-through facility shall not be located near other uses where the location of such facility would be detrimental to pedestrian convenience or safety.
- (9) **Additional Requirements.** In addition to these conditions, the commission may require an applicant to modify a site plan to provide for sufficient pedestrian amenities, reduce the negative visual impact, and/or provide better circulation and parking so as to reduce the potential for accidents and the impact the proposed use may have on neighboring development when the director of the department of public works or the chief of police suggests such modifications are desirable. Such modifications to a site plan may include, but are not limited to, additional landscaping and screening, redesign of parking areas, relocation of entrances/exits and curb cuts and the limitation of the size and number of signs.

B. Incidental Entertainment. Background music provided at an eating or drinking place, the sole purposes of which shall be to enhance the particular ambiance of the establishment. When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.2-A Table of Principal Uses, the following regulations apply:

- (1) **Format of Entertainment.** Incidental entertainment shall be limited to the following formats:
 - (a) Live music performance in which no more than 3 instruments are played at any one time.
 - (b) Prerecorded music played from a preselected play list over the permanently installed sound system of the establishment.
- (2) **Volume.** Incidental entertainment shall be permissible provided that the maximum volume

of incidental entertainment, irrespective of the format, shall be limited so as not to extend beyond the boundaries of the premises at any time.

- (3) **Noise Mitigation Plan.** A noise mitigation plan described in 1.3.3.B.(15)(b) is required.

C. Outdoor Cafe. Tables and chairs for patrons of eating and drinking establishments located outdoors and directly adjacent to the structure containing the associated use. When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.2-A Table of Principal Uses, the following regulations apply:

- (1) **General Location.** The following requirements apply to all outdoor cafes, unless otherwise noted:
 - (a) Outdoor Cafes may be located anywhere on the lot, or on the adjacent right-of-way, provided that, if it is located in the right of way, a minimum of 4 feet of sidewalk shall remain available and obstacle-free for passing pedestrians.
 - (b) Outdoor cafes are not subject to building line requirements or front yard or corner side setbacks.
 - (c) Outdoor cafes not associated with additional construction and located fully on the lot are subject to administrative approval by the zoning administrator.
 - (d) The outdoor cafe shall be located directly adjacent to the principal use.
- (2) **Maximum Size.** The total area occupied by the outdoor cafe shall not exceed 600 square feet in area in the public right of way, and may not exceed 100 percent of the square footage of the active commercial floor area (exclusive of kitchen, office and storage areas) of the indoor portion of the eating and drinking establishment.
- (3) **Enclosure.** The outdoor cafe shall be enclosed by a fence with a minimum height 30 inches and a maximum of 42 inches. All construction in the right-of-way shall be fully removable during the off-season or when the outdoor cafe is not in use. No chain link fencing, plastic fencing, or other material not durable enough to endure the season shall be utilized. Steel or colored PVC may be used. For outdoor seating areas of eight chairs or fewer, the preceding enclosure requirements may be waived by the zoning administrator or commission, as applicable, upon

a determination that an enclosure may cause undue interference with the public right-of-way or is unnecessary because of site conditions.

- (4) **Cover.** The outdoor cafe may have a covering or overhead enclosure and shall be open-air.

D. Outdoor Storage. Permanent outdoor storage of goods not typically housed or sold indoors, such as large scale materials and building and landscape supplies. When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.2-A Table of Principal Uses, the following regulations apply:

- (1) Outdoor storage areas shall be located in the rear or side yard of the lot.
- (2) Loose materials shall not be stacked higher than 6 feet.
- (3) Loose materials shall at a minimum be stored in a 3-sided shelter and shall be covered.
- (4) Materials shall be set back a minimum of 5 feet from any lot line.
- (5) All outdoor storage areas shall be screened from view of adjacent parcels and street rights-of-way using the heavy side or rear buffer, refer to 6.9.2 Side & Rear Buffer Requirements.

E. Outdoor Display. The outdoor display of merchandise or other items offered for sale or advertisement. When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.2-A Table of Principal Uses, the following regulations apply:

- (1) Outdoor displays must extend at least 5 feet from the building façade, but in no instance shall merchandise or other items for sale or advertisement be located beyond an established street line. In the case of street lines and building lines being coincident, there shall be no outdoor display unless permission has been granted by the department of public works and all necessary permits have been obtained;
- (2) Merchandise or other items displayed as the accessory use shall be restricted to those items or merchandise which are sold at the principal use;
- (3) If associated with a principal use on a corner lot, only a single frontage shall be utilized for accessory outdoor display purposes;
- (4) Merchandise or other items, and all temporary structures used for outdoor display, shall be removed and stored indoors from dusk to dawn;

3.0 USES

Accessory Commercial Uses

- (5) Notwithstanding any provision of this section, the public way, street, sidewalk, curb, and all means of ingress and egress to the structure containing the principal use shall be maintained free of obstructions, merchandise or other items. A minimum of 4 feet of sidewalk shall remain available and obstacle-free for passing pedestrians.

F. Parking. Parking as an accessory use in conjunction with an adjacent principal building on the lot; a principal building on the lot and nearby buildings; or multiple buildings on one or more lots within a Campus Overlay. Does not include parking for one-unit, 2-unit, and 3-unit dwellings.

- (1) **Parking Lot.** A parking lot is a paved surface used solely for the parking of vehicles. A parking lot may be uncovered or covered by a solar parking lot canopy per 4.20.6.C. Parking lot locations are regulated by building type. Refer to 4.0 Building Types.
- (2) **Parking Structure.** A structure used solely for the parking of vehicles. Parking Structures within buildings are regulated per building type. Refer to 4.0 Building Types. Separate accessory parking structures are regulated in 4.20.3.D. Accessory Parking Structure, with the yard location set by the building type. While the parking use may be permitted in a particular district on Figure 3.4-A Table of Accessory Uses, whether the structure is permitted is defined in Figure 4.20-A Accessory Structure Table.
- (3) When noted as subject to conditions ("●") or requires a special permit ("○") in Figure 3.2-A

Table of Principal Uses, the following regulations apply:

- (a) **Parking Lots in Public Parks.** New parking lots may be permitted in public parks named in 3.3.3.D.(5) through a special permit application, which shall be referred to the department of public works and the city advisory commission on parks and recreation for a report of their recommendations at least 30 days prior to the date assigned for a public hearing. Such recommendations, if any, shall be publicly read and incorporated into the records of any public hearings held thereon.
- (b) **Parking Lots in Private Parks.** New parking lots may be permitted in private parks in accordance with special permit or site plan review, as applicable.

TEMPORARY USES	DISTRICTS																	Reference
	DT-1	DT-2	DT-3	MS-1	MS-2	MS-4/5	CX-1	CX-2	ID-1	ID-2	MX-1	MX-2	NX-#	N#-1	N#-2	N#-3	OS	
Temporary Uses																		
Temporary Outdoor Events	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.7.1
Farmers Market	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.7.2

● Permitted
 ● Permitted subject to Use-specific conditions
 ○ Requires a Conditional Use Permit
 Prohibited Use

Figure 3.6-A Table of Temporary Uses

3.6 Temporary Uses

3.6.1 TEMPORARY USES: GENERAL PROVISIONS

A. Voting Place. The provisions of these regulations shall be so construed as not to interfere with the temporary use of any premises as a voting place in connection with a municipal, state or federal election, or primary.

3.6.2 TABLE OF TEMPORARY USES

Figure 3.6-A Table of Allowed Temporary Uses presents a listing of expressly allowed temporary uses. Each of the listed temporary uses is given the following designation:

Permitted Subject to Conditions ("O"). These temporary uses are permitted by right in the districts in which they are listed, provided that they comply with the use-specific conditions of 3.7 Temporary Use Definitions & Use-specific conditions.

3.7 Temporary Use Definitions & Use-Specific Conditions

3.7.1 TEMPORARY OUTDOOR EVENT

A temporary event such as a carnival, circus, street celebration, race, bazaar, market or other similar outdoor event. Such events may be on a street, open space, or other public space in which public access is wholly or partially restricted. The event may include the sale of goods.

A. Speeches & Political Events. This temporary use is not intended to include public speeches, political rallies, political marches, protests, demonstrations or similar events.

B. Use-Specific Conditions. When noted as subject to conditions ("O") in Figure 3.6-A Table of Temporary Uses, the following regulations apply:

- (1) Proof of permission for use of the subject property must be obtained from the owner, or other person with authority to grant same, and be submitted to the zoning administrator;
- (2) The temporary outdoor event is of a temporary nature;
- (3) The temporary outdoor event does not operate nightly beyond the hour of 11:00 p.m.;
- (4) The temporary outdoor event shall be operated in accordance with all applicable statutes, ordinances and regulations of the state and the city, and shall have obtained and submitted to the zoning administrator any permits, certificates, permissions, licenses, and authorizations required;
- (5) Proper insurance, protecting the city and being evidenced by an insurance certificate, approved by the city's risk manager, shall be submitted to the zoning administrator;
- (6) The director of licenses and inspections may issue permits for specific festivals and events, pursuant to the municipal code, provided that such permits shall only be issued if consistent with these regulations, and consistent with any commission decisions regarding the appropriate uses of land.
- (7) **Temporary Outdoor Events in the OS District.** For temporary outdoor events in the OS district, the following additional provisions shall apply:
 - (a) A deposit or bond benefitting the city, in an amount and form determined by the director of the department of public works,

3.0 USES

Farmers Market

shall be tendered by the applicant to the department of development services, and shall be forfeited by the applicant to the department of development services in the event of any damage to any property or person in and around the site of the festival or event during the operation thereof, provided that whether the deposit or bond is forfeited, and the amount of deposit or bond that is forfeited, shall be in the sole discretion of the director of the department of public works.

- (b) The commission hereby delegates its authority to determine whether specific festivals and events in the OS district are appropriate uses of land to the park superintendent in the department of public works. In making decisions regarding such uses of land in the OS district, the park superintendent shall consider:
 - (i) The impact of the proposed activities on existing furniture, lighting fixtures, historic and monument sites, sculptures, artwork, pathways, trees, shrubs, grasses, other landscaping, watersheds, watercourses, inland wetlands, and the environment generally;
 - (ii) runoff;
 - (iii) sewage and solid waste management plans of the applicant; suitability of the proposed site for the proposed activities;
 - (iv) the financial capability and experience of the applicant in managing an event of the proposed nature and scale;
 - (v) the need for street closures or other impacts on any public rights of way;
 - (vi) public safety;
 - (vii) parking;
 - (viii) fencing materials and the impact thereof;
 - (ix) and the adequate provision of lighting, drinking water, essential services, and connections to public utilities.
- (c) The park superintendent shall base his or her approval of such uses, and any conditions thereon, on careful consideration

of each of the preceding matters and in no event shall approve a use that:

- (i) is likely to cause irreparable harm to physical property, real or personal, natural or artificial, in the OS district;
 - (ii) is so poorly planned or managed that significant threats to public safety may occur;
 - (iii) will result in environmental hazards; or
 - (iv) is being proposed or run by an individual, business entity, non-profit organization, or other group that has in the past violated any aspect of the code, including the noise ordinance, and appears likely to do so again during its involvement in this activity.
- (d) If the park superintendent intends to find a specific festival or event to be an appropriate use of land for property contained within the OS district, he or she must report such an intent to the staff and the chair of the commission prior to any formal approval being given to the applicant for such uses.
 - (e) Such an intent to approve is reviewable by the commission and may be rejected if the commission determines that the decision to approve was made in error, if the decision to approve was arbitrary or capricious, or if the park superintendent failed to fully consider the concerns in the preceding subsection or the conditions set forth in these regulations.
 - (f) The park superintendent shall be required to submit quarterly reports to the commission regarding the number, attendance, and impact of any activities approved pursuant to this section on the property contained within the OS district.

3.7.2 FARMERS MARKET

A public market administered by a market manager and held multiple times per year to connect and mutually benefit farmers, communities, and shoppers.

When noted as subject to conditions ("C") in Figure 3.2-A Table of Principal Uses, the following regulations apply:

- A. Permission.** Proof of permission for use of the subject property must be obtained from the owner, or other person with authority to grant same, and be submitted to the zoning administrator.

- B. Time Limit.** The farmers' market is of a temporary nature, namely, in operation only one day or 2 days per week.
- C. Minimum Lot Size.** A minimum lot area of 100 square feet per stand shall be provided.
- D. Operating Hours.** The farmers' market operates between the maximum hours of 8 a.m. and 8 p.m.
- E. Insurance.** Proper insurance, protecting the city and being evidenced by an insurance certificate, approved by the city's risk manager, shall be submitted to the zoning administrator.
- F. OS District.** For farmers' markets taking place in the OS district, a deposit or bond benefitting the city, in an amount and form determined by the director of the department of public works, shall be tendered by the applicant to the department of development services, and shall be forfeited by the applicant to the department of development services in the event of any damage to any property or person in and around the site of the farmers' market during the operation thereof, provided that whether the deposit or bond is forfeited, and the amount of deposit or bond that is forfeited, shall be in the sole discretion of the director of the department of public works.
- G. Local Vendors.** The farmers' markets shall allow as vendors predominantly local farmers, farmers' cooperatives and producers selling any of the following: whole produce; value-added agricultural products such as jams, jellies, and pickles; prepared food; all agricultural and horticultural products including but not limited to whole produce, plants, flowers, meats, dairy products, and other food-related products.
- H. Parking Plan.** A parking plan for attendees of the farmers' market shall be provided and approved by the zoning administrator.

4.0 BUILDING TYPES

Applicability

4.1 Introduction to Building Types

4.1.1 APPLICABILITY

The Building Types detailed in this chapter, 4.0 Building Types, define the required building forms for new construction, renovation of existing structures, and redevelopment within all zoning districts.

4.1.2 GENERAL REQUIREMENTS

All Building Types shall fulfill the following requirements.

A. Zoning Districts. Each Building Type shall be constructed only within districts where the Building

Type is permitted. Refer to Figures 4.1-A and 4.1-B for Building Types Permitted by District.

B. Uses. Each Building Type can house a variety of uses depending on the district in which it is located. Refer to 3.0 Uses for uses permitted per district. Some Building Types have additional limitations on permitted uses.

C. No Other Building Types. All buildings constructed must fulfill the requirements of one of the Building Types permitted within the zoning district of the lot.

D. Permanent Structures. All buildings constructed shall be permanent construction without a chassis,

BUILDING TYPES PERMITTED BY DISTRICT — MIXED-USE/NON-RESIDENTIAL DISTRICTS

		BUILDING TYPES														
DISTRICT		Downtown Storefront	Downtown General Building	Storefront	Cottage Commercial	Commercial Center	General Building	Workshop/Warehouse	Civic Building	Apartment Building	Stacked Flats	Row Building	House A	House B	House C	Notes
DOWNTOWN	DT-1															Refer to Zoning Map for Primary & Secondary Street locations.
	DT-2															
	DT-3															
COMMERCIAL-INDUSTRIAL MIX	CX-1															
	CX-2															
MAIN STREET	MS-1															
	MS-2															
	MS-3															
MULTI-USE MIX	MX-1															
	MX-2															
INDUSTRIAL	ID-1															
	ID-2															

● = Permitted

● = In DT-1 and DT-3, Building Type required on all Primary Street Frontages. In DT-2, Building Type required on all Bushnell Park frontage (Ford and Jewell Streets)

Figure 4.1-A Permitted Building Types by District for Mixed-Use and Non-Residential Districts

4.0 BUILDING TYPES

Materials

4.2 General Design Requirements for All Building Types

The following requirements affect a building's appearance and are intended to improve the physical quality of buildings, enhance the pedestrian experience, and protect the character of the each neighborhood, district, node, or corridor.

4.2.1 MATERIALS

A. Primary Facade Materials. 80 percent of each facade shall be constructed of primary materials. For facades over 100 square feet, more than one material shall be used to fulfill the 80 percent requirement.

- (1) Permitted primary building materials include: high quality, durable, natural materials, such as

stone, brick; wood lap siding; lapped, shingled, or panel fiber cement board siding; glass.

- (2) Other high quality materials may be approved in the sole discretion of the decision-making body upon a determination that such materials are appropriate to the architectural style of the building and the surrounding context, after receiving from the applicant relevant information as may be requested by the decision-making body, which information may include but shall not be limited to a material sample, specification sheet(s), and a document explaining successful, high quality installations of such materials.

- (3) Refer to Figure 4.2-A Primary Materials.

B. Secondary Facade Materials. Secondary materials are limited to details and accents and include gypsum reinforced fiber concrete for trim and cornice elements; metal for beams, lintels, trim, and ornamentation, and exterior architectural metal panels and cladding.

- (1) Exterior Insulation and Finishing Systems (EIFS) is permitted for trim only or on upper floor facades only.



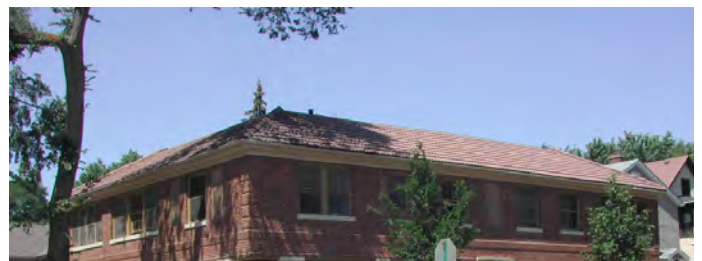
Primary Materials: Brick



Primary Materials: Siding and brick



Roof Materials: Asphalt Composite Shingles



Roof Materials: Ceramic Tile

Figure 4.2-A Primary Materials

Figure 4.2-B Roof Materials

4.0 BUILDING TYPES

Windows, Awnings, & Shutters

C. Roof Materials. Acceptable roof materials include 300 pound or better, dimensional asphalt composite shingles, wood shingles and shakes, metal tiles or standing seam, slate, and ceramic tile, as well as membrane for flat roofs, and any additional materials necessary for the proper installation of green roofs. "Engineered" wood or slate may be approved during the site plan process with an approved sample and examples of successful, high quality local installations. Refer to Figure 4.2-B Roof Materials. An applicant seeking approval for a building with a parapet or flat roof – which contains a use other than a 1-, 2-, or 3-Unit Dwelling, and other than a Retail or Service Use less than 10,000 square feet – shall consider cool roofs, green roofs, and solar panels for roofing materials, and if the application does not include such materials, the applicant must provide an explanation.

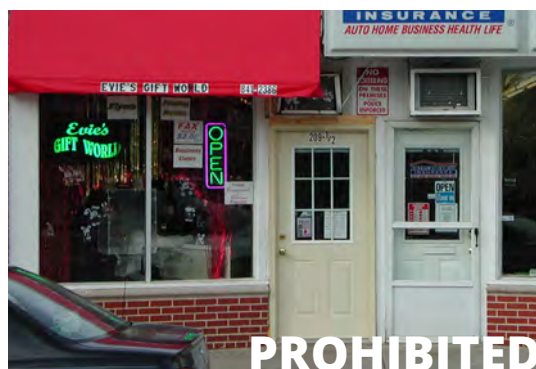
D. Appropriate Grade of Materials. Commercial grade doors, windows, and hardware shall be used on all building types with the exception of the Row Building

and the House Building Types used for residential purposes. Refer to Figure 4.2-C Commercial Grade Doors & Windows.

4.2.2 WINDOWS, AWNINGS, & SHUTTERS

A. Windows. All windows on all buildings, other than windows 20 feet above grade in the DT districts, shall fulfill the following:

- (1) **Recessed Glass.** All window glass shall be recessed a minimum of 2 inches from the facade.



Prohibited: Residential Grade Doors on Commercial Buildings.

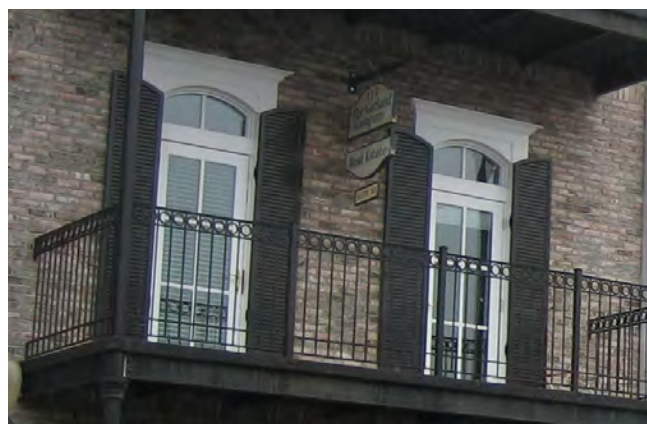


Permitted: Commercial Grade Doors & Windows on Commercial Buildings.

Figure 4.2-C Commercial Grade Doors & Windows



Figure 4.2-D Expressed Lintels



Appropriately Scaled Shutters.



Inappropriately Scaled Shutters.

Figure 4.2-E Shutters

4.0 BUILDING TYPES

Windows, Awnings, & Shutters

- (2) **Type.** A minimum of 80 percent of all non-storefront window glass on street facades shall be double hung, casement, or vertically oriented.
- (3) **Prohibited Windows.** Tinted or reflective glass, and glass block are prohibited on street facades. Blocked or covered windows, whether covered by paint, fabric, plastic, or signage, shall be prohibited except as allowed in 8.9 Window Sign.
- (4) **Percent of Transparency.** Percent of transparency is required per building type.
- (5) **Operable Windows.** A minimum of 60 percent of all transparency on street facades except storefronts shall be operable.
- (6) **Lintels.** Lintels shall be expressed above all windows and doors, whether by a change in brick coursing or a separate element. Refer to Figure 4.2-D Expressed Lintels.

B. Shutters. If installed, shutters, whether functional or not, shall be sized for the windows. If closed, the shutters shall not be too small for complete coverage of the window. Shutters shall be wood. "Engineered" wood may be approved during the site plan process with an approved sample and examples of successful, high quality local installations. Refer to Figure 4.2-E Shutters

C. Window Bars. Exterior bars are prohibited on any window.

D. Awnings. All awnings shall be canvas or metal. Plastic awnings are not permitted. Awning types for each building face shall be coordinated. Refer to Figure 4.2-F Examples of Awnings from Other Cities.

E. Security Grills.

- (1) **Definition.** A security grill is a building-mounted grating or screen of metal bars or wires, used as protection or to allow ventilation or discreet observation.
- (2) **Interior Mounted.** Security grills shall be located completely within the interior of the building with the window glass on the exterior.
- (3) **Fully Retractable.** Grills shall be fully retractable with the housing located above the window on the interior of the building, not visible from the street. Grills mounted to the exterior of the building are prohibited.
- (4) **Retracted During the Day.** Grills shall be retracted during the daylight hours, all days except Sunday.



Permitted Awnings: Metal



Permitted Awnings: Canvas

Figure 4.2-F Examples of Awnings from Other Cities

4.0 BUILDING TYPES

Balconies

4.2.3 BALCONIES

The following applies in all locations where balconies are incorporated into the facade design facing any street or parking lot. Refer to [Figure 4.2-G Balcony Examples from Other Cities](#).

- A. Definition.** Balconies include any platform that projects from the wall of a building above grade and is enclosed by a parapet or railing.
- (1) **Exception: False Balconies.** These regulations do not apply to false balconies a maximum of 16 inches deep, sometimes referred to as juliet balconies or balconets, which are permitted. False balconies consist of a rail and door, with no outdoor platform.
- B. Size.** Balconies shall be a minimum of 5 feet deep and 6 feet wide.
- C. Connection to Building.** Balconies that are not integral to the facade shall be independently secured and unconnected to other balconies.
- D. Facade Coverage.** A maximum of 40 percent of the front and corner side facades, as calculated separately, may be covered with balconies, including street-facing railing and balcony structure.



Balconies: Not Permitted

4.2.4 BUILDING VARIETY

Building design shall vary between vertical facade divisions, where required per the building types, and from adjacent buildings by the type of dominant material or color, scale, or orientation of that material and at least 2 of the following. Refer to [Figure 4.2-H Examples of Building Variety](#) for illustrations of this requirement.

- A.** The proportion of recesses and projections.
- B.** The location of the entrance and window placement, unless storefronts are utilized.
- C.** Roof type, plane, or material, unless otherwise stated in the building type requirements.

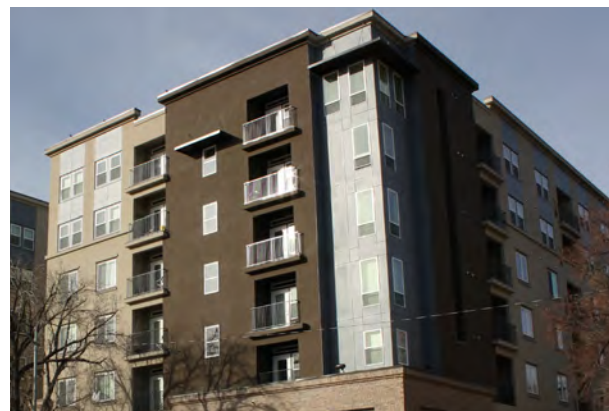


Balconies Appropriately Attached to or Incorporated into Facade

4.2.5 COURTYARDS

Courtyards, defined in 1.6, are permitted in any location on a lot. Minor offsets and recesses intended for architectural effect shall not be considered courtyards. All courtyards, except those provided adjacent to any House Type, shall fulfill the following:

- A. No Parking.** Courtyards shall not be used for parking.



Balconies Integral with Facade Design

Figure 4.2-G Balcony Examples from Other Cities

4.0 BUILDING TYPES

Description & Intent

4.8 General Building Type

4.8.1 DESCRIPTION & INTENT

The General Building Type is a less distinctive building than the Storefront or Civic buildings and is typically limited to office, civic, and/or residential uses.

The General Building is intended to be built close to the front and corner lot lines allowing easy access to passing pedestrians and transit riders, but with a landscaped area between the building and sidewalk.

Parking may be provided in the rear of the lot, within the building, or, in some cases, one double-loaded aisle of parking is permitted in the interior or the side yard at the front lot line.



Figure 4.8-A Illustrative Examples of General Buildings

4.0 BUILDING TYPES

General Building Type Regulations

4.8.2 GENERAL BUILDING TYPE REGULATIONS

		MS-2	CX-1	CX-2 & ID	MX-1	MX-2
A. Building Siting. Refer to Figure 4.8-B General Building: Building Siting and 4.18.1 Building Siting for explanation.						
1	Multiple Principal Buildings	not permitted	not permitted	permitted	not permitted	permitted with Campus Overlay
2	Minimum Front Lot Line Coverage	85% NOTE 1	65% NOTE 1	65% NOTE 1	65% NOTE 1	65% NOTE 1
3	Occupation of Corner	required				
4	Front Build-to Zone	at or up to 5' behind the Building Line	within 2' of the Building Line	between 5' & 15' from front lot line	within 5' of the Building Line	at or up to 15' behind the Building Line
5	Corner Build-to Zone	within 5' of the Building Line	within 2' of the Building Line	between 5' & 10' from corner lot line'	within 2' of the Building Line	at or up to 10' behind the Building Line
6	Minimum Side Setback	7.5'	5'	5'	7.5'	15'
7	Minimum Rear Setback	5'	5'	5'	15'	35'
8	Minimum Lot Width Maximum Building Width	50' 50'	none none	none none	60' 80'	none none
9	Maximum Building Coverage Maximum Impervious Area Additional Semi-Pervious Area	55% 75% 15%	60% 80% 15%	60% 75% 15%	45% 65% 25%	65% 80% 10%
10	Permitted Parking & Loading Locations	rear yard	rear & limited side yard NOTE 2	rear & side yard	rear & limited side yard NOTE 2	rear & side yard
11	Permitted Vehicular Access	one driveway per lot; one additional driveway for lots with over 160' feet in street frontage; circular drop-off drive per 4.1.2.I.(4); shared driveways encouraged				
B. Height. Refer to Figure 4.8-C General Building: Height & Use Requirements and 4.18.2 Height for explanation.						
12	Minimum Overall Height	2 stories	2 stories	2 stories	2 stories	2 stories
13	Maximum Overall Height	4 stories	5 stories	4 stories	5.5 stories	6 stories
14	Ground Story: (Measured floor-to-floor) Minimum Height Maximum Height	9' 14'	9' 24' NOTE 3	9' 24' NOTE 3	9' 14'	9' 24' NOTE 3
15	Upper Stories: (Measured floor-to-floor) Minimum Height Maximum Height	9' 14'	9' 16'	9' 16'	9' 14'	9' 14'

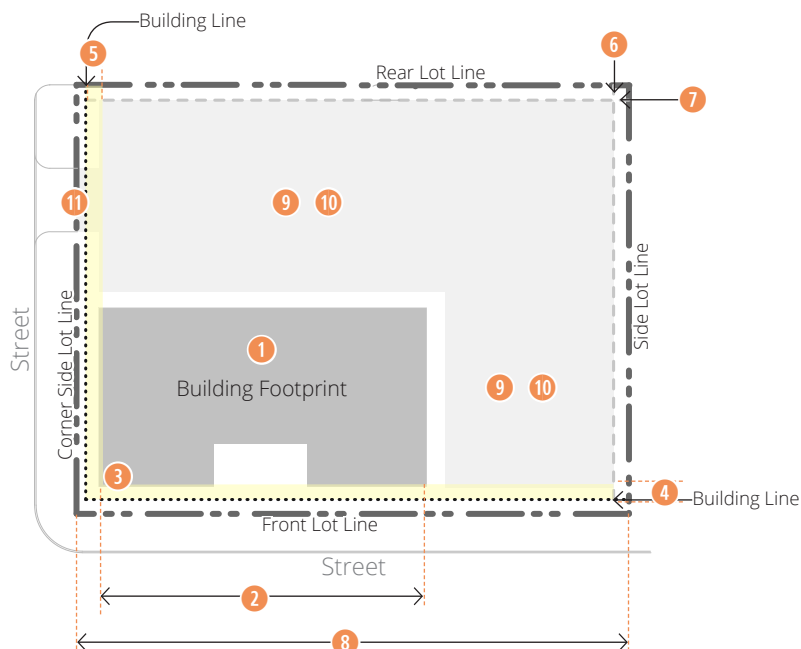


Figure 4.8-B General Building: Building Siting

4.0 BUILDING TYPES

General Building Type Regulations

	MS-2	CX-1	CX-2 & ID	MX-1	MX-2
C. Uses. Refer to Figure 4.8-C General Building: Height & Use Requirements and 4.18.3 Uses for explanation. Refer to 3.0 for permitted uses.					
16	Ground Story	any use permitted by district, except retail and service uses are limited to no more than 25% of the ground floor area and shall be located along the street facade ^{NOTE 4}			
17	Upper Story	any use permitted by district except retail and service uses, except Eating Places and Drinking Places as permitted in the district are allowed on the second story per ^{NOTE 4}			
18	Parking within Building	permitted fully in any basement and in rear of upper floors			
19	Entrance to Parking/Loading within Building	corner side, rear, interior side facade			
20	Required Occupied Space	minimum 30' deep on all full floors from the front facade			
D. Street Facade Requirements. Refer to Figure 4.8-D General Building: Street Facade Requirements and 4.18.4 Street Facade Requirements for explanation.					
21	Minimum Transparency per each Story	15%			
22	Blank Wall Limitations	required per floor on all stories (refer to 4.18.4.B. for requirements)			
23	Front Facade Entrance Type refer to 4.19.1 Entrance Types	stoop, arcade			
24	Principal Entrance Location	front or courtyard facade			
25	Required Number of Street Entrances	1 per each 100' of front facade			
26	Ground Story Vertical Facade Divisions	every 100' of facade width			
27	Horizontal Facade Divisions	required within 3' of the top of any visible basement or the ground story, and within 3' of the top of any fifth floor above the first floor			
28	Permitted Roof Types refer to 4.19.2 Roof Types	parapet, pitched, flat	parapet, flat; tower	parapet, pitched, flat; tower	

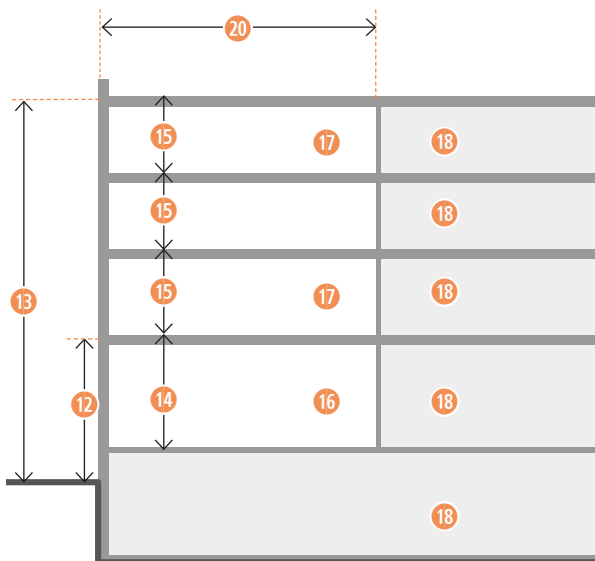


Figure 4.8-C General Building: Height & Use Requirements



Figure 4.8-D General Building: Street Facade Requirements

4.0 BUILDING TYPES

General Building Type Regulations

E. Notes. The following notes are keyed to the requirements in the building type table, A through D:

1. A courtyard covering up to 35 percent of the front facade is permitted and may contribute to the Front Lot Line Coverage requirement, provided that a fence and landscaping fulfilling the requirements of 6.8 Frontage Buffer is provided along the building line. Refer to 4.2.5 Courtyards. Courtyard facades shall fulfill 4.8.2.D. Street Facade Requirements.
2. Lots wider than 140 feet are permitted one double-loaded aisle of parking (maximum width of 65 feet), located perpendicular to the front lot line.
3. If 18 feet or more in height, ground story shall count as 2 stories towards maximum building height.
4. Any Eating Places (refer to 3.3.5.J.) open to the public, but within the interior of the building, shall be located only on the first or second stories and shall be directly accessible from a public right of way. If located on the second story, "directly accessible" shall include being accessible through a small ground-story lobby containing an elevator and stairs. Allowed signage marking the entrance of the Eating Place shall be provided on the exterior of the building.

4.0 BUILDING TYPES

Description & Intent

4.9 Workshop/Warehouse Building Type

4.9.1 DESCRIPTION & INTENT

The Workshop/Warehouse Building Type provides a street facade similar to the General Building.

This Building Type is still intended to be built fairly close to the front and corner lot lines allowing easy access to pedestrians.

In the Industrial (ID) districts, the regulations for this building are very flexible to allow a wide range of forms, accommodating larger scale truck loading, warehousing, and manufacturing. In other districts, the Workshop/Warehouse Building is defined to work within a more pedestrian oriented area. In those locations, parking is limited to the side and rear, and service bays and loading are limited on the front facade.



Figure 4.9-A Illustrative Examples of Workshop/Warehouse Buildings

4.0 BUILDING TYPES

Workshop/Warehouse Building Type Regulations

4.9.2 WORKSHOP/WAREHOUSE BUILDING TYPE REGULATIONS

	CX-1	CX-2	ID-1	ID-2
A. Building Siting. Refer to Figure 4.9-B Workshop/Warehouse Building: Building Siting and 4.18.1 Building Siting for explanation.				
1 Multiple Principal Buildings	not permitted	permitted	permitted	
2 Minimum Front Lot Line Coverage	75%	50%	none required	
3 Occupation of Corner	required		not required	
4 Front Build-to Zone	within 2' of the Building Line	between 15' and 25' of front lot line	minimum 15' setback from front lot line	
5 Corner Build-to Zone	within 2' of the Building Line	between 5' and 20' of front lot line	minimum 15' setback from corner side lot line	
6 Minimum Side Setback	5'	5'	none; except 30 feet from adjacent residential use	
7 Minimum Rear Setback	5'	5'	5'	
8 Minimum Lot Width Maximum Building Width	80' none	60' none	60' none	100' none
9 Maximum Building Coverage Maximum Impervious Area Additional Semi-Pervious Area	65% 80% 10%	60% 75% 10%	60% 80% 10%	50% 70% 10%
10 Permitted Parking & Loading Locations	rear and limited side yard ^{NOTE 1}	rear and limited side yard ^{NOTE 1}	preferred in rear or side yard	
11 Vehicular Driveway Access	one driveway per street frontage			
B. Height. Refer to Figure 4.9-C Workshop/Warehouse Building: Height & Use Requirements and 4.18.2 Height for explanation.				
12 Minimum Overall Height	1 story	1 story	1 story	1 story
13 Maximum Overall Height	5 stories	3 stories	no maximum	no maximum
14 Ground Story: (Measured floor-to-floor) Minimum Height Maximum Height	12' (16' for single story building) 30' ^{NOTE 2}		12' 30' ^{NOTE 2}	
15 Upper Stories: (Measured floor-to-floor) Minimum Height Maximum Height	9' 16'		9' 16'	

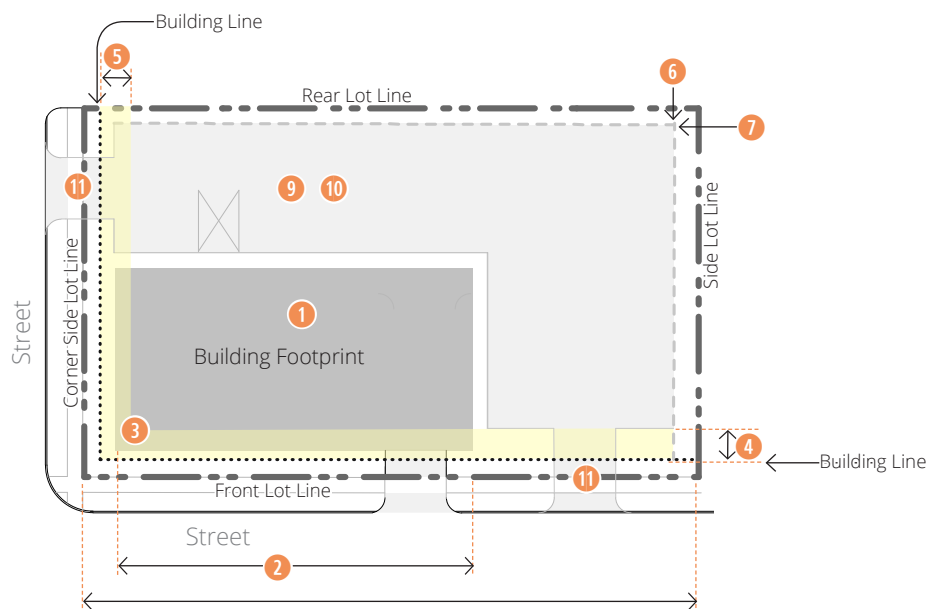


Figure 4.9-B Workshop/Warehouse Building: Building Siting

4.0 BUILDING TYPES

Workshop/Warehouse Building Type Regulations

	CX-1	CX-2	ID-1	ID-2	
C. Uses. Refer to Figure 4.9-C Workshop/Warehouse Building: Height & Use Requirements and 4.18.3 Uses for explanation. Refer to 3.0 for permitted uses.					
16	Ground Story	all uses permitted by district; any showroom shall be located on the ground story ^{NOTE 3}			
17	Upper Stories	all uses permitted by district ^{NOTE 3}			
18	Parking within Building	personal vehicle parking permitted fully in basement and in rear of upper floors	unlimited		
19	Garage Entrance/Service Bay Location	one single-vehicle-width permitted on front facade; rear & side facades	unlimited; preferred on rear and/or side facades		
20	Required Occupied Space	minimum 30' deep on all full floors from the front facade	minimum 30' deep on ground floor from the front facade	not required	
D. Street Facade Requirements. Refer to Figure 4.9-D Workshop/Warehouse Building: Street Facade Requirements and 4.18.4 Street Facade Requirements for explanation.					
21	Minimum Transparency per each Story	15%	12%	none required; 15% preferred	none required
22	Blank Wall Limitations	required per floor on all stories (refer to 4.18.4.B. for requirements)		not required	
23	Front Facade Entrance Type refer to 4.19.1 Entrance Types	stoop		none required	
24	Principal Entrance Location	front, corner side, side facade		no requirement	
25	Required Number of Street Entrances	one		none required	
26	Ground Story Vertical Facade Divisions	not required			
27	Horizontal Facade Divisions	required within 3' of the top of any visible basement or the ground story		not required	
28	Permitted Roof Types refer to 4.19.2 Roof Types	parapet, flat; tower	parapet, pitched, flat; tower	not required; tower permitted	
29	Special Materials Requirements (refer to 4.2.1 Materials for general materials requirements)	primary materials shall be masonry	primary materials on a minimum of 50% of front facade shall be masonry; metal warehouse building permitted on corner side and up to 50% of front facade	metal warehouse building permitted	

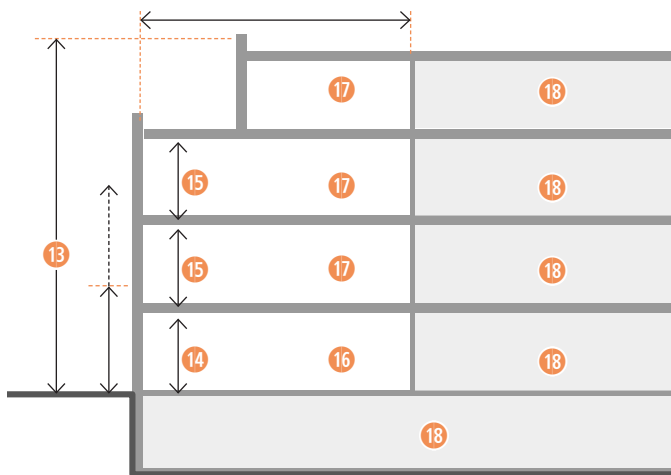


Figure 4.9-C Workshop/Warehouse Building: Height & Use Requirements

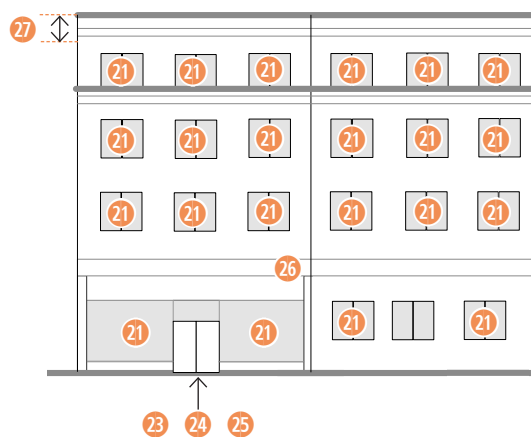


Figure 4.9-D Workshop/Warehouse Building: Street Facade Requirements

4.10 Civic Building Type

4.10.1 DESCRIPTION & INTENT

The Civic Building is the most flexible Building Type intended only for buildings utilizing the civic and institutional category of uses.

These buildings are distinctive within the urban fabric created by the other Building Types and could be designed as unique and/or iconic structures.

In contrast to most of the other Building Types, a minimum setback line is required instead of a build to zone, though this setback is required to be landscaped. Parking is typically limited to the rear and small side yard lots.



image from JohnCanningCo.com



Figure 4.10-A Illustrative Examples of Civic Buildings

4.0 BUILDING TYPES

Civic Building Type Regulations

4.10.2 CIVIC BUILDING TYPE REGULATIONS

SEE NOTE 1

	DT Districts	MS Districts	CX Districts	MX-2 District	MX-1, NX & N Districts
A. Building Siting. Refer to Figure 4.10-B Civic Building: Building Siting Examples and 4.18.1 Building Siting for explanation.					
1 Multiple Principal Buildings	not permitted	not permitted	permitted	permitted with 5.1 Campus Overlay	not permitted
2 Minimum Front Lot Line Coverage	not required				
3 Occupation of Corner	not required				
4 Minimum Front Setback	behind the Building Line a minimum of 5'				
5 Minimum Corner Setback	behind the Building Line a minimum of 5'				
6 Minimum Side Setback	5'	10'	5'	15'	5'; 100' from residential uses
7 Minimum Rear Setback	0'	5'	5'	15'	25'; 100' from residential uses
8 Minimum Lot Width Maximum Building Width	none none	60' 140'	none none	100' none	120' 80'
9 Maximum Building Coverage Maximum Impervious Area Additional Semi-Pervious Area	no limitation	60% 75% 10%	80% 80% 15%	60% 80% 10%	30% 50% 20%
10 Permitted Parking & Loading Locations	shall not front primary streets	rear & limited side yards NOTE 2	rear & side yards	rear & side yards	rear yard & limited side yards NOTE 2
11 Permitted Vehicular Access	one driveway per street frontage; in MX-1 and N districts, locate only on side streets.				

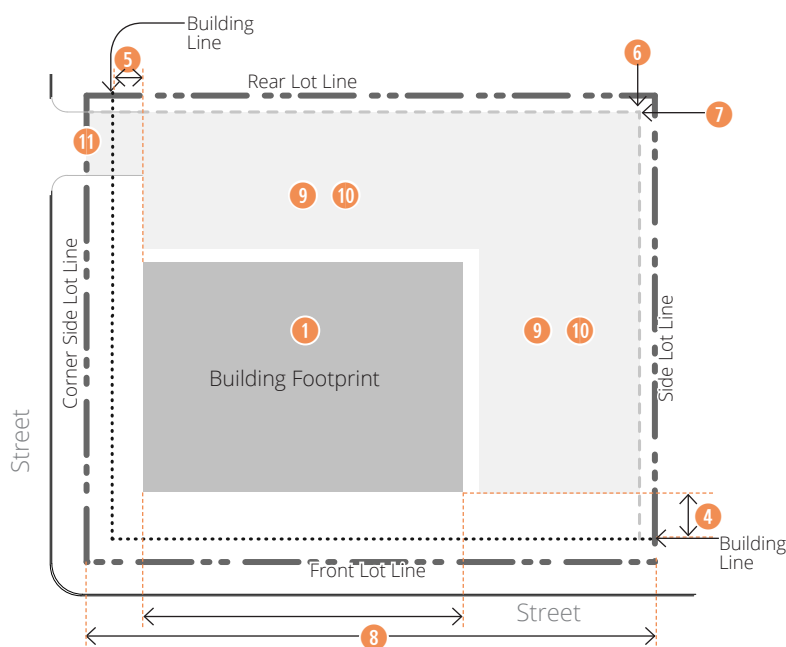
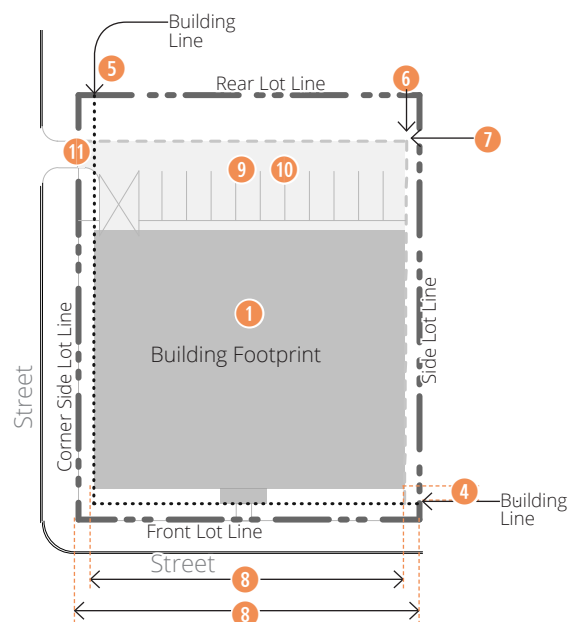


Figure 4.10-B Civic Building: Building Siting Examples



4.0 BUILDING TYPES

Civic Building Type Regulations

		DT Districts	MS Districts	CX Districts	MX-2 District	MX-1, NX & N Districts
B. Height. Refer to Figure 4.10-C Civic Building: Height & Use Requirements and 4.18.2 Height for explanation.						
12	Minimum Overall Height	1 story	1 story	1 story	1 story	1 story
13	Maximum Overall Height	8 stories	3 stories	4 stories	6 stories	2 stories
14	Ground Story: (Measured floor-to-floor) Minimum Height Maximum Height	10' 30' NOTE 3	10' 24' NOTE 3	10' 30' NOTE 3	10' 30' NOTE 3	10' 24' NOTE 3
15	Upper Stories: (Measured floor-to-floor) Minimum Height Maximum Height	9' 14'	9' 14'	9' 14'	9' 14'	9' 14'
C. Uses. Refer to Figure 4.10-C Civic Building: Height & Use Requirements and 4.18.3 Uses for explanation. Refer to 3.0 for permitted uses.						
16	All Stories	only civic and institutional uses permitted by district NOTE 1				
17	Parking within Building	permitted fully in any basement and in rear of upper floors				not permitted
18	Entrance to Parking/Loading within Building	any non-primary street facing facade	rear or side facade			not applicable
19	Required Occupied Space	minimum 30' deep on all full floors from the front facade				
D. Street Facade Requirements. Refer to Figure 4.10-D Civic Building: Street Facade Requirements and 4.18.4 Street Facade Requirements for explanation.						
20	Minimum Transparency per each Story	10%				
21	Blank Wall Limitations	required on ground story (refer to 4.18.4.B. for requirements)				
22	Front Facade Entrance Type refer to 4.19.1 Entrance Types	stoop, arcade				
23	Principal Entrance Location	front, corner side, or side facade				
24	Required Number of Street Entrances	no requirement				
25	Ground Story Vertical Facade Divisions	no requirement				
26	Horizontal Facade Divisions	no requirement				
27	Permitted Roof Types refer to 4.19.2 Roof Types	parapet, pitched, flat; tower; other roof types permitted with special permit (refer to 4.19.2.A.(4) Other Roof Types)				

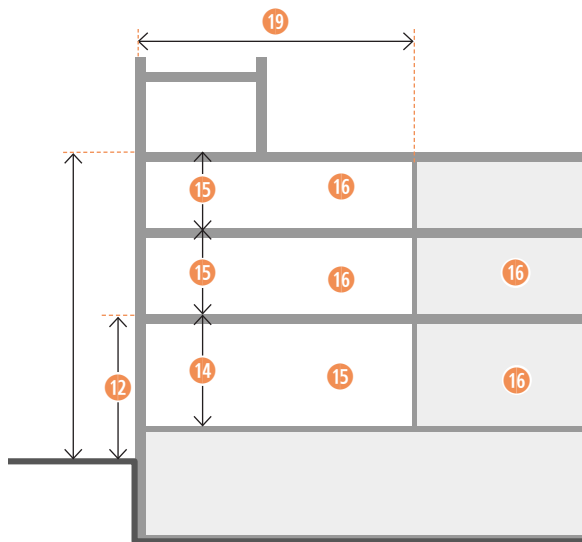


Figure 4.10-C Civic Building: Height & Use Requirements

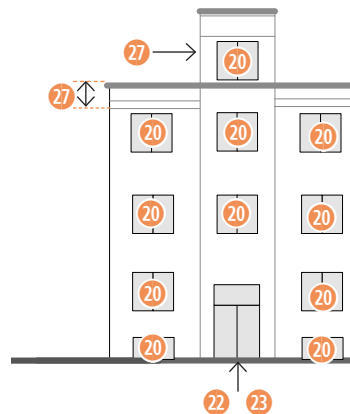


Figure 4.10-D Civic Building: Street Facade Requirements

4.0 BUILDING TYPES

Civic Building Type Regulations

- E. Notes.** The following notes are keyed to the requirements in the building type table, A through D:
1. The Civic Building Type shall only be utilized for certain uses per the Building Type table. Further, in some districts, the Civic Building may only be used on a corner lot (refer to Figure 4.1-B Permitted Building Types by District for Residential Districts).
 2. Lots wider than 140 feet are permitted to have one double-loaded aisle of parking (maximum width of 72 feet), located perpendicular to the front lot line.
 3. If 18 feet or more in height, ground story shall count as 2 stories towards maximum building height.

4.0 BUILDING TYPES

Accessory Structure Table

Accessory Structures	Districts																	
	DT-1	DT-2	DT-3	MS-1	MS-2	MS-3	CX-1	CX-2	ID-1	ID-2	MX-1	MX-2	NX-#	N-#-1	N-#-2	N-#-3	OS	Reference
Accessory Buildings																		4.20.3
Construction Structures	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.3.A.
Kiosk				●	●	●	●	●	●	●	●	●	●				●	4.20.3.B.
Out Building & Garage				●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.3.C.
Parking Structure	●	●	●	●	●	●	●	●	●	●	●	●						4.20.3.D.
Temporary Building	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.3.E.
Accessory Outdoor Structures																		4.20.4
Ball Court	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.4.A.
Deck & Patio	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.4.B.
Dog Run								●	●	●							●	4.20.4.C.
Flag Pole	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.4.E.
Fuel Pumps & Canopies						●			●									4.20.4.F.
Gazebo											●	●	●	●	●	●	●	4.20.4.G.
Landscape Features	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.4.H.
Temporary Storage Container	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.4.I.
Accessory Urban Agriculture Structures																		4.20.5
Accessory Farm Structures	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.5.A.
Compost Bins	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.5.B.
Henhouses	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.5.C.
Accessory Renewable Energy Structures																		4.20.6
Solar - Building-Mounted	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.6.A.
Solar - Freestanding						●	●	●	●	●	●	●	●	●	●	●	●	4.20.6.B.
Solar - Parking Lot Canopy				●	●	●	●	●	●	●	●	●						4.20.6.C.
Wind - Freestanding						●		●	●	●		●						4.20.6.D.
Wind - Roof-Mounted	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.6.E.

- Permitted
- Permitted subject to Use-Specific Regulations

Figure 4.20-A Accessory Structure Table

4.0 BUILDING TYPES

Accessory Structure Table

ACCESSORY STRUCTURES	DISTRICTS																	
	DT-1	DT-2	DT-3	MS-1	MS-2	MS-3	CX-1	CX-2	ID-1	ID-2	MX-1	MX-2	NX-#	N-#-1	N-#-2	N-#-3	OS	Reference
Accessory Utility Structures																		4.20.7
Antenna & Satellite Dish						●		●	●	●	●	●	●	●	●	●	●	4.20.7.A.
Electric Vehicle Charging Stations, Levels 1 & 2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.7.B.
Electric Vehicle Charging Stations, Levels 3	●	●	●				●	●	●	●								4.20.7.B.
Freestanding Radio or Wireless Tower						●	●	●	●	●		●						4.20.7.C.
Mechanical Equipment	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.7.D.
Rainwater Collection/Cistern	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.20.7.E.
Small Cell Nodes	○	○	○	○	○	○	○	○	○	○	○	○					○	4.20.7.F
Transportation Shelter	●	●	●	●	●	●	●	●	●	●	●	●	●				●	4.20.7.G.

●

 Permitted

●

 Permitted subject to Use-Specific Regulations

○

 Requires a Special Permit

Figure 4.20-B Accessory Structure Table (continued)

4.0 BUILDING TYPES

Accessory Buildings

4.20.3 ACCESSORY BUILDINGS

Accessory Buildings are fully enclosed, unless otherwise stated. The following are classified as Accessory Buildings:

A. Construction Structures. Temporary structures associated with a construction project, including: temporary buildings used to house offices associated with construction and/or sales and marketing for the development; and temporary storage and waste containers.

- (1) Construction Structures are permitted in all yards.
- (2) Construction Structures are only permitted in conjunction with open building permits and shall be removed when building permits are closed.
- (3) Two Construction Structures are permitted per development project with one additional structure per every 2 acres of lot area.
- (4) Wheels and chassis on temporary buildings shall be screened from the street by skirting.

B. Kiosk. An accessory building with limited space for the proprietor and associated goods and no space for customers to enter the structure, with the exception of bathrooms. A Kiosk is not permitted when a principal structure is located on the lot. Refer to Figure 4.20-C Kiosk.

- (1) **Yard.** Permitted in all yards.
- (2) **Use.**
 - (a) In the OS district, a Kiosk may contain a Neighborhood Retail or Service Use (refer to 3.0 Uses).
 - (b) In the MS, CX, ID, MX, or NX districts, a Kiosk may only be utilized to house attendants for parking lots as principal uses, as defined in

3.3.8.A., and not for any other use. For such parking lots in such districts, any accessory structure on the lot must satisfy the requirements of this section.

- (3) **Area.** Maximum of 500 square feet floor area.
- (4) **Height.** Maximum of one story or 15 feet (refer to 4.18.2 Height).
- (5) **Facade Requirements.** A Kiosk shall fulfill the following facade requirements:
 - (a) Front and corner facades shall have a minimum transparency of 20 percent (refer to 4.18.4.A.).
 - (b) The kiosk shall be oriented toward the front of corner lot line. The primary sales or service windows or principal entrance shall be located on the front or corner facade.
- (6) **Roof Type.** Pitched roof type is required.
- (7) **Permanent Structure.** No wheels, hitch, or chassis shall be located on a kiosk.
- (8) **Materials.** Permitted materials include durable, natural materials, such as stone, brick, stucco, metal, concrete, and painted or stained wood.

C. Out Building and Garage. A fully enclosed building on a lot that is detached from the principal structure on the same lot. A principal structure is required, unless otherwise stated. Typical Out Buildings include garages, pool houses, workshops, barns, or sheds.

- (1) **Side and Rear Setback.** Minimum side and rear setback of an Out Building shall be 5 feet.
- (2) **Height.** The height of the Out Building may be one story lower than the principal building utilizing the floor to floor heights of the principal building.
- (3) **Residential Districts.** A maximum of one Out Building shall be located on a lot zoned Neighborhood (N) or Neighborhood Mix (NX).
- (4) **OS Districts.** No principal structure is required. Uses may not include retail sales or service.

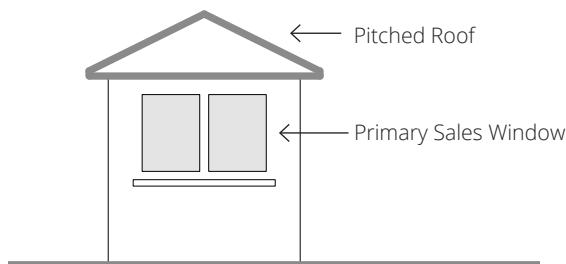


Figure 4.20-C Kiosk

4.0 BUILDING TYPES

Accessory Buildings

D. Parking Structure. A stand alone accessory structure for decked, multi-level parking (refer to Figure 4.20-D and Figure 4.20-E). A parking structure is not necessarily fully enclosed.

- (1) **Location.** An accessory parking structure shall be located as follows:
 - (a) Parking Structures shall be located in the rear yard only and shall be screened from view from the front of the lot or any Primary Street by the principal building.
 - (b) Parking Structures shall not extend closer to the front, corner, or side lot line than the principal structure.
- (2) **Height.** The overall height of a Parking Structure shall be one story lower than the majority height of the principal structure, not including the roof type.

E. Temporary Building. A temporary structure typically associated with a temporary event, such as a circus or temporary sale (refer to 3.6 Temporary Uses).

- (1) **Yard.** Permitted in all yards.
- (2) Temporary buildings associated with a temporary event shall be removed within 24 hours of the close of the event.
- (3) Wheels and chassis shall be screened by skirting.
- (4) Tents are considered a type of Temporary Building.
 - (a) Tents are permitted in all districts and are the only Temporary Building permitted in districts MX-1 and NX districts.
 - (b) Height shall not exceed that of the permitted Building Type(s) (refer to 4.3 through 4.16).
 - (c) Tents must be constructed of fire retardant material.
 - (d) Guy wires, stakes, and other supports must be clearly marked and secured.

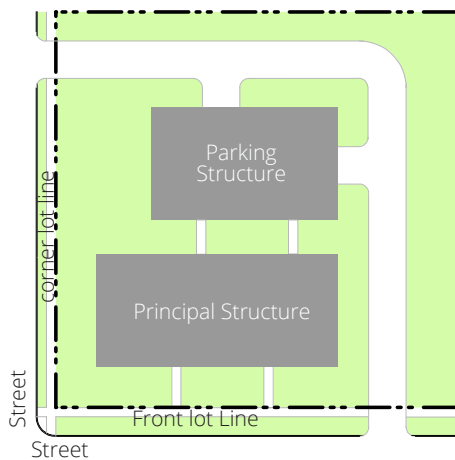


Figure 4.20-D Plan of Parking Structure.

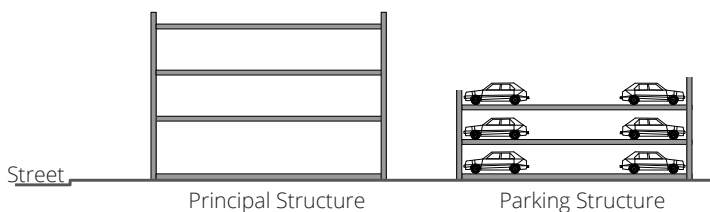


Figure 4.20-E Section of Parking Structure.



2010 Census Profile

490 Capitol Ave, Hartford, Connecticut, 06106
Drive Time: 10 minute radius

Prepared by Esri
Latitude: 41.76352
Longitude: -72.69293

	2000	2010	2000-2010 Annual Rate
Population	162,721	165,783	0.19%
Households	63,256	63,621	0.06%
Housing Units	69,555	70,915	0.19%
Population by Race			
Total		165,783	100.0%
Population Reporting One Race		158,959	95.9%
White		67,832	40.9%
Black		49,713	30.0%
American Indian		906	0.5%
Asian		6,583	4.0%
Pacific Islander		94	0.1%
Some Other Race		33,831	20.4%
Population Reporting Two or More Races		6,824	4.1%
Total Hispanic Population		62,921	38.0%
Population by Sex			
Male		79,378	47.9%
Female		86,405	52.1%
Population by Age			
Total		165,781	100.0%
Age 0 - 4		11,986	7.2%
Age 5 - 9		11,148	6.7%
Age 10 - 14		11,308	6.8%
Age 15 - 19		13,352	8.1%
Age 20 - 24		14,607	8.8%
Age 25 - 29		13,876	8.4%
Age 30 - 34		11,680	7.0%
Age 35 - 39		10,744	6.5%
Age 40 - 44		11,109	6.7%
Age 45 - 49		11,408	6.9%
Age 50 - 54		10,680	6.4%
Age 55 - 59		8,976	5.4%
Age 60 - 64		7,523	4.5%
Age 65 - 69		5,176	3.1%
Age 70 - 74		3,742	2.3%
Age 75 - 79		2,995	1.8%
Age 80 - 84		2,460	1.5%
Age 85+		3,014	1.8%
Age 18+		123,973	74.8%
Age 65+		17,387	10.5%

Data Note: Hispanic population can be of any race. Census 2010 medians are computed from reported data distributions.

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri converted Census 2000 data into 2010 geography.

Households by Type		
Total	63,622	100.0%
Households with 1 Person	21,490	33.8%
Households with 2+ People	42,132	66.2%
Family Households	37,148	58.4%
Husband-wife Families	17,448	27.4%
With Own Children	7,836	12.3%
Other Family (No Spouse Present)	19,700	31.0%
With Own Children	11,449	18.0%
Nonfamily Households	4,984	7.8%
All Households with Children	22,142	34.8%
Multigenerational Households	3,394	5.3%
Unmarried Partner Households	5,751	9.0%
Male-female	5,177	8.1%
Same-sex	574	0.9%
Average Household Size	2.48	
Family Households by Size		
Total	37,147	100.0%
2 People	12,803	34.5%
3 People	9,806	26.4%
4 People	7,617	20.5%
5 People	3,949	10.6%
6 People	1,726	4.6%
7+ People	1,246	3.4%
Average Family Size	3.21	
Nonfamily Households by Size		
Total	26,473	100.0%
1 Person	21,490	81.2%
2 People	4,103	15.5%
3 People	610	2.3%
4 People	175	0.7%
5 People	61	0.2%
6 People	17	0.1%
7+ People	17	0.1%
Average Nonfamily Size	1.23	
Population by Relationship and Household Type		
Total	165,783	100.0%
In Households	157,620	95.1%
In Family Households	124,939	75.4%
Householder	36,999	22.3%
Spouse	17,386	10.5%
Child	55,630	33.6%
Other relative	9,305	5.6%
Nonrelative	5,620	3.4%
In Nonfamily Households	32,681	19.7%
In Group Quarters	8,163	4.9%
Institutionalized Population	3,174	1.9%
Noninstitutionalized Population	4,989	3.0%

Data Note: **Households with children** include any households with people under age 18, related or not. **Multigenerational households** are families with 3 or more parent-child relationships. **Unmarried partner households** are usually classified as nonfamily households unless there is another member of the household related to the householder. Multigenerational and unmarried partner households are reported only to the tract level. Esri estimated block group data, which is used to estimate polygons or non-standard geography. **Average family size** excludes nonrelatives.

Source: U.S. Census Bureau, Census 2010 Summary File 1.

Family Households by Age of Householder		
Total	37,148	100.0%
Householder Age 15 - 44	18,760	50.5%
Householder Age 45 - 54	8,166	22.0%
Householder Age 55 - 64	5,390	14.5%
Householder Age 65 - 74	2,788	7.5%
Householder Age 75+	2,044	5.5%
Nonfamily Households by Age of Householder		
Total	26,474	100.0%
Householder Age 15 - 44	10,021	37.9%
Householder Age 45 - 54	4,815	18.2%
Householder Age 55 - 64	4,987	18.8%
Householder Age 65 - 74	3,181	12.0%
Householder Age 75+	3,470	13.1%
Households by Race of Householder		
Total	63,621	100.0%
Householder is White Alone	29,056	45.7%
Householder is Black Alone	18,735	29.4%
Householder is American Indian Alone	323	0.5%
Householder is Asian Alone	2,257	3.5%
Householder is Pacific Islander Alone	32	0.1%
Householder is Some Other Race Alone	11,011	17.3%
Householder is Two or More Races	2,207	3.5%
Households with Hispanic Householder	20,502	32.2%
Husband-wife Families by Race of Householder		
Total	17,448	100.0%
Householder is White Alone	9,428	54.0%
Householder is Black Alone	3,643	20.9%
Householder is American Indian Alone	73	0.4%
Householder is Asian Alone	1,153	6.6%
Householder is Pacific Islander Alone	6	0.0%
Householder is Some Other Race Alone	2,579	14.8%
Householder is Two or More Races	566	3.2%
Husband-wife Families with Hispanic Householder	5,074	29.1%
Other Families (No Spouse) by Race of Householder		
Total	19,699	100.0%
Householder is White Alone	5,323	27.0%
Householder is Black Alone	7,788	39.5%
Householder is American Indian Alone	122	0.6%
Householder is Asian Alone	288	1.5%
Householder is Pacific Islander Alone	12	0.1%
Householder is Some Other Race Alone	5,332	27.1%
Householder is Two or More Races	834	4.2%
Other Families with Hispanic Householder	9,202	46.7%
Nonfamily Households by Race of Householder		
Total	26,474	100.0%
Householder is White Alone	14,305	54.0%
Householder is Black Alone	7,305	27.6%
Householder is American Indian Alone	128	0.5%
Householder is Asian Alone	815	3.1%
Householder is Pacific Islander Alone	13	0.0%
Householder is Some Other Race Alone	3,100	11.7%
Householder is Two or More Races	808	3.1%
Nonfamily Households with Hispanic Householder	6,226	23.5%

Source: U.S. Census Bureau, Census 2010 Summary File 1.



2010 Census Profile

490 Capitol Ave, Hartford, Connecticut, 06106
Drive Time: 10 minute radius

Prepared by Esri
Latitude: 41.76352
Longitude: -72.69293

Total Housing Units by Occupancy

Total	70,965	100.0%
Occupied Housing Units	63,621	89.7%
Vacant Housing Units		
For Rent	4,522	6.4%
Rented, not Occupied	118	0.2%
For Sale Only	449	0.6%
Sold, not Occupied	128	0.2%
For Seasonal/Recreational/Occasional Use	303	0.4%
For Migrant Workers	1	0.0%
Other Vacant	1,823	2.6%
Total Vacancy Rate	10.3%	

Households by Tenure and Mortgage Status

Total	63,621	100.0%
Owner Occupied	21,161	33.3%
Owned with a Mortgage/Loan	16,095	25.3%
Owned Free and Clear	5,066	8.0%
Average Household Size	2.66	
Renter Occupied	42,460	66.7%
Average Household Size	2.39	

Owner-occupied Housing Units by Race of Householder

Total	21,161	100.0%
Householder is White Alone	13,377	63.2%
Householder is Black Alone	4,785	22.6%
Householder is American Indian Alone	61	0.3%
Householder is Asian Alone	674	3.2%
Householder is Pacific Islander Alone	7	0.0%
Householder is Some Other Race Alone	1,702	8.0%
Householder is Two or More Races	555	2.6%
Owner-occupied Housing Units with Hispanic Householder	3,736	17.7%

Renter-occupied Housing Units by Race of Householder

Total	42,459	100.0%
Householder is White Alone	15,679	36.9%
Householder is Black Alone	13,950	32.9%
Householder is American Indian Alone	262	0.6%
Householder is Asian Alone	1,582	3.7%
Householder is Pacific Islander Alone	24	0.1%
Householder is Some Other Race Alone	9,309	21.9%
Householder is Two or More Races	1,653	3.9%
Renter-occupied Housing Units with Hispanic Householder	16,767	39.5%

Average Household Size by Race/Hispanic Origin of Householder

Householder is White Alone	2.19
Householder is Black Alone	2.52
Householder is American Indian Alone	2.59
Householder is Asian Alone	2.76
Householder is Pacific Islander Alone	2.56
Householder is Some Other Race Alone	3.05
Householder is Two or More Races	2.69
Householder is Hispanic	2.94

Source: U.S. Census Bureau, Census 2010 Summary File 1.



2010 Census Profile

490 Capitol Ave, Hartford, Connecticut, 06106
Drive Time: 15 minute radius

Prepared by Esri
Latitude: 41.76352
Longitude: -72.69293

	2000	2010	2000-2010 Annual Rate
Population	321,831	330,149	0.26%
Households	126,335	128,830	0.20%
Housing Units	135,083	139,633	0.33%
Population by Race			
Total		330,149	100.0%
Population Reporting One Race		318,739	96.5%
White		175,148	53.1%
Black		83,461	25.3%
American Indian		1,325	0.4%
Asian		16,711	5.1%
Pacific Islander		136	0.0%
Some Other Race		41,958	12.7%
Population Reporting Two or More Races		11,410	3.5%
Total Hispanic Population		82,565	25.0%
Population by Sex			
Male		156,645	47.4%
Female		173,504	52.6%
Population by Age			
Total		330,149	100.0%
Age 0 - 4		21,240	6.4%
Age 5 - 9		20,861	6.3%
Age 10 - 14		21,539	6.5%
Age 15 - 19		24,783	7.5%
Age 20 - 24		24,844	7.5%
Age 25 - 29		24,244	7.3%
Age 30 - 34		21,538	6.5%
Age 35 - 39		20,646	6.3%
Age 40 - 44		22,077	6.7%
Age 45 - 49		23,813	7.2%
Age 50 - 54		22,908	6.9%
Age 55 - 59		19,782	6.0%
Age 60 - 64		17,091	5.2%
Age 65 - 69		12,116	3.7%
Age 70 - 74		9,200	2.8%
Age 75 - 79		7,909	2.4%
Age 80 - 84		7,162	2.2%
Age 85+		8,395	2.5%
Age 18+		252,419	76.5%
Age 65+		44,782	13.6%

Data Note: Hispanic population can be of any race. Census 2010 medians are computed from reported data distributions.

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri converted Census 2000 data into 2010 geography.

Households by Type		
Total	128,830	100.0%
Households with 1 Person	40,878	31.7%
Households with 2+ People	87,952	68.3%
Family Households	79,043	61.4%
Husband-wife Families	46,694	36.2%
With Own Children	19,637	15.2%
Other Family (No Spouse Present)	32,349	25.1%
With Own Children	17,829	13.8%
Nonfamily Households	8,909	6.9%
All Households with Children	42,273	32.8%
Multigenerational Households	6,037	4.7%
Unmarried Partner Households	9,727	7.6%
Male-female	8,611	6.7%
Same-sex	1,116	0.9%
Average Household Size	2.45	
Family Households by Size		
Total	79,043	100.0%
2 People	30,472	38.6%
3 People	20,033	25.3%
4 People	16,067	20.3%
5 People	7,618	9.6%
6 People	2,949	3.7%
7+ People	1,904	2.4%
Average Family Size	3.12	
Nonfamily Households by Size		
Total	49,786	100.0%
1 Person	40,878	82.1%
2 People	7,425	14.9%
3 People	1,050	2.1%
4 People	292	0.6%
5 People	92	0.2%
6 People	29	0.1%
7+ People	20	0.0%
Average Nonfamily Size	1.22	
Population by Relationship and Household Type		
Total	330,149	100.0%
In Households	316,191	95.8%
In Family Households	255,480	77.4%
Householder	78,911	23.9%
Spouse	46,610	14.1%
Child	105,332	31.9%
Other relative	15,916	4.8%
Nonrelative	8,712	2.6%
In Nonfamily Households	60,711	18.4%
In Group Quarters	13,958	4.2%
Institutionalized Population	5,632	1.7%
Noninstitutionalized Population	8,326	2.5%

Data Note: **Households with children** include any households with people under age 18, related or not. **Multigenerational households** are families with 3 or more parent-child relationships. **Unmarried partner households** are usually classified as nonfamily households unless there is another member of the household related to the householder. Multigenerational and unmarried partner households are reported only to the tract level. Esri estimated block group data, which is used to estimate polygons or non-standard geography. **Average family size** excludes nonrelatives.

Source: U.S. Census Bureau, Census 2010 Summary File 1.



2010 Census Profile

490 Capitol Ave, Hartford, Connecticut, 06106
Drive Time: 15 minute radius

Prepared by Esri
Latitude: 41.76352
Longitude: -72.69293

Family Households by Age of Householder		
Total	79,042	100.0%
Householder Age 15 - 44	34,063	43.1%
Householder Age 45 - 54	18,397	23.3%
Householder Age 55 - 64	13,229	16.7%
Householder Age 65 - 74	7,199	9.1%
Householder Age 75+	6,154	7.8%
Nonfamily Households by Age of Householder		
Total	49,786	100.0%
Householder Age 15 - 44	16,502	33.1%
Householder Age 45 - 54	8,512	17.1%
Householder Age 55 - 64	9,247	18.6%
Householder Age 65 - 74	6,447	12.9%
Householder Age 75+	9,078	18.2%
Households by Race of Householder		
Total	128,829	100.0%
Householder is White Alone	75,634	58.7%
Householder is Black Alone	30,532	23.7%
Householder is American Indian Alone	473	0.4%
Householder is Asian Alone	5,387	4.2%
Householder is Pacific Islander Alone	46	0.0%
Householder is Some Other Race Alone	13,433	10.4%
Householder is Two or More Races	3,324	2.6%
Households with Hispanic Householder	26,219	20.4%
Husband-wife Families by Race of Householder		
Total	46,694	100.0%
Householder is White Alone	31,108	66.6%
Householder is Black Alone	7,604	16.3%
Householder is American Indian Alone	118	0.3%
Householder is Asian Alone	3,335	7.1%
Householder is Pacific Islander Alone	12	0.0%
Householder is Some Other Race Alone	3,498	7.5%
Householder is Two or More Races	1,019	2.2%
Husband-wife Families with Hispanic Householder	7,403	15.9%
Other Families (No Spouse) by Race of Householder		
Total	32,348	100.0%
Householder is White Alone	11,657	36.0%
Householder is Black Alone	12,347	38.2%
Householder is American Indian Alone	173	0.5%
Householder is Asian Alone	607	1.9%
Householder is Pacific Islander Alone	15	0.0%
Householder is Some Other Race Alone	6,363	19.7%
Householder is Two or More Races	1,186	3.7%
Other Families with Hispanic Householder	11,347	35.1%
Nonfamily Households by Race of Householder		
Total	49,787	100.0%
Householder is White Alone	32,869	66.0%
Householder is Black Alone	10,581	21.3%
Householder is American Indian Alone	182	0.4%
Householder is Asian Alone	1,445	2.9%
Householder is Pacific Islander Alone	19	0.0%
Householder is Some Other Race Alone	3,572	7.2%
Householder is Two or More Races	1,119	2.2%
Nonfamily Households with Hispanic Householder	7,469	15.0%

Source: U.S. Census Bureau, Census 2010 Summary File 1.



2010 Census Profile

490 Capitol Ave, Hartford, Connecticut, 06106
Drive Time: 15 minute radius

Prepared by Esri
Latitude: 41.76352
Longitude: -72.69293

Total Housing Units by Occupancy

Total	139,656	100.0%
Occupied Housing Units	128,830	92.2%
Vacant Housing Units		
For Rent	5,853	4.2%
Rented, not Occupied	182	0.1%
For Sale Only	1,049	0.8%
Sold, not Occupied	282	0.2%
For Seasonal/Recreational/Occasional Use	656	0.5%
For Migrant Workers	2	0.0%
Other Vacant	2,802	2.0%
Total Vacancy Rate	7.7%	

Households by Tenure and Mortgage Status

Total	128,830	100.0%
Owner Occupied	66,476	51.6%
Owned with a Mortgage/Loan	48,476	37.6%
Owned Free and Clear	18,000	14.0%
Average Household Size	2.59	
Renter Occupied	62,354	48.4%
Average Household Size	2.31	

Owner-occupied Housing Units by Race of Householder

Total	66,476	100.0%
Householder is White Alone	48,587	73.1%
Householder is Black Alone	11,682	17.6%
Householder is American Indian Alone	126	0.2%
Householder is Asian Alone	2,205	3.3%
Householder is Pacific Islander Alone	13	0.0%
Householder is Some Other Race Alone	2,706	4.1%
Householder is Two or More Races	1,157	1.7%
Owner-occupied Housing Units with Hispanic Householder	6,418	9.7%

Renter-occupied Housing Units by Race of Householder

Total	62,353	100.0%
Householder is White Alone	27,047	43.4%
Householder is Black Alone	18,850	30.2%
Householder is American Indian Alone	347	0.6%
Householder is Asian Alone	3,182	5.1%
Householder is Pacific Islander Alone	33	0.1%
Householder is Some Other Race Alone	10,727	17.2%
Householder is Two or More Races	2,167	3.5%
Renter-occupied Housing Units with Hispanic Householder	19,801	31.8%

Average Household Size by Race/Hispanic Origin of Householder

Householder is White Alone	2.22
Householder is Black Alone	2.62
Householder is American Indian Alone	2.56
Householder is Asian Alone	2.97
Householder is Pacific Islander Alone	2.76
Householder is Some Other Race Alone	3.09
Householder is Two or More Races	2.74
Householder is Hispanic	2.98

Source: U.S. Census Bureau, Census 2010 Summary File 1.



2010 Census Profile

490 Capitol Ave, Hartford, Connecticut, 06106
Drive Time: 30 minute radius

Prepared by Esri
Latitude: 41.76352
Longitude: -72.69293

	2000	2010	2000-2010 Annual Rate
Population	986,614	1,032,793	0.46%
Households	391,448	410,656	0.48%
Housing Units	412,969	438,727	0.61%
Population by Race			
Total		1,032,793	100.0%
Population Reporting One Race		1,004,448	97.3%
White		757,464	73.3%
Black		130,821	12.7%
American Indian		2,819	0.3%
Asian		43,266	4.2%
Pacific Islander		346	0.0%
Some Other Race		69,732	6.8%
Population Reporting Two or More Races		28,345	2.7%
Total Hispanic Population		156,275	15.1%
Population by Sex			
Male		497,465	48.2%
Female		535,328	51.8%
Population by Age			
Total		1,032,792	100.0%
Age 0 - 4		59,056	5.7%
Age 5 - 9		63,430	6.1%
Age 10 - 14		68,035	6.6%
Age 15 - 19		70,906	6.9%
Age 20 - 24		65,802	6.4%
Age 25 - 29		67,094	6.5%
Age 30 - 34		62,314	6.0%
Age 35 - 39		64,175	6.2%
Age 40 - 44		72,751	7.0%
Age 45 - 49		81,365	7.9%
Age 50 - 54		80,440	7.8%
Age 55 - 59		68,928	6.7%
Age 60 - 64		58,860	5.7%
Age 65 - 69		42,326	4.1%
Age 70 - 74		31,016	3.0%
Age 75 - 79		26,539	2.6%
Age 80 - 84		23,392	2.3%
Age 85+		26,365	2.6%
Age 18+		798,961	77.4%
Age 65+		149,638	14.5%

Data Note: Hispanic population can be of any race. Census 2010 medians are computed from reported data distributions.

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri converted Census 2000 data into 2010 geography.

Households by Type		
Total	410,656	100.0%
Households with 1 Person	120,653	29.4%
Households with 2+ People	290,003	70.6%
Family Households	262,499	63.9%
Husband-wife Families	185,342	45.1%
With Own Children	76,216	18.6%
Other Family (No Spouse Present)	77,157	18.8%
With Own Children	41,359	10.1%
Nonfamily Households	27,504	6.7%
All Households with Children	128,789	31.4%
Multigenerational Households	14,837	3.6%
Unmarried Partner Households	29,017	7.1%
Male-female	25,693	6.3%
Same-sex	3,324	0.8%
Average Household Size	2.44	
Family Households by Size		
Total	262,498	100.0%
2 People	109,478	41.7%
3 People	63,723	24.3%
4 People	54,267	20.7%
5 People	22,998	8.8%
6 People	7,833	3.0%
7+ People	4,199	1.6%
Average Family Size	3.04	
Nonfamily Households by Size		
Total	148,156	100.0%
1 Person	120,653	81.4%
2 People	23,403	15.8%
3 People	2,819	1.9%
4 People	872	0.6%
5 People	270	0.2%
6 People	73	0.0%
7+ People	66	0.0%
Average Nonfamily Size	1.23	
Population by Relationship and Household Type		
Total	1,032,793	100.0%
In Households	1,001,967	97.0%
In Family Households	820,273	79.4%
Householder	262,060	25.4%
Spouse	184,991	17.9%
Child	313,273	30.3%
Other relative	37,940	3.7%
Nonrelative	22,009	2.1%
In Nonfamily Households	181,694	17.6%
In Group Quarters	30,826	3.0%
Institutionalized Population	14,538	1.4%
Noninstitutionalized Population	16,288	1.6%

Data Note: **Households with children** include any households with people under age 18, related or not. **Multigenerational households** are families with 3 or more parent-child relationships. **Unmarried partner households** are usually classified as nonfamily households unless there is another member of the household related to the householder. Multigenerational and unmarried partner households are reported only to the tract level. Esri estimated block group data, which is used to estimate polygons or non-standard geography. **Average family size** excludes nonrelatives.

Source: U.S. Census Bureau, Census 2010 Summary File 1.



2010 Census Profile

490 Capitol Ave, Hartford, Connecticut, 06106
Drive Time: 30 minute radius

Prepared by Esri
Latitude: 41.76352
Longitude: -72.69293

Family Households by Age of Householder		
Total	262,498	100.0%
Householder Age 15 - 44	99,915	38.1%
Householder Age 45 - 54	66,165	25.2%
Householder Age 55 - 64	48,776	18.6%
Householder Age 65 - 74	26,897	10.2%
Householder Age 75+	20,745	7.9%
Nonfamily Households by Age of Householder		
Total	148,156	100.0%
Householder Age 15 - 44	47,135	31.8%
Householder Age 45 - 54	25,894	17.5%
Householder Age 55 - 64	27,337	18.5%
Householder Age 65 - 74	19,044	12.9%
Householder Age 75+	28,746	19.4%
Households by Race of Householder		
Total	410,657	100.0%
Householder is White Alone	319,964	77.9%
Householder is Black Alone	47,286	11.5%
Householder is American Indian Alone	990	0.2%
Householder is Asian Alone	13,489	3.3%
Householder is Pacific Islander Alone	107	0.0%
Householder is Some Other Race Alone	21,777	5.3%
Householder is Two or More Races	7,044	1.7%
Households with Hispanic Householder	47,581	11.6%
Husband-wife Families by Race of Householder		
Total	185,341	100.0%
Householder is White Alone	154,084	83.1%
Householder is Black Alone	13,184	7.1%
Householder is American Indian Alone	333	0.2%
Householder is Asian Alone	9,081	4.9%
Householder is Pacific Islander Alone	37	0.0%
Householder is Some Other Race Alone	6,217	3.4%
Householder is Two or More Races	2,405	1.3%
Husband-wife Families with Hispanic Householder	15,184	8.2%
Other Families (No Spouse) by Race of Householder		
Total	77,157	100.0%
Householder is White Alone	45,158	58.5%
Householder is Black Alone	17,953	23.3%
Householder is American Indian Alone	316	0.4%
Householder is Asian Alone	1,366	1.8%
Householder is Pacific Islander Alone	29	0.0%
Householder is Some Other Race Alone	10,025	13.0%
Householder is Two or More Races	2,310	3.0%
Other Families with Hispanic Householder	19,538	25.3%
Nonfamily Households by Race of Householder		
Total	148,157	100.0%
Householder is White Alone	120,721	81.5%
Householder is Black Alone	16,148	10.9%
Householder is American Indian Alone	340	0.2%
Householder is Asian Alone	3,042	2.1%
Householder is Pacific Islander Alone	41	0.0%
Householder is Some Other Race Alone	5,536	3.7%
Householder is Two or More Races	2,329	1.6%
Nonfamily Households with Hispanic Householder	12,859	8.7%

Source: U.S. Census Bureau, Census 2010 Summary File 1.



2010 Census Profile

490 Capitol Ave, Hartford, Connecticut, 06106
Drive Time: 30 minute radius

Prepared by Esri
Latitude: 41.76352
Longitude: -72.69293

Total Housing Units by Occupancy

Total	438,712	100.0%
Occupied Housing Units	410,656	93.6%
Vacant Housing Units		
For Rent	12,736	2.9%
Rented, not Occupied	509	0.1%
For Sale Only	3,657	0.8%
Sold, not Occupied	875	0.2%
For Seasonal/Recreational/Occasional Use	2,934	0.7%
For Migrant Workers	17	0.0%
Other Vacant	7,328	1.7%
Total Vacancy Rate	6.4%	

Households by Tenure and Mortgage Status

Total	410,656	100.0%
Owner Occupied	264,266	64.4%
Owned with a Mortgage/Loan	192,844	47.0%
Owned Free and Clear	71,422	17.4%
Average Household Size	2.57	
Renter Occupied	146,390	35.6%
Average Household Size	2.20	

Owner-occupied Housing Units by Race of Householder

Total	264,265	100.0%
Householder is White Alone	229,528	86.9%
Householder is Black Alone	19,458	7.4%
Householder is American Indian Alone	368	0.1%
Householder is Asian Alone	7,051	2.7%
Householder is Pacific Islander Alone	39	0.0%
Householder is Some Other Race Alone	4,946	1.9%
Householder is Two or More Races	2,875	1.1%
Owner-occupied Housing Units with Hispanic Householder	13,795	5.2%

Renter-occupied Housing Units by Race of Householder

Total	146,391	100.0%
Householder is White Alone	90,436	61.8%
Householder is Black Alone	27,828	19.0%
Householder is American Indian Alone	622	0.4%
Householder is Asian Alone	6,438	4.4%
Householder is Pacific Islander Alone	68	0.0%
Householder is Some Other Race Alone	16,831	11.5%
Householder is Two or More Races	4,168	2.8%
Renter-occupied Housing Units with Hispanic Householder	33,786	23.1%

Average Household Size by Race/Hispanic Origin of Householder

Householder is White Alone	2.33
Householder is Black Alone	2.63
Householder is American Indian Alone	2.71
Householder is Asian Alone	3.05
Householder is Pacific Islander Alone	2.71
Householder is Some Other Race Alone	3.14
Householder is Two or More Races	2.74
Householder is Hispanic	3.02

Source: U.S. Census Bureau, Census 2010 Summary File 1.



Site Details Map

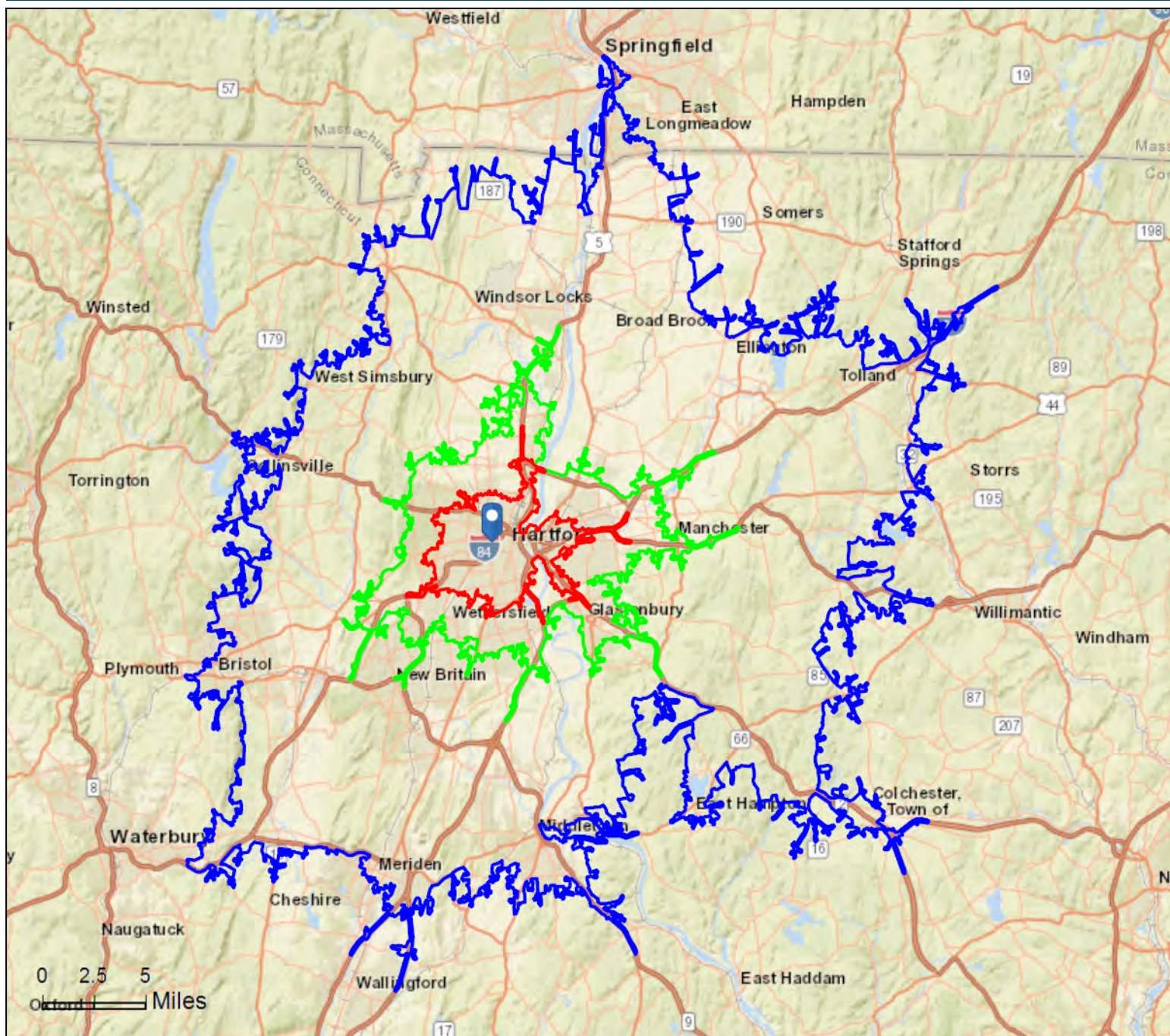
490 Capitol Ave, Hartford, Connecticut, 06106

Drive Time: 10, 15, 30 minute radii

Site Details Map

Latitude: 41.76352

Longitude: -72.69293



This site is located in:

City: Hartford
County: Hartford County
State: Connecticut
ZIP Code: 06106
Census Tract: 09003524600
Census Block Group: 090035246004
CBSA: Hartford-West Hartford-East Hartford, CT Metropolitan Statistical Area

October 30, 2019

APPENDIX D

Appraisal Economics Inc., Fair Market Value Study, November 5, 2019

NOTE: DUE TO ENCRYPTION OF PDF FORMAT FILE,
ATTACHMENT TO THIS REPORT WAS NOT PERMITTED.

APPENDIX E

Appraisal Economics Inc., Orderly Liquidation Value, November 5, 2019



140 E. Ridgewood Ave., Ste. 580N
Paramus, New Jersey 07652-3915
Telephone +1 201 265 3333
Web www.ae-us.com

November 5, 2019

Mr. Thomas Pysh
Property Agent II
State of Connecticut
450 Columbus Boulevard, Suite 1402
Hartford, Connecticut 06103

Re: Orderly Liquidation Value of the Capitol District Energy Centre Cogeneration Associates Power Plant

Dear Mr. Pysh:

Pursuant to your authorization, Appraisal Economics Inc. has conducted an appraisal of the Capitol District Energy Centre Cogeneration Associates Power Plant (“CDECCA Power Plant” or the “subject property”) located at 490 Capitol Avenue, Hartford, Connecticut.

This report has been prepared in compliance with the Uniform Standards of Professional Appraisal Practice. The orderly liquidation value is determined as of March 31, 2021 (the “Valuation Date”). Note that the Valuation Date is about 1.5 years after November 5, 2019 (the “Report Date”). Use of this report signifies your acceptance of the limiting conditions contained in the report and the limitations outlined in the engagement agreement.

A summary of the information collected is provided in this report and used to determine the orderly liquidation value. It assumes that the buyer will be responsible for all dismantling and removal costs of the equipment. The subject property is currently an operating plant and is expected to continue operating on the Valuation Date, March 31, 2021. Orderly liquidation value is based on a hypothetical condition that assumes the CDECCA Power Plant will shut down. As the Valuation Date is only about 1.5 years after this Report Date, we have assumed that the orderly liquidation value will not materially change over this period. However, this is dependent on the future economy and equipment demand which could change and result in a different value.

The subject property currently provides steam and chilled water to buildings connected to the Capitol Area System thermal energy loop. It also provides backup power to the New England Independent System Operator (ISO-NE). Assuming the steam and chilled water supply agreement is not renewed by the State of Connecticut on the Valuation Date, the highest and best use is to continue supplying only backup power. The orderly liquidation value as provided in this report is based on a hypothetical condition that the CDECCA Power Plant will be shut down with the



equipment sold in a piecemeal fashion. We provide a highest and best use appraisal as an operating power plant in a separate report.

Respectfully submitted,
APPRAISAL ECONOMICS INC.

Joseph G. Kettell, ASA

draft

Confidential

**CAPITOL DISTRICT ENERGY
CENTRE COGENERATION
ASSOCIATES POWER PLANT
490 CAPITOL AVENUE,
HARTFORD, CONNECTICUT**

***Prepared for:
THE STATE OF CONNECTICUT***

**ORDERLY LIQUIDATION VALUE
As of March 31, 2021**



APPRAISAL ECONOMICS
Independent Valuation Experts



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APPENDICES

- I Statement of Assumptions and Limiting Conditions
- II Professional Qualifications



1.0 APPRAISER'S CERTIFICATION

We certify to the best of our knowledge and belief:

1. The statements of fact contained in this report are true and correct.
2. The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions and are our personal, impartial, and unbiased professional analyses, opinions, and conclusions.
3. We have no present or prospective interest in the property that is the subject property of this report, and we have no personal interest with respect to the parties involved.
4. We have no bias with respect to the property that is the subject property of this report or to the parties involved with this assignment.
5. Our engagement in this assignment was not contingent upon developing or reporting predetermined results.
6. Our compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
7. Our analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice.
8. We have made a personal inspection of the property that is the subject property of this report on May 30, 2019.
9. No one provided significant property appraisal assistance to the persons signing this certification.
10. Because of our education, training, and experience as an equipment appraiser, we are qualified to perform this assignment.
11. We have also performed a value-in-use appraisal of the subject property which is provided in a separate report. Other than these two reports, we have performed no other services, as an appraiser or in any other capacity, regarding the property that is the subject property of this report within the three-year period immediately preceding acceptance of this assignment.



12. Certification and Re-Certification: The American Society of Appraisers has a mandatory recertification program for all of its senior members. We are in compliance with this program.

Joseph G. Kettell, ASA
Managing Director

Alkesh Desai,
Senior Associate

Anthony J. Rinaldi, Jr.
State of Connecticut Certified Real Estate
Temporary Appraiser License Number RTG0003398



2.0 SUMMARY OF SALIENT FACTS AND CONCLUSIONS

Property address	490 Capitol Avenue, Hartford, Reeves County, Connecticut 06106
Property tax identification number(s)	202-416-020
Owner of record	Hull Street Energy, LLC
Client	State of Connecticut
Intended use	Planning purposes by State of Connecticut and to be used for no other purpose
Date of the report	November 5, 2019
Date of inspection	May 30, 2019
Valuation Date of the appraisal	March 31, 2021
Property rights appraised	Fee Simple
Property type	Industrial
Land area	53,968 Square Foot
Improvements	30,666 Square foot
Machinery & Equipment	Currently used as Power Plant
Zoning designation	CX-1 Multi-use Mixed
Highest and best use as vacant	Commercial and Industrial Development
Highest and best use as improved	Current Use of Power Plant
Orderly Liquidation Value	\$6,465,000



3.0 PREMISE AND SCOPE OF THE APPRAISAL

In developing this appraisal report, our scope of work involves the following:

1. Inspection of the subject property by Joseph G. Kettell and Anthony J. Rinaldi, Jr. on May 30, 2019;
2. Estimation of a reasonable exposure time and marketing time associated with our opinion of market value;
3. Collection of data specific to the physical characteristics of the subject property and the neighborhood in which it is located from primary and secondary sources;
4. Review of data regarding taxes, zoning, utilities, easements, and municipal services;
5. Consideration of all three approaches to value;
6. The land value was based upon an analysis of comparable land sales;
7. Confirmation of all land sales data, to the extent considered reasonable and practical by our peers, with one or more of the following: public records, principals, managers, and real estate agents representing principals. It should be noted that speaking with both the City of Hartford and Reeves County officials, they are well behind in updating tax records, deeds and subdivisions. This is partly due to the growth within the immediate area. All comparables were verified by several sources, including brokers, municipal officials, tax searches and/or real estate commercial services;
8. The subject property currently provides steam and chilled water to buildings connected to the Capitol Area System thermal energy loop. It also provides backup power to the New England Independent System Operator (ISO-NE). Assuming the steam and chilled water supply agreement is not renewed by the State of Connecticut on the Valuation Date, the highest and best use is to continue supplying only backup power. As such, the orderly liquidation value is based on a hypothetical condition that the CDECCA Power Plant will be shut down with the equipment sold in a piecemeal fashion. The orderly liquidation value assumes that the power plant will be sold as one unit and will be installed and operated at another location. We provide a highest and best use appraisal of the subject property as an operating power plant in a separate report.
9. We assume that the buyer will be responsible for all dismantling and removal costs of the equipment. The subject property is currently an



operating plant and is expected to continue operating on the Valuation Date, March 31, 2021.

10. The cost approach was performed by using construction cost data from Marshall & Swift Valuation Service. The depreciation was deducted from all causes – physical deterioration, functional obsolescence, and external/economic obsolescence;
11. The market approach was performed by using price data on the machinery and equipment from manufacturers, dealers of used equipment, as well as other available resources; and
12. Preparation of an appraisal report in which we present our data, analysis, and conclusions. Our estimated value of the land, building, and plant equipment is summed to obtain the orderly liquidation value of the subject property. As the Valuation Date is only about 1.5 years after the Report Date, we have assumed that the orderly liquidation value will not materially change over this period. However, this is dependent on the future of both the economy and equipment demand which could change and result in a different value.

3.1 Ownership and Property History

The current owner of the subject property is Hull Street Energy, LLC which has a mailing address of 490 Capitol Avenue, Hartford, Connecticut. Based on tax records, there have been no sales within three years prior to the Report Date. We are unaware of any current listings or offers.

3.2 Definitions

Orderly Liquidation Value

For purposes of this report, orderly liquidation value is synonymous with market value and defined as,

“Market value means the most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby,

1. Buyer and seller are typically motivated;



2. Both parties are well informed or well advised, and acting in what they consider their own best interest;
3. A reasonable time is allowed for exposure in the open market;
4. Payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto; and
5. The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.”¹

Property Rights Appraised

The property rights appraised are all rights existing in the **Fee Simple Interest**. A fee simple interest is defined as:

“Absolute ownership unencumbered by any other interest or estate, subject only to the limitations imposed by the governmental powers of taxation, eminent domain, police power, and escheat.”²

Exposure Time, is defined as,

“The estimated length of time the property interest being appraised would have been offered on the market prior to the hypothetical consummation of a sale at market value on the Valuation Date of the appraisal; a retrospective estimate based on an analysis of past events assuming a competitive and open market.”³

Exposure time is always presumed to occur prior to the Valuation Date of the appraisal. The overall concept of reasonable exposure encompasses not only adequate, sufficient, and reasonable time but also adequate, sufficient, and reasonable effort.

Market value estimates imply that an adequate marketing effort and reasonable time for exposure occurred prior to the Valuation Date of the appraisal. For purposes of this report, market value is synonymous with orderly liquidation value. In the case of forced liquidation, the time frame for marketing the property

¹ *Uniform Standards of Professional Appraisal Practice*, The Appraisal Foundation, 2018-2019 Edition.

² *The Dictionary of Real Estate Appraisal*, 6th Edition, The Appraisal Institute, Chicago, 2016.

³ Ibid.



rights are so severely limited that an adequate marketing program cannot be implemented.

Based on the current market trends, the estimated exposure time for the Subject property is 6 to 12 months. This estimate of exposure time is based on conversations with brokers and other real estate professionals in the market, and our judgment.

Marketing Time, is defined as,

“An opinion of the amount of time it might take to sell a real or personal property interest at the concluded market value level during the period immediately after the Valuation Date of an appraisal. Marketing time differs from exposure time, which is always presumed to precede the Valuation Date of an appraisal.”⁴

Reasonable marketing time is an estimate of the amount of time it would take to sell an interest in real property at its estimated market value during the period immediately after the Valuation Date of the appraisal; the anticipated time required to expose the property to a pool of prospective purchasers and to allow appropriate time for negotiation, the exercise of due diligence, and the consummation of a sale at a price supportable by concurrent market conditions.

We have estimated that a marketing time of 6 to 12 months should be sufficient to locate a purchaser. We have considered the current market conditions and have concluded a value for the subject property that should generate interest sufficient to make this marketing time realistic. The concluded marketing time assumes that adequate financing is available at reasonable rates, the market conditions remain relatively unchanged, and the current economic conditions do not dramatically change.

Extraordinary Assumption, is defined as an assumption, directly related to a specific assignment, as of the Valuation Date of the assignment results, which, if found to be false, could alter the appraiser's opinions or conclusions.⁵

This appraisal does not employ any extraordinary assumptions.

Hypothetical Condition, is defined as a condition, directly related to a specific assignment, which is contrary to what is known by the appraiser to exist on the Valuation Date of the assignment results, but is used for the purpose of analysis.⁶

⁴ Ibid.

⁵ Uniform Standards of Professional Appraisal Practice, The Appraisal Foundation, 2018-2019 Edition.

⁶ Ibid.



As the subject property is an operating plant and is expected to continue operating up to the Valuation Date, March 31, 2021, it is assumed that the plant will be shut down so that an orderly liquidation sale can proceed. This is a hypothetical condition of the subject property.

Forced Liquidation Value, is an opinion of the gross amount, expressed in terms of money that typically could be realized from a properly advertised and conducted public auction, with the seller being compelled to sell with a sense of immediacy on an as-is, where - is basis, as of a specific date⁷.

⁷ *Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets*, Third Edition, Copyright 2011, American Society of Appraisers, pp. 11.



4.0 PROPERTY DESCRIPTION

The subject property's site is a 53,968 square foot, triangular shaped lot that appears to be level and at grade to the roadway. The site has minimal parking as the building sits primarily on the boundaries. All common utilities are available to the site.



Tax Parcel ID	202-416-020
Lot Size:	53,968 Square Foot
Shape	Irregular
Zoning	None
Topography/Drainage	No particular drainage problems were observed or disclosed at the time of field inspection. This appraisal assumes that surface water collection, both on-site and in public streets adjacent to the subject property, is adequate.
Easements/ Encroachments	We were not provided a copy of any current title reports to review. Our valuation assumes that there are no known easements, encroachments or restrictions that would have an effect on the marketability or highest and best use of the property and that the subject property has clear and marketable title.
Soil Stability	A soil analysis was not provided. Based on inspection and observation of the site, there appears to be no apparent soil stability issues and assume the subject property's soil is adequate to support the existing improvements.



4.1 Improvement Description

The subject property is a 45-foot-tall, industrial shell building that houses a 62.1 MW natural gas-fired, dual fuel capable, combined-cycle cogeneration plant. The interior of the building is primarily open, with metal decking and stairs to access certain machinery. There is a small office/control room located at the top of the facility.

Gross Building Area	30,666
Year Built	1988
Actual/Physical Age	30+/-
Economic Life	45
Effective Age	25
Remaining Economic Life	20
Overall Property Condition	Average

Construction Details

Foundation	Masonry on slab
Frame	Steel/Masonry
Roof Structure	Flat Rubber Asphalt
Exterior Doors	Steel
Exterior Walls	Masonry
Windows	Fixed casement
Plumbing System	Adequate
Heating/Cooling	Only in office/control room
Electrical Service	Adequate
Interior Doors	Steel
Interior Walls	Sheetrock in office/control room
Floors	Concrete
Fire Safety/Sprinkler	Wired Smoke Detectors/Wet
Elevator	None

Improvement Analysis

The quality of the subject property is consistent with that of competing properties and appears to have been updated and well maintained. Overall, the market appeal of the subject property is consistent with that of competing Class C properties. The improvements appear to be adequately suited to their current use. Our inspection did not reveal any significant items of functional obsolescence.



ADA Compliance

Based on our inspection and the information provided to us, we are not aware of any American with Disabilities Act (ADA) issues. However, we are not experts in ADA matters, and further study by an appropriately qualified professional would be recommended to assess ADA compliance.

Hazardous Substances

An environmental assessment report has not been provided for review, and environmental issues are beyond our scope of this appraisal. No hazardous substances were observed during our inspection of the improvements; however, we are not qualified to detect such substances. Aside from the environmental concerns discussed previously, we assume no hazardous conditions exist on or near the subject property.

4.2 Equipment Description

The subject property is a 62.1 MW combined-cycle cogeneration plant. commissioned in 1989. Major equipment items are listed below. All other equipment including auxiliary pumps, valves, piping, etc. is assumed to have minimal scrap value that will be an offset the cost of dismantling the plant.

Gas Turbine	GE Frame 6/ 40MW
Steam Turbine	GE/ 22.26 MW
Heat Recovery Steam Generator	10MW
Gas Turbine Generator	44.18 MVA
Steam Turbine Generator	33 MVA
Cooling Tower	4 Cell, mechanical draft
Overall Property Condition	Average
Boilers	
Auxiliary Boiler	Zurn, 162,000 LBSTMHR
Auxiliary Boiler	Cleaver Brooks, 28 LBS/Hr
Auxiliary Boiler	Cleaver Brooks, 28 LBS/Hr
Chillers	
Chiller	Trane, 1,800 tons
Chiller	Carrier, 1,800 tons
Chiller	Trane, 900 tons
Chiller	Carrier, 900 tons



Storage Tanks	
Acid storage tank	1,300 gallons
Caustic storage tank	1,300 gallons
Demin. tank	30,000 gallons
Neut. Tank	6,850 gallons
Fuel oil tank	60,900 gallons
Waste oil tank	500 gallons

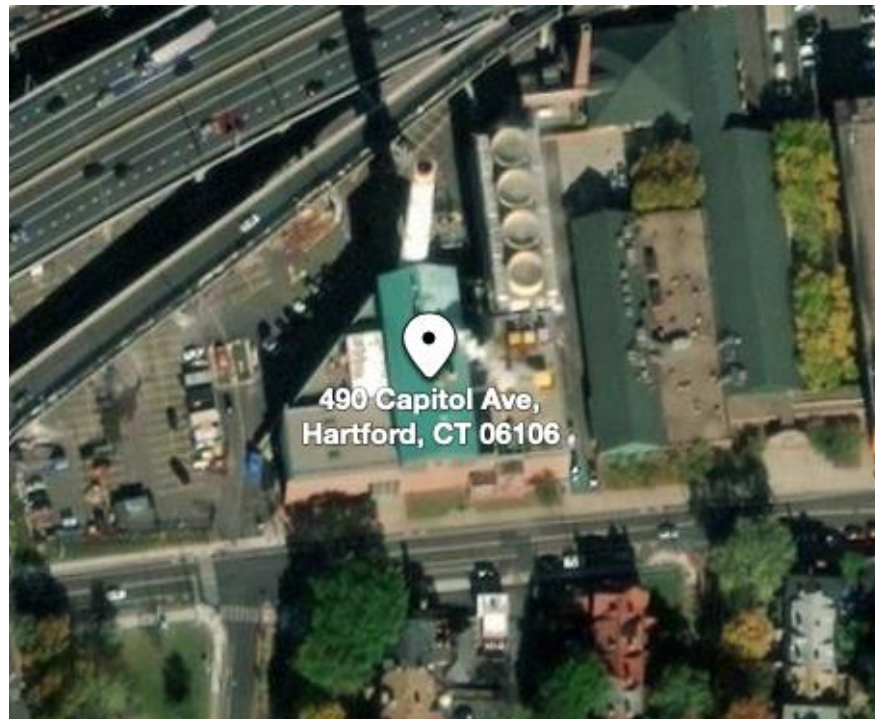
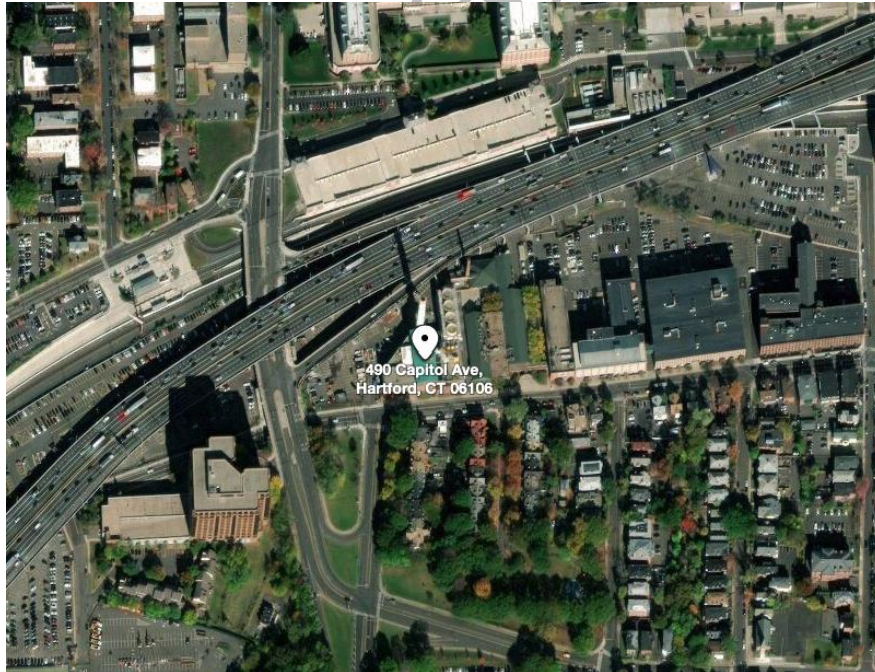
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4.3 Subject Property Photographs and Maps

On the following pages, we provide photographs and maps of the subject property.

AERIAL MAPS

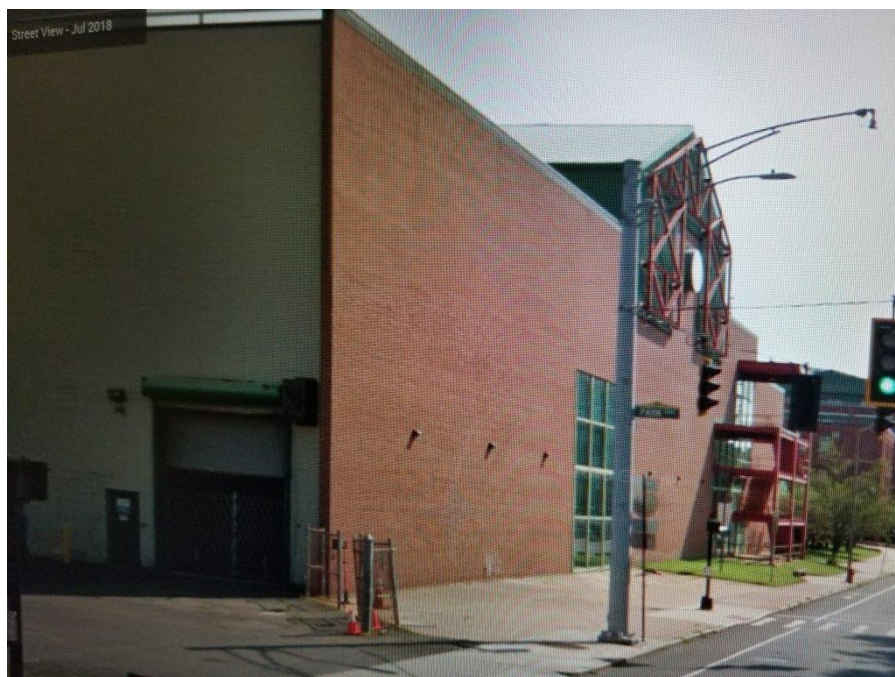




SUBJECT PROPERTY PHOTOGRAPHS



Looking North



Looking East



Looking West



Looking South



Interior



Mezzanine



G.E. Frame 6 Gas Turbine



G.E. Steam Turbine



Cooling Tower



Boilers



Chillers

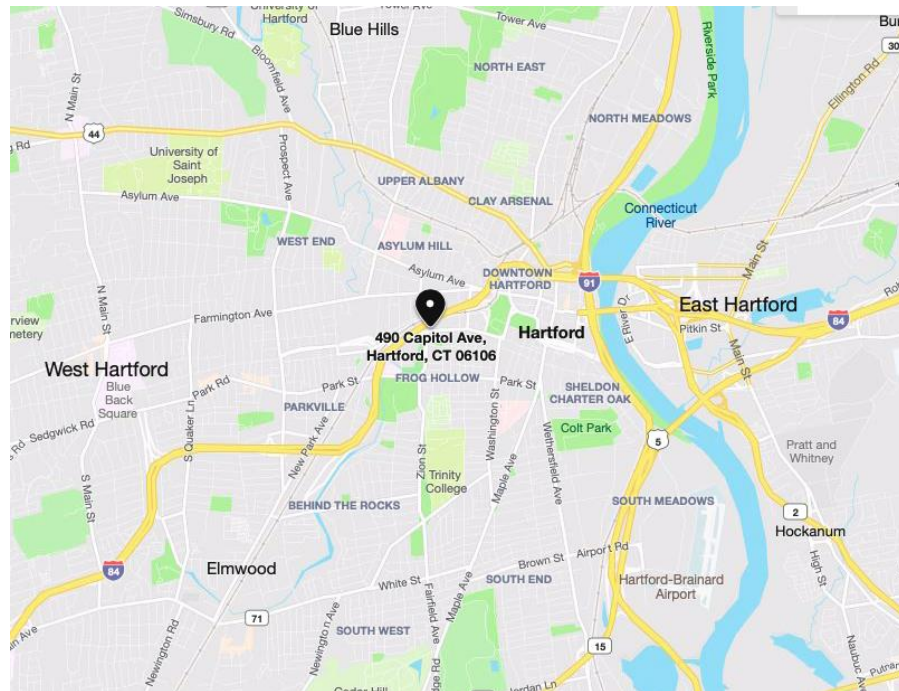


Storage Tanks

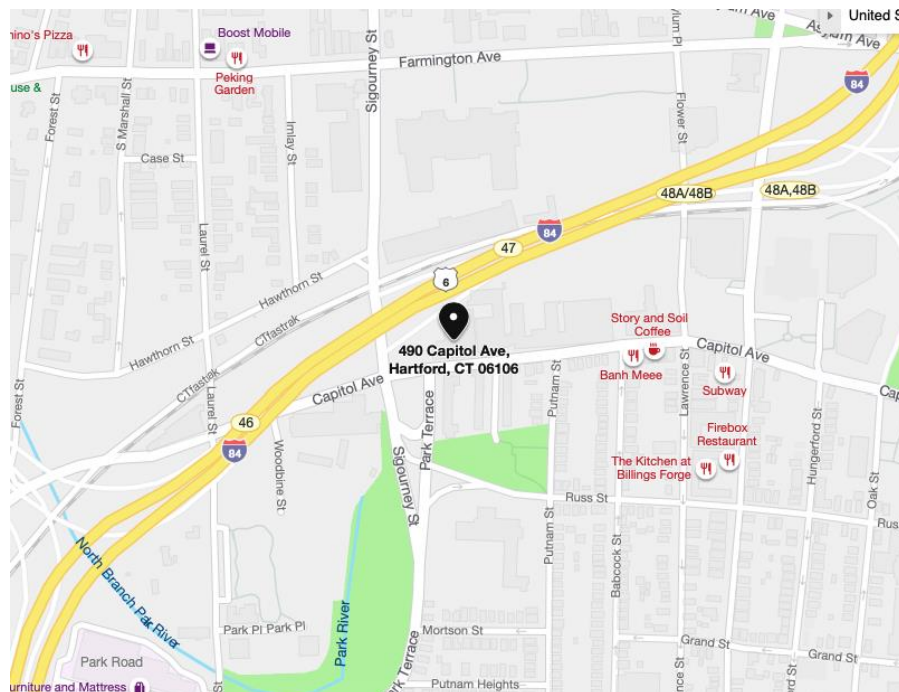
**CAPITOL DISTRICT ENERGY CENTRE COGENERATION ASSOCIATES
POWER PLANT ORDERLY LIQUIDATION VALUE
As of March 31, 2021**



Location Map



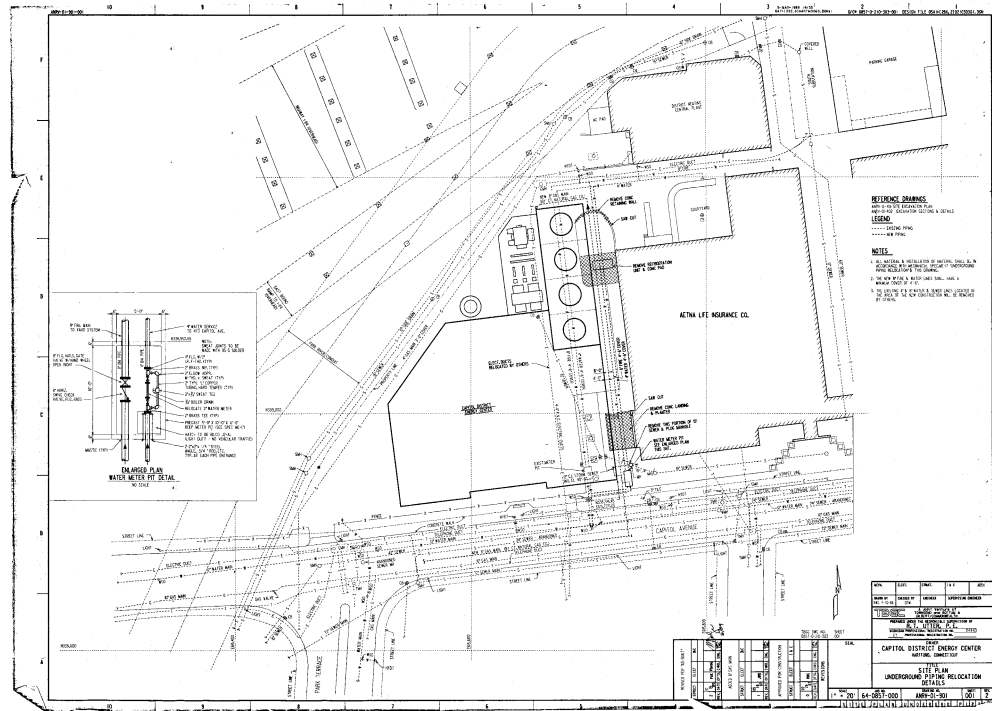
Neighborhood Map



**CAPITOL DISTRICT ENERGY CENTRE COGENERATION ASSOCIATES
POWER PLANT ORDERLY LIQUIDATION VALUE
As of March 31, 2021**



SURVEY



TAX MAP





4.4 Taxes and Assessments

Real estate taxes based on assessed values are the primary revenue source of many municipalities. Based on the concept that the tax burden should be distributed in proportion to the value of all properties within a taxing jurisdiction, a system of assessments is established by the local assessor. Theoretically, the assessed value placed on each parcel bears a definite relationship to market value so that properties of equal market value will have similar assessments, and properties of higher and lower values will have proportionately larger and smaller assessments and taxes. According to Hartford property tax records, there is no recorded assessment on file.

4.5 Zoning

The purpose of zoning is to promote and maintain a degree of compatibility in use of real estate within the confines of a given geographic area. According to the zoning office of Hartford, Connecticut, the subject property is located in the CX-1 Multi-use Mixed district. The CX-1 district is a lower intensity district intended to be compatible with adjacent historic neighborhoods. This district includes office, institutional, and/or residential uses in a mix of lower scaled General Apartment, Row, House A, and House B Building Types. The following figures display the permitted uses and bulk requirements.

PERMITTED USES

DISTRICT	Downtown Storefront	Downtown General Building	Storefront	Cottage Commercial	Commercial Center	General Building	Workshop/Warehouse	Civic Building	Apartment Building	Stacked Flats	Row Building	House A	House B	House C	Notes
DOWNTOWN	DT-1	●	●					●							Refer to Zoning Map for Primary & Secondary Street locations.
	DT-2	●	●					●							
	DT-3	●	●					●							
COMMERCIAL-INDUSTRIAL MIX	CX-1					●	●	●							
	CX-2		●			●	●	●							
MAIN STREET	MS-1		●	●				●							
	MS-2		●	●		●		●	●	●					
	MS-3		●	●	●			●							
MULTI-USE MIX	MX-1					●		●	●	●	●	●	●		
	MX-2					●		●	●		●	●			
INDUSTRIAL	ID-1				●	●	●								
	ID-2					●	●								



BULK REQUIREMENTS

		MS-2	CX-1	CX-2 & ID	MX-1	MX-2
A. Building Siting. Refer to Figure 4.8-B General Building: Building Siting and 4.18.1 Building Siting for explanation.						
1	Multiple Principal Buildings	not permitted	not permitted	permitted	not permitted	permitted with Campus Overlay
2	Minimum Front Lot Line Coverage	85% NOTE 1	65% NOTE 1	65% NOTE 1	65% NOTE 1	65% NOTE 1
3	Occupation of Corner	required				
4	Front Build-to Zone	at or up to 5' behind the Building Line	within 2' of the Building Line	between 5' & 15' from front lot line	within 5' of the Building Line	at or up to 15' behind the Building Line
5	Corner Build-to Zone	within 5' of the Building Line	within 2' of the Building Line	between 5' & 10' from corner lot line'	within 2' of the Building Line	at or up to 10' behind the Building Line
6	Minimum Side Setback	7.5'	5'	5'	7.5'	15'
7	Minimum Rear Setback	5'	5'	5'	15'	35'
8	Minimum Lot Width Maximum Building Width	50' 50'	none none	none none	60' 80'	none none
9	Maximum Building Coverage Maximum Impervious Area Additional Semi-Pervious Area	55% 75% 15%	60% 80% 15%	60% 75% 15%	45% 65% 25%	65% 80% 10%
10	Permitted Parking & Loading Locations	rear yard	rear & limited side yard NOTE 2	rear & side yard	rear & limited side yard NOTE 2	rear & side yard
11	Permitted Vehicular Access	one driveway per lot; one additional driveway for lots with over 160' feet in street frontage; circular drop-off drive per 4.1.2.I.(4); shared driveways encouraged				
B. Height. Refer to Figure 4.8-C General Building: Height & Use Requirements and 4.18.2 Height for explanation.						
12	Minimum Overall Height	2 stories	2 stories	2 stories	2 stories	2 stories
13	Maximum Overall Height	4 stories	5 stories	4 stories	5.5 stories	6 stories
14	Ground Story: (Measured floor-to-floor) Minimum Height Maximum Height	9' 14'	9' 24' NOTE 3	9' 24' NOTE 3	9' 14'	9' 24' NOTE 3
15	Upper Stories: (Measured floor-to-floor) Minimum Height Maximum Height	9' 14'	9' 16'	9' 16'	9' 14'	9' 14'

Comments

The subject property conforms to permitted uses and is regarded as a legal conforming use. The foregoing is only a summary of the provision of the zoning ordinance and related regulations. All applicable statutes should be read by an attorney to determine their entire and exact content to properly interpret the regulations and to determine their effect upon the subject property.



5.0 HIGHEST AND BEST USE

Highest and best use is defined as:

“The reasonably probable and legal use of vacant land or an improved property that is physically possible, appropriately supported, financially feasible, and that results in the highest value. The four criteria the highest and best use must meet are legal permissibility, physical possibility, financial feasibility, and maximum productivity.”⁸

The concept of highest and best begins with the highest and best use of land. If a site has existing improvements on it, the highest and best use may be determined to be different from the existing use. The existing use will, however, continue to be the highest and best use until highest and best use of land as-if vacant exceeds the total value of the property as currently improved.

The determination of highest and best use is not a fact to be found, rather it is an opinion based on judgment and analytical assessment. In appraisal practice, the concept of highest and best use represents the premise upon which value is based. In the context of most probable selling price (market value), another appropriate term to reflect highest and best use would be most probable use.

Highest and best use reflects a basic assumption about real estate market behavior - the price a buyer will pay for a property is based on the buyer's conclusions about the most profitable use of the site or the property. Therefore, upon sale, sites and improved properties tend to be put to their highest and best use.

In concluding the highest and best use of the subject property, first we consider the highest and best use of the site as-if vacant and then as improved.

Highest and Best Use as Vacant

Physically possible - The site is triangular in shape and contains 53,968 square foot of land. The topography and soil compositions appear adequate to support development of the site.

Legally permissible - Legal restrictions, as they apply to the subject property, involve the public restrictions of zoning. As previously stated, the site does conform to any zoning requirements.

Financially feasible - We infer that an industrial use is financially feasible as such properties in the neighborhood are actively being leased and sold.

⁸ Appraisal Institute, *The Dictionary of Real Estate Appraisal*, Sixth Edition, Chicago, 2016.



Maximally productive - The maximally productive use is the use among those that are physically possible, legally permissible, and financially feasible that provides the highest present value to the land. Based on the analysis of these factors, we infer that the most profitable use of the site, if vacant, is for it to be developed with a commercial or industrial building.

Predicated on the four criteria which determine highest and best use including a review of applicable zoning regulations and the pattern of neighboring land uses, we conclude that the highest and best use of the site, as if vacant, is for the development of a commercial or industrial use.

Highest and Best Use as Improved

The subject property is developed with a combined cycle cogeneration power plant, which is not consistent with the highest and best use of the site as if it were vacant. It currently provides steam and chilled water to buildings connected to the Capitol Area System thermal energy loop. It also provides backup power to the New England Independent System Operator. Assuming the steam and chilled water supply agreement is not renewed by the State of Connecticut, the highest and best use will be to continue supplying backup power. We provide a highest and best use appraisal in a separate report.

For these reasons, orderly liquidation value, which is the premise of this appraisal, is a hypothetical condition of the subject property and not its highest and best use.



6.0 VALUATION APPROACH

The purpose of this appraisal is to estimate the current market value of the fee simple interest in the subject property. There are three general approaches to value: (i) the cost approach, (ii) the sales comparison approach, and (iii) the income approach. Each approach is based on general concepts and principles, with various specific methods that can be applied. The suitability of any approach and the appropriate methods to use depend on the property being appraised, the availability of data, and the facts and circumstances of the particular valuation assignment.

The *cost approach* is based on the principle of substitution, which states that a prudent buyer will not pay more than the cost of creating a substitute property that has the same utility as the subject property. This approach requires accurate estimates of land value, current construction costs to replace all existing improvements, and all forms of depreciation (physical deterioration, functional obsolescence, and external obsolescence) of the existing improvements. Use of this approach is best suited for newly constructed properties (as the cost to build can be determined more reliably and depreciation is minimal) and special purpose properties (as these generally have fewer potential buyers and users, making it difficult to identify comparable sales and market rents).

The *sales comparison approach* is also based on the principle of substitution, and derives an indication of value by comparing the subject property to similar properties that have sold recently or are currently offered for sale in the same or competing market areas. The sales are analyzed and adjustments to the sale prices are made for factors such as conditions of sale, market conditions, location, functionality, and physical characteristics. The sales comparison approach can be used to value improved properties, vacant land, and land being considered as though vacant.

The *income approach* is based on the principle of anticipation, which states that value is derived from the expectation of future economic benefits. Expected future benefits can be converted into an estimate of value either by capitalizing a single year's income estimate or by the discrete discounting of multiple future years' income. Future amounts are projected based on a review of the Subject property's historical results, estimates for the subject property from management (if available), and market data for similar properties. An appropriate capitalization rate or discount rate is selected by analyzing the risk and market rates of return for income associated with similar properties with comparable holding periods and risk levels. The rate of return reflects both the "time value of money" and the risk of the projections.

The subject property currently provides steam and chilled water to buildings connected to the Capitol Area System thermal energy loop. It also provides backup power to the New England Independent System Operator (ISO-NE). Assuming the steam and chilled water supply agreement is not renewed by the State of Connecticut on the Valuation Date, the highest and best use is to continue supplying only backup power. The orderly liquidation value as provided in this report is based on a



hypothetical condition that the plant will be shut down with the equipment sold in a piecemeal fashion. The orderly liquidation value assumes that the power plant will be sold as one unit and will be installed and operated at another location. To estimate orderly liquidation value, we rely on market and cost data of the subject property.

draft



7.0 APPRAISAL ANALYSIS

The cost approach is based on the principle of substitution. This is the premise that a prudent purchaser would not pay more for a property than the cost of replacing it with a substitute having equivalent utility.

The value of the subject property is developed by the following procedure.

1. The land value, as if vacant and available to be put to its highest and best use, is derived from a comparable sales analysis.
2. Reproduction cost-new of the building is estimated by using construction cost data from Marshall & Swift Valuation Service. Accrued depreciation of the building caused by physical deterioration, functional obsolescence, and economic (external) obsolescence is estimated and deducted from the cost estimate.
3. The power plant and associated equipment is based on a combination of market and cost data. Market prices for specific items were obtained where possible. When market prices were not available, a cost analysis was performed.
4. The value of the land, building, and plant equipment are summed to obtain an orderly liquidation value of the subject property. As the Valuation Date is only about 1.5 years after the Report Date, we have assumed that the orderly liquidation value will not materially change over this period. However, this is dependent on the future economy and equipment demand which could change and result in a different value.

7.1 Land Valuation

The most common method of appraising vacant land is a sales comparison analysis of recent sales of sites similar to the Subject. All comparables were verified by several sources, including brokers, municipal officials, tax searches, and/or real estate commercial services.

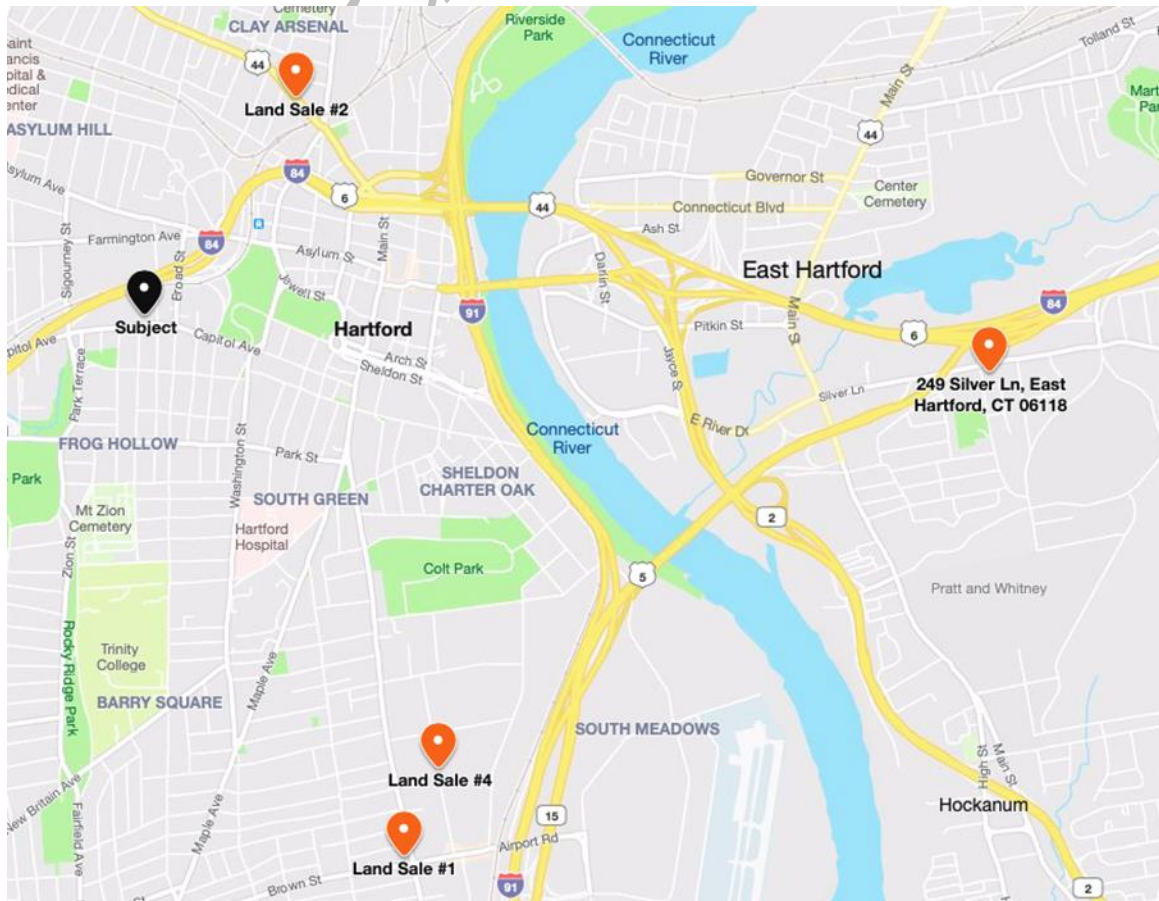
**CAPITOL DISTRICT ENERGY CENTRE COGENERATION ASSOCIATES
POWER PLANT ORDERLY LIQUIDATION VALUE
As of March 31, 2021**



COMPARABLE LAND SALES

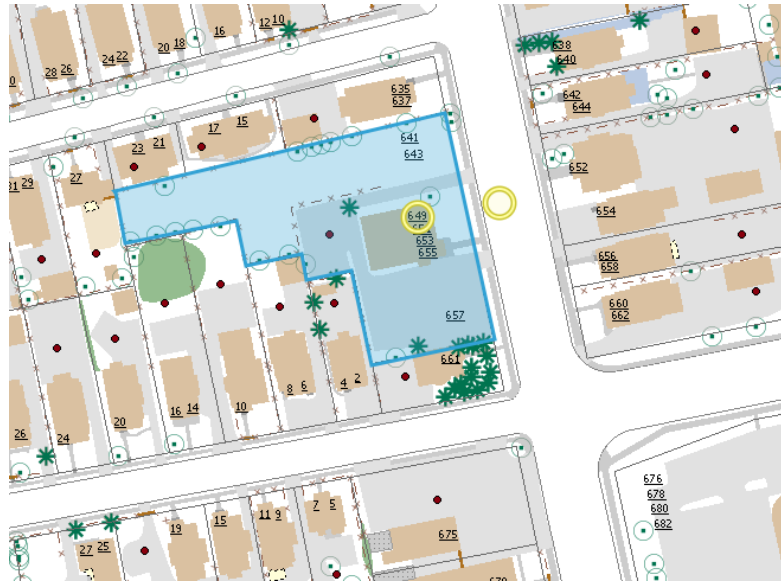
	Comparable 1	Comparable 2	Comparable 3	Comparable 4
Address	649 Wethersfield Ave. Hartford, CT.	102 Albany Ave. Hartford, CT.	249 Silver Ln. East Hartford, CT.	218 Ledyard St. Hartford, CT.
Date of Sale:	6/1/2016	6/5/2017	1/24/2019	2/5/2019
Sale Price:	\$500,000	\$220,000	\$700,000	\$115,000
Site Size - SF:	54,450	32,670	121,968	22,651
Unadjusted Price/SF:	\$9.18	\$6.73	\$5.74	\$5.08

LOCATION OF COMPARABLE LAND SALES





COMPARABLE LAND SALE #1



Property Identification

Address 649 Wethersfield Avenue,
Hartford, Connecticut

Sale Data

Sale Date June 1, 2016
Sale Price \$500,000
Land Size 54,450 SF
Sale Price/SF \$9.18

Property Details

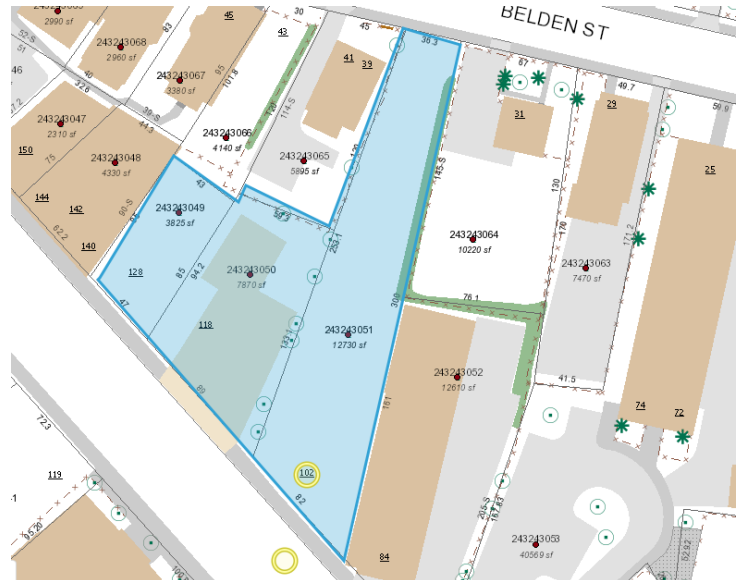
Proposed Use Retail Building
Existing Improvements None
Zoning NX-2
Utilities Available to Site All

Comments

Sale of a 54,450 square foot vacant lot that was purchased with the intent to construct a Dollar General Storefront. Located in the NX-2 zone which allows for a variety of commercial and residential uses.



COMPARABLE LAND SALE #2



Property Identification

Address 102 Albany Avenue,
Hartford, Connecticut

Sale Data

Sale Date June 5, 2017
Sale Price \$220,000
Land Size 32,670 SF
Sale Price/SF \$6.73

Property Details

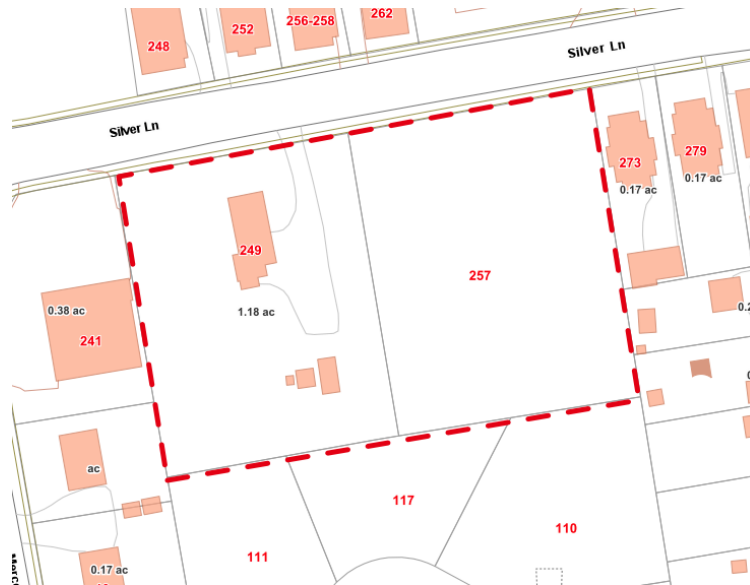
Proposed Use Hold for development.
Existing Improvements None
Zoning CX-1
Utilities Available to Site All

Comments

Sale of a 32,670 square foot vacant lot that is being held for redevelopment. It is located in the CX-1 zone which allows for a variety of commercial and residential uses.



COMPARABLE LAND SALE #3



Property Identification

Address 249 Silver Lane,
East Hartford, Connecticut

Sale Data

Sale Date January 24, 2019
Sale Price 700,000
Land Size 121,968 SF
Sale Price/SF \$5.74

Property Details

Proposed Use Gas station and store
Existing Improvements None.
Zoning B2
Utilities Available to Site All

Comments

Sale of a 121,968 square foot vacant site that was being purchased with the intent of building a gas station and convenience store.



COMPARABLE LAND SALE #4



Property Identification

Address 218 Ledyard Street,
Hartford, Connecticut

Sale Data

Sale Date February 5, 2019
Sale Price \$115,000
Land Size 22,651
Sale Price/SF \$5.08

Property Details

Proposed Use Hold for development.
Existing Improvements None
Zoning ID-1
Utilities Available to Site All

Comments

Sale of a 22,651 square foot site that is being used as car storage. The site is located in the ID-1 Industrial zone that allows for industrial development.



7.2 Analysis of Market Data

All of the sales are considered reasonably comparable to the subject property. We are unaware of any non-market financing or special concessions with respect to the sale prices. The sale price per square foot is the selected comparison measurement.

The selected comparable sales indicate an unadjusted price ranging from approximately \$5.08 to \$9.18 per square foot. In the following figure, we present our sales adjustment grid whereby we make qualitative adjustments to the sales to reflect superior and inferior characteristics relative to the subject property. The sales are all analyzed on the basis of property rights conveyed, terms of financing, conditions of sale, market conditions, location, size, zoning, and utility.

COMPARABLE SALES ADJUSTMENT GRID⁹

	Subject	Comparable 1	Comparable 2	Comparable 3	Comparable 4
Address	490 Capital Ave. Hartford, CT.	649 Wethersfield Ave. Hartford, CT.	102 Albany Ave. Hartford, CT.	249 Silver Ln. East Hartford, CT.	218 Ledyard St. Hartford, CT.
Date of Value/Sale:	10/16/2019	6/1/2016	6/5/2017	1/24/2019	2/5/2019
Sale Price:		\$500,000	\$220,000	\$700,000	\$115,000
Site Size - SF:	53,968	54,450	32,670	121,968	22,651
Unadjusted Price/SF:		\$9.18	\$6.73	\$5.74	\$5.08
Adjustments					
Rights Transferred :	Fee Simple	Fee Simple	Fee Simple	Fee Simple	Fee Simple
Financial Considerations:		Market 0%	Market 0%	Market 0%	Market 0%
Conditions of Sale:		Arm's Length 0%	Arm's Length 0%	Arm's Length 0%	Arm's Length 0%
Market Conditions - Time:		Stable 0%	Stable 0%	Stable 0%	Stable 0%
Time Adj. Cash Equiv.		\$9.18	\$6.73	\$5.74	\$5.08
Location:		Similar 0%	Similar 0%	Similar 0%	Similar 0%
Site Size SF:	53,968	54,450 0%	32,670 0%	121,968 10.0%	22,651 0.0%
Zoning:	CX-1	NX-1 0%	MX-1 0%	B2 0%	ID-1 5%
Utility		Similar 0%	Similar 0%	Similar 0%	Similar 0%
Net Adjustments:		0%	0%	10.0%	5.0%
Adjusted Price/SF:		\$9.18	\$6.73	\$6.31	\$5.33

Property Rights Conveyed: The transaction price is always predicated on the real property interest conveyed. We believe that all comparable sales are unencumbered; therefore, no adjustments to the comparables are necessary.

Terms of Sale/Financing: The terms of sale, more commonly known as the cash equivalency adjustment, account for properties sold with atypical financing terms

⁹ The value of the subject property as of the Report Date November 5, 2019 is the best indicator of the value as of the Valuation Date of March 31, 2021.



adjusted to reflect cash settlements on typical market terms. We believe that all comparable sales are typical cash to seller transactions. Therefore, no adjustments to the comparables are necessary.

Conditions of Sale: The conditions of sale adjustment reflects the motivations of the buyer and the seller and is required when a sale is considered to be a non-arm's length sale. Examples of these conditions are assemblages, foreclosure sales, and transactions between related parties. All of the sales of the comparable properties are considered arm's length transactions and no bundle of rights were limited; therefore, no adjustments are required.

Market Conditions/Time: Market conditions adjustment reflects the changes in value over time due to fluctuations in the supply and demand of the market. All the sales of the comparable properties occurred during similar market conditions as the of the Report Date; therefore, no adjustments are required.

Location: All comparables are considered similar in location, and therefore, no adjustments are required.

Size: Market participants typically pay premiums for smaller properties relative to larger properties per square foot, because the total investment is lower in terms of price per square foot. Furthermore, smaller properties, due to their relatively lower prices attract a larger pool of buyers. These forces put an upward pressure on the price of small real estate. This phenomenon is commonly referred to as the "economies of scale." Sale #3 is larger, requiring a positive adjustment.

Zoning: The Subject is located in the CX-1 zone that is situated along commercial corridors that are historically industrial and are transitioning to commercial uses, with the conversion of older industrial warehouses. Sales #1, #2, and #3 are also commercial zones, therefore requiring no adjustments. Sale #4 is in an industrial zone that allows for similar transformation; however, overall allowed density is lower, and therefore, a positive adjustment is applied.

Utility: The subject property is level and has good access, with utilities on site. All comparables are considered similar, requiring no adjustments.

7.3 Indication of Market Value for Land

After making the adjustments as described in the previous section, the comparable sale prices range from \$5.33 to \$9.18 per square foot, with an average price of \$6.89 per square foot. Based on our analysis of the available sales data in the subject property's local market, we conclude to a market value estimate for the 53,968 square foot of \$6.50 per square foot or \$350,000 rounded, (\$6.50 x 53,968 square foot).



7.4 Building Cost and Depreciation Estimates

We value the subject property's building and yard improvements using the cost approach. In this approach, the building's and yard improvement's replacement cost new is first estimated and then adjusted for physical, functional, and economic obsolescence to estimate value. We estimate the replacement cost new by using building cost data published by Marshall Valuation Service handbook ("MVS")¹⁰. Once the appropriate cost data is identified, it is applied to the building's size to obtain a replacement cost new estimate.

Our estimates of replacement cost new are adjusted for physical deterioration as well as functional and economic obsolescence using the age-life approach. Specifically, our depreciation estimates are derived by first determining appropriate economic lives for the various assets. Economic life relates to the length of time from the original in-service date that an asset is expected to provide an economic benefit to the company and the length of time over which the market value of an asset will approach scrap or salvage value.

As previously mentioned, once we have established our economic life estimates, we adjust for the effect of non-linear depreciation using the MVS depreciation tables (Section 97). This handbook allows us to quantify physical depreciation based on the economic life and the actual or effective age of each asset. The physical depreciation tables used in this analysis are derived from actual cases of sales and mortality to which mathematical curves have been matched.

Based on the economic life, we estimate the remaining useful life. MVS depreciation tables indicate a depreciation rate which is then deducted from the replacement cost new. The figure on the following page displays the reproduction cost estimates for the subject property.

¹⁰ Marshall & Swift, L.P., *Marshall Valuation Service*, Los Angeles, CA, 2018.



BUILDING REPLACEMENT COST

Gross building area	30,666
Height	45 Foot
Economic life	50 yrs.
Effective age	<u>25 yrs.</u>
Remaining economic life	25 yrs.
Section/Page	14/15
Type	Ind. Heavy Processing
Class	B
Quality	Average
Base building cost/sf.	\$148.00
Less HVAC	\$12.30
Sprinkler	<u>2.66</u>
Total base cost/sf.	\$138.36
Local Multiplier	1.18
Current cost multiplier	1.06
Perimeter Multiplier	0.919
Height Multiplier	<u>1.79</u>
Total adjusted base cost/sf.	\$284.68
Gross building area	<u>30,666/sf</u>
Replacement Cost New	\$8,729,997
Physical Depreciation	50%
Functional Obsolescence	30%
Economic Obsolescence	<u>0%</u>
Replacement Cost New Less Depreciation	\$3,055,499
Building Replacement Cost New (Rounded)	\$3,055,000



YARD IMPROVEMENTS REPLACEMENT COST

<i>Parking</i>	
Paving - SF	20,000
Cost Per SF - 20,000 SF	\$4.50
Local Multiplier	1.18
Current Cost Multiplier	<u>1.03</u>
Total Cost Multiplier	\$5.47
Replacement Cost New	109,386
Less Depreciation @ 50%	<u>54,693</u>
Replacement Cost New Less Depreciation	\$54,693
<i>Fencing</i>	
Cost Per LF - 350 LF	\$16.62
Local Multiplier	1.18
Current Cost Multiplier	<u>1.03</u>
Total Cost Multiplier	\$20.20
Replacement Cost New	7,070
Less Depreciation @ 50%	<u>3,535</u>
Replacement Cost New Less Depreciation	\$3,535
Total Yard Improvements	\$58,228
Total Yard Improvements (Rounded)	\$60,000

7.5 Machinery and Equipment Cost and Sales Comparison Estimates

For the sales comparison approach, manufacturers, distributors, and dealers can provide information since they are aware of equipment on the used market, even selling similar equipment. A search is also made of similar items in the general market place that have sold and are presently offered for sale. For equipment where market data is not available, we provide a replacement cost less depreciation analysis using the actual manufacturer or dealer pricing of the subject equipment. If the manufacturer of the equipment is not available or cannot be reached for any reason, then dealers or distributors are contacted when possible for verification of similar items with similar utility.

Sources Contacted and/or Researched

The following sources were contacted and/or researched in this assignment:

- CFAS Enterprise Inc.
- eBay
- LabX
- Ecrecon
- Utility Warehouse
- GovDeals



- Surplus Industrial Supply
- Department of Energy
- Ritchie Bros.
- Iron Planet
- Phoenix equipment
- Salvex
- The Brattle Group
- Eagle Tanks
- Equipnet
- JME Ellsworth

We have based the conclusion of value for all items using a combination of the sales comparison approach and the cost approach. Opinions of resale value from third parties and a search of similar equipment recently sold or available for sale were considered under the sales comparison approach. Factors such as replacement cost new, normal useful life, effective age and typical levels of depreciation were utilized under the cost approach. The auxiliary equipment such as pumps and, compressors supporting the major equipment are either included with the major equipment, or assumed to have minimal value. Based on this research and analysis, the total estimated values of the subject items are as follows, with itemized descriptions provided on the next page. However, before purchasing equipment for resale, we recommend obtaining bids from equipment brokers.

Machinery and Equipment Orderly Liquidation Value: \$3,000,000



MACHINERY AND EQUIPMENT LIST

No.	Equipment Description	Manufacturer	Model	Capacity	Orderly Liquidation Value
Power Plant					
1	Gas Turbine	GE	Frame 6	40 Mw	
2	Gas Turbine Generator	GE		44.18 MVA	
3	Heat Recovery Steam Generator (HRSG)				
4	Steam Turbine (STG)	GE		22.26 Mw	
5	Steam Turbine Generator	GE		33 MVA	
6	Cooling Tower	BAC-Pritchard			
Subtotal - Power Plant					\$1,312,500
Steam Generating Equipment					
7	Auxiliary Boiler	Zurn		162,000 LBSTMHR	
8	Auxiliary Boiler	Cleaver Brooks		28 LBS/Hr	
9	Auxiliary Boiler	Cleaver Brooks		28 LBS/Hr	
Subtotal - Steam Generating Equipment					\$116,850
Chilled Water Equipment					
10	Chiller	Trane	CVHF 1720	1,800 tons	
11	Chiller	Carrier		1,800 tons	
12	Chiller	Trane		900 tons	
13	Chiller	Carrier		900 tons	
Subtotal - Chilled Water Equipment					\$1,713,289
Storage Tanks					
14	Acid storage tank			1,300 gallons	
15	Caustic storage tank			1,300 gallons	
16	Demin. tank			30,000 gallons	
17	Neut. tank			6,850 gallons	
18	Fuel oil storage tank	Clawson		60,900 gallons	
19	Waste oil tank			500 gallons	
Subtotal - Storage Tanks					\$38,087
Total					3,180,726
Total (rounded)					<u>\$3,000,000</u>



8.0 RECONCILIATION AND CONCLUSION OF VALUE

In concluding our opinion of the orderly liquidation value of the subject property, we use the market approach for the land, the cost approach for the building and yard improvements and the combination of cost and sales comparison approaches for the machinery and equipment. These values are summarized in the following figure.

SUMMARY OF ORDERLY LIQUIDATION VALUE

Land	\$350,000
Building	\$3,055,000
Yard Improvements	\$60,000
Machinery and Equipment	<u>\$3,000,000</u>
Total	<u>\$6,465,000</u>

Therefore, we conclude that the orderly liquidation value of the subject property is:

**SIX MILLION FOUR HUNDRED SIXTY FIVE THOUSAND
U.S. DOLLARS
\$6,465,000**

as of the Valuation Date.



APPENDIX I

ASSUMPTIONS AND LIMITING CONDITIONS

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Statement of Assumptions and Limiting Conditions

1. This appraisal is for no purpose other than property and business enterprise valuation as described in the scope of the appraisal, and we are neither qualified nor attempting to go beyond this narrow scope. The reader should be aware that there are also inherent limitations to the accuracy of the information and analysis contained in this appraisal. Before making any decision based on the information and analysis contained in this report, it is critically important to read this entire section to understand these limitations.
2. It is assumed that the utilization of the land and improvements is within the boundaries of the property lines of the property described and that there is no encroachment or trespass unless noted within the report.
3. No survey of the property has been made by Appraisal Economics Inc. and no responsibility is assumed in connection with such matters. Any maps, plats, or drawings reproduced and included in this report are intended only for the purpose of showing spatial relationships. The reliability of the information contained on any such map or drawing is assumed by us and cannot be guaranteed to be correct. A surveyor should be consulted if there is any concern on boundaries, setbacks, encroachments, or other survey matters.
4. No responsibility is assumed for matters of a legal nature that affect title to the property, nor is an opinion of title rendered. The title is assumed to be good and marketable. The value estimate is given without regard to any questions of title boundaries, encumbrances, or encroachments. We are not usually provided an abstract of the property being appraised and, in any event, we neither made a detailed examination of it nor do we give any legal opinion concerning it.
5. It is assumed that there is full compliance with all applicable federal, state, and local environmental regulations and laws unless noncompliance is stated, defined, and considered in the appraisal report. A comprehensive examination of laws and regulations affecting the subject property was not performed for this appraisal.
6. It is assumed that all applicable zoning and use regulations and restrictions have been complied with, unless a nonconformity has been stated, defined, and considered in the appraisal report. Information and analysis shown in this report concerning these items are based only on rudimentary investigation. Any significant question should be addressed to local zoning or land use officials or an attorney.
7. It is assumed that all required licenses, consents, or other legislative or administrative authority from any local, state, or national government or private entity or organization have been or can be obtained or renewed for any use on which the value estimate contained in this report is based. Appropriate government officials or an



attorney should be consulted if an interested party has any questions or concerns on these items as we have not made a comprehensive examination of laws and regulation affecting the subject property.

8. This appraisal should not be considered a report on the physical items that are part of the property. Although the appraisal may contain information about the physical items being appraised (including their adequacy or condition), it should be clearly understood that this information is only to be used as a general guide for property valuation and not as a complete or detailed physical report. We are not construction, engineering, environmental, or legal experts, and any statement given on these matters in this report should be considered preliminary in nature.
9. The observed condition of the foundation, roof, exterior walls, interior walls, floors, heating system, plumbing, insulation, electrical service, and all mechanical and construction is based on a casual inspection only and no detailed inspection was made. For instance, we are not experts on heating systems and we made no attempt to inspect the interior of the furnace. The structures were not checked for building code violations, and it is assumed that all buildings meet applicable building codes unless so stated in the report.
10. Some items such as conditions behind walls, above ceilings, behind locked doors, or under the ground are not exposed to casual view and therefore were not inspected. The existence of insulation, if any is mentioned, was found by conversation with others or circumstantial evidence. Since it is not exposed to view, the accuracy of any statements about insulation cannot be guaranteed.
11. It is assumed that there are no hidden or unapparent conditions of the property, sub-soil, or structures that would render it more or less valuable. No responsibility is assumed for such conditions, or for engineering that may be required to discover such factors. As no engineering or pecculation tests were made, no liability is assumed for soil conditions. Sub-surface rights (mineral and oil) were not considered in making this appraisal.
12. Wells and septic systems, if any, are assumed to be in good working condition and of sufficient size and capacity for the stated highest and best use.
13. We are not environmental experts, and we do not have the expertise necessary to determine the existence of environmental hazards such as the presence of urea-formaldehyde foam insulation, toxic waste, asbestos or hazardous building materials, or any other environmental hazards on the subject or surrounding properties. If we know of any problems of this nature which we believe would create a significant problem, they are disclosed in this report. Nondisclosure should not be taken as an indication that such a problem does not exist, however. An expert in the field should be consulted if any interested party has questions on environmental factors.



14. No chemical or scientific tests were performed by us on the subject property, and it is assumed that the air, water, ground, and general environment associated with the property present no physical or health hazard of any kind unless otherwise noted in the report. It is further assumed that the lot does not contain any type of dump site and that there are no underground tanks (or any underground source) leaking toxic or hazardous chemicals into the groundwater or the environment unless otherwise noted in the report.
15. The age of any improvements to the subject property mentioned in this report should be considered a rough estimate. We are not sufficiently skilled in the construction trades to be able to reliably estimate the age of improvements by observation. We therefore rely on circumstantial evidence which may come into our possession (such as dates on architectural plans) or conversations with those who might be somewhat familiar with the history of the property such as property owners, on site personnel, or others. Parties interested in knowing the exact age of improvements on the land should contact us to ascertain the source of our data and then make a decision as to whether they wish to pursue additional investigation.
16. Because no detailed inspection was made and because such knowledge goes beyond the scope of this appraisal, any observed condition or other comments given in this appraisal report should not be taken as a guarantee that a problem does not exist. Specifically, no guarantee is made as to the adequacy or condition of the foundation, roof, exterior walls, interior walls, floors, heating system, air conditioning system, plumbing, electrical service, insulation, or any other detailed construction matters. If any interested party is concerned about the existence, condition, or adequacy of any particular item, we strongly suggest that a construction expert be hired for a detailed investigation.
17. As can be seen from limitations presented above, this appraisal has been performed with a limited amount of data. Data limitations result from a lack of certain areas of expertise by us (that go beyond the scope of our ordinary knowledge), our inability to view certain portions of the property, the inherent limitations of relying upon information provided by others, etc.
18. There is also an economic constraint, however. The appraisal budget (and the fee for this appraisal) did not contain unlimited funds for investigation. We have spent our time and effort in the investigative stage of this appraisal in those areas where we think it would be most efficient, but inevitably there is significant possibility that we do not possess all information relevant to the subject property.
19. Before relying on any statement made in this appraisal report, interested parties should contact us for the exact extent of our data collection on any point which they believe to be important to their decision-making. This will enable such interested parties to determine whether they consider the extent of our data gathering process



was adequate for their needs or whether they would like to pursue additional data gathering for a higher level of certainty.

20. Information (including projections of income and expenses) provided by local sources, such as governmental agencies, financial institutions, accountants, attorneys, and others is assumed to be true, correct, and reliable. No responsibility for the accuracy of such information is assumed by us.
21. The comparable sales data relied upon in the appraisal is believed to be from reliable sources. Though all the comparables were examined, it was not possible to inspect them all in detail. The value conclusions are subject to the accuracy of said data.
22. Engineering analysis of the subject property were neither provided for use nor made part of this appraisal contract. Any representation as to the suitability of the property for uses suggested in this analysis is therefore based only on a rudimentary investigation by us and the value conclusions are subject to said limitations.
23. All values shown in the appraisal report are projections based on our analysis as of the date of the appraisal. These values may not be valid in other time periods or as conditions change. We take no responsibility for events, conditions, or circumstances affecting the property's market value that take place subsequent to either the date of value contained in this report or the date of our field inspection, whichever occurs first.
24. Because projected mathematical models and other projections are based on estimates and assumptions that are inherently subject to uncertainty and variation depending upon evolving events, we do not represent them as results that actually are achieved.
25. This appraisal is an estimate of value based on an analysis of information known to us at the time the appraisal was made. We do not assume any responsibility for incorrect analysis because of incorrect or incomplete information. If new information of significance is released, the value given in this report is subject to change without notice.
26. Opinions and estimates expressed herein represent our best judgement, but should not be construed as advice or recommendation to act. Any actions taken by you, the client, or any others should be based on your own judgement, and the decision process should consider many factors other than just the value estimate and information given in this report.
27. Appraisal reports are technical documents addressed to the specific technical needs of clients. Casual readers should understand that this report does not contain all of the information we have concerning the subject property of the real estate market. While no factors we believe to be significant yet unknown to the client have been knowingly



withheld, it is always possible that we have information of significance that may be important to others but which, with our limited acquaintance of the property and our limited expertise, does not seem to be important to us.

28. Appraisal reports made for lenders are technical documents specifically made to lender requirements. Casual readers are cautioned about their limitations and cautioned against possible misinterpretation of the information contained in these reports.
29. We should be contacted with any questions before the report is used for decision making.
30. This appraisal was prepared at the request of and for the exclusive use of the client to whom the appraisal is addressed. No third party shall have any right to use or rely upon this appraisal for any purpose.
31. There are no requirements, by reason of this appraisal, to give testimony or appear in court or any pretrial conference or appearance required by subpoena with reference to the property in question, unless sufficient notice is given to allow adequate preparation and additional fees are paid by the client at our regular rates for such appearances and the preparation necessitated thereby.
32. This report is made for the information or guidance of the client and possession of this report, or a copy thereof, does not carry with it a right of publication. Neither all nor any part of the contents of this report shall be conveyed to the public through advertising, public relations, news, sales, or other media without the written consent and approval of Appraisal Economics Inc. Nor shall we or the professional organization of which we are members be identified without our written consent.
33. It is suggested that those who possess this appraisal report should not release copies to others. Certainly legal advice should be obtained on potential liability issues before this is done. Anyone who releases an incomplete or altered copy of this appraisal report (including all attachments) does so at their own risk and assumes complete liability for harm caused by reliance upon an incomplete or altered copy. We do not assume any liability for harm caused by reliance upon an incomplete or altered copy of this appraisal report released by others. Anyone with a question on whether their copy of an appraisal report is incomplete or altered should contact our office.
34. Values and conclusions for various components of the subject parcel as contained within this report are valid only when making a summation; they are not to be used independently for any purpose and must be considered invalid if so used. The allocation of the total value in this report between land and improvements applies only under the reported highest and best use of the property. The separate valuations



for land and buildings must not be used in conjunction with any other appraisal and are invalid if so used.

35. It is assumed that all equipment has standard features commensurate with its normal operation.
36. Descriptions of items made a part of this report are believed to be correct. Any errors or omissions were unintentional and should not affect the value assignment.

draft



APPENDIX II

PROFESSIONAL QUALIFICATIONS

draft



JOSEPH KETTELL, ASA

Joseph Kettell is a managing director of Appraisal Economics Inc. He has orchestrated all elements of financial analysis, corporate valuations, transfer pricing, damages analysis, and litigation support. He has performed fair market value studies of tangible and intangible assets for corporate acquisitions, tax, accounting, financing, and regulatory purposes. Industry assignments include aerospace, automobile manufacturing, banking, chemicals and petrochemicals, coal, computer and electronics, construction, entertainment and broadcasting, general manufacturing, healthcare, insurance, metals manufacturing, mining, municipal utilities, paint and specialty chemicals, pharmaceutical, power plants, pulp and paper manufacturing, service oriented companies, software, sport franchises, synthetic rubber and plastic products, retail, telecommunications, and textiles. Mr. Kettell's assignments have required travel throughout the world.

Previous Experience

Price Waterhouse

Prior to joining Appraisal Economics, Mr. Kettell managed valuation assignments for the accounting firm Price Waterhouse in New York City. Working in the tax department, he was responsible for transfer pricing, business valuations and appraisals of intellectual property and other intangible assets for large corporate clients in the United States and Europe.

Arthur D. Little, Inc.

Mr. Kettell was manager of financial valuation services for the international consulting firm of Arthur D. Little, Inc. His work included appraising businesses worth several billion dollars and the valuation of intangible assets including trademarks, software, patents, and proprietary technology.

Combustion Engineering

As a chemical engineer, Mr. Kettell worked for CE Lummus (currently ABB Lummus), a subsidiary of Combustion Engineering, in Bloomfield, New Jersey. He performed conceptual design and the economic evaluation of chemical, petrochemical, utility, and environmental plants. While at CE Lummus, Mr. Kettell lived in Japan performing pilot plant research and development on a steel manufacturing process. This assignment led to a U.S. patent under Mr. Kettell's name.

Expert Testimony

Mr. Kettell has provided court testimony in numerous states including New York, New Jersey, California, Connecticut, Florida, Illinois, Indiana, Massachusetts, Michigan, Ohio, Virginia, and Washington. He has also testified at the Federal Communication Commission hearings and on several occasions in arbitration hearings at the American Arbitration Association.



Mr. Kettell has provided testimony for the U.S. Department of Justice in Washington, D.C. on several large assignments, along with many assignments for the Internal Revenue Service. He has provided power plant appraisals for the Enron bankruptcy trustee in preparation for trial.

Mr. Kettell authored a report on valuation of intellectual property for charitable contribution Federal tax deductions taken by major corporations. His report was presented to the U.S. Congress just prior to sweeping tax law changes on that topic.

Lecturer

American Society of Appraisers
Valuation of Intellectual Property
Valuation of Merchant Power Plants

Estate Planning Councils: Rockland County, N.Y.; Bergen County, N.J.; Morris County, N.J.
Valuing Businesses for Estate Tax Planning

Annual Merchant Power Plant Conference (Institute of International Research)
Valuing Merchant Power Plants, Chicago, Il.

Professional Affiliations

American Society of Appraisers (ASA)

Mr. Kettell is an accredited senior member of the ASA (an international organization with over 6,000 valuation professionals) and has lectured and held executive offices in the Northern New Jersey Chapter. He is a past president and won the ASA's President's Cup for most outstanding chapter during his term.

Publications

Mr. Kettell is a contributing author of the text book, Property Taxation, 3rd Edition, published by the Institute of Property Taxation.

Education

Masters of Business Administration
Fairleigh Dickinson University

Masters of Chemical Engineering
Manhattan College

Bachelor of Arts in Chemistry
Queens College, City University of New York



Testimony from 2005 to 2014

Year	Case	Description	Judge
2014	Estate of Carl Pohlad v. Commissioner of Internal Revenue 12508-13	Valuation of Minnesota Twins baseball team, U.S. Tax Court	Judge Jacobs
2014	Metallix, Inc. v. Fry's Metal Inc., et al	Deposition at Rabinowitz, Lubetkin & Tully, LLC, Livingston, NJ.	
2013	Covert Generating Co., LLC v. Covert Township	Michigan Tax Tribunal	
2012	Wheelabrator Bridgeport, L.P. v. City of Bridgeport	Superior Court of New Britain, Connecticut	Judge Aronson
2011	Weingram & Associates P.C. v. Joseph Grayzel M.D.	Deposition at Weiner Lesniak LLP, Parsippany, NJ. Case settled.	
2011	Century Aluminum v. Ravenswood, WV Township Assessor	Property Tax Assessment Board of Appeal, Jackson County, West Virginia	Hearing Tribunal
2007	Pennsylvania Blue Shield v. United States of America	Deposition, U.S. Department of Justice, Washington D.C. Case Settled	
2007	Blue Cross and Blue Shield of Louisiana v. United States of America Civil No. 05-914-A-M3 (M.D. La.)	Deposition, U.S. Department of Justice, Washington D.C. Case Settled.	
2007	City of Alexandria, Virginia v. Mirant Potomac River, LLC. CL05001413	State Tax Court, Alexandria, Virginia	Judge Ross, Jr.
2006	Health Alliance Network, Inc. v. Continental Casualty Company 01CV5858	U.S. District Court Southern District of New York	Judge Robinson
2006	Gramercy Alumina v Parish of St James 05-22093-001	Louisiana State Tax Commission	Hearing Tribunal
2006	Beta Steel Corp. v. Portage Township Assessor	Property Tax Assessment Board of Appeal, Porter County, Indiana	Hearing Tribunal
2006	Enron Bankruptcy Trustee v. Virginia Electric and Power Co.	Deposition at Weil Gotshal & Manges LLP, Dallas, TX Case Settled.	
2005	Robert Dallas Inc. v. Commissioner of Internal Revenue 7493-04	District Tax Court New York	Judge Colvin



Representative Clients

AEA Investors
Aluminum Company of America
Bank of Boston
Bank of New England
Bankers Trust
BASF
Beneficial
BIC
Black & Decker
BMW of North America
Carlyle Group
CBS
Citicorp
Champion International
CSX Corp.
Cytec
Dewey Ballantine
Dow Chemical
Eastman Kodak
General Dynamics
General Electric Capital Corp.
General Foods
General Motors
Georgia Pacific
Gillette
Grolier Publishing
Hoffmann-La Roche
IBP
Internal Revenue Service
Interpublic Group
Kaiser Aluminum
Melville
New England Telephone
New York Times
NYNEX
Ogden
Ohio Medical Association
Philip Morris
Quantum Chemical
Reader's Digest
Reynolds Aluminum
Schering-Plough
Shearson Lehman
Sullivan & Cromwell
Thermo-Electron
Toshiba America
U.S. Department of Justice
Waters Corp
Westinghouse Electric



ALKESH DESAI

Mr. Desai is a senior associate in the Appraisal Economics Inc. valuation services group where he is responsible for valuation of machinery and equipment, business and intangible assets. He has performed valuation studies for variety of purposes including: post acquisition allocation of purchase price, financial reporting, and management planning.

Previous Experience

KPMG

Prior to joining Appraisal Economics, Mr. Desai worked as an associate for the accounting firm KPMG in Mumbai, India. Working in the valuation department, he was responsible for appraisals of real estate and machinery and equipment.

Ernst & Young

Mr. Desai was an analyst of capital equipment in the valuation group in Mumbai, India. His work included the valuation of tangible assets in the electronic manufacturing, process, and brewery industries.

RBSA Valuation Advisors LLP

Mr. Desai was a valuation engineer at RBSA Valuation Advisors LLP. His work included the valuation of real estate and machinery & equipment in the plastic, steel, and injection molding, and textile industries.

Reliance Industries Limited

As a mechanical engineer, Mr. Desai worked, Jamnagar Refinery (world's largest refinery). He performed startup activities for a 750MW captive power plant and provided extensive support for piping execution in the refinery.

Education

Bachelor of Mechanical Engineering (BEng)

Gujarat University (India) (Distinction)

Masters of Science - Finance (MSc)

Bradford University (UK) (Distinction)

ANTHONY J. RINALDI, JR

Mr. Rinaldi has 20 years experience in valuing real property. He has appraised, and given expert testimony concerning many large commercial, industrial, investment and special purpose properties including: cold storage facilities, corporate headquarters, department stores, hotels and motels, industrial parks, manufacturing plants, marine terminals, mines and quarries, office buildings, oil terminals, process plant equipment, regional shopping centers, R&D properties, and vacant land. He has appraised properties throughout the United States. Appraisals have been done for ad valorem taxation, bankruptcy court, condemnation, equitable distribution, estate planning, fire insurance, inheritance taxes, leveraged buyouts, litigation, bank financing, and mergers/acquisitions.

Previous Experience

Anthony J. Rinaldi Jr. Appraisals - Principal

Perform appraisals of residential properties, industrial, office, retail, hotels, assisted living facilities, multi-family and land. Appraisals performed for mortgage financing, advalorem taxation, estate tax planning, inheritance taxes, litigation support, acquisitions and dispositions, insurance, Green Acres, and bankruptcy. Engagements have been completed throughout the United States. Certified Yellow Book Appraiser.

Senior Real Estate Appraiser/Manager, Miller-Rinaldi

Perform appraisals of residential properties, industrial, office, retail, hotels, assisted living facilities, multi-family and land. Appraisals performed for mortgage financing, advalorem taxation, estate tax planning, inheritance taxes, litigation support, acquisitions and dispositions, insurance, Green Acres, bankruptcy. Review Appraiser for New York Bancorp and Bank of New Jersey. Assignments have been performed in New Jersey, New York, and Pennsylvania. Responsibilities also include managing and reviewing appraisal work of subcontractors, client relationships, assignment proposals, assignment status, and final appraisal report preparation and invoicing.

Real Estate Salesperson, Anthony J. Rinaldi, Realtor

Assist clients in the purchase and sale of properties in New Jersey, which includes draft preparation of sales contract and interaction with attorneys and mortgage brokers.

Advanced Education

Appraisal Institute Course 110/120-Appraisal Principles & Procedures

Appraisal Institute Course - Statistics

Appraisal Institute Course 310-Basic Income Capitalization

Appraisal Institute Course 320-General Applications

Appraisal Institute Course 510-Advanced Income Capitalization

Appraisal Institute Course - Residential Site Valuation and Cost Approach

Appraisal Institute Course - Sales Comparison and Income Approach

A.S.A. - ALL215 -Appraisal Report Writing
Appraisal Institute Seminar - Evaluating Commercial Construction
Appraisal Institute Seminar - Introduction to FHA Appraising
Appraisal Institute Seminar - Form 1004MC
Rutgers University - Property Tax Administration 1 & 2
USPAP Equivalent - 2018/2019
RS Means Seminar- Square Foot & Assemblies Cost Estimating
Kovats Real Estate School- Real Estate Salesperson Course
Appraisal Institute Seminar - Appraising the Appraisal: Appraisal Review
A.S.A - ME201 Introduction to Machinery and Equipment Valuation
A.S.A - ME202 Machinery and Equipment Valuation Methodology
Appraisal Institute Course - Solving Land Valuations Puzzles
Appraisal Institute Course - Uniform Appraisal Standards for Federal Land Acquisitions

Certifications

State Certified General Appraiser, New Jersey #42RG00212600,
Pennsylvania # GA003789 and New York 46000051089

Licensed Real Estate Salesperson, State of New Jersey Ref #571183

Representative Clients

American Tire & Auto Company	General Electric Company
Alampi & DeMarris	Green Acres
Allied Signal Corp	Hartz Mountain Industries Corporation
Awosting Reserve	Herold & Haines
Bank of America	Hyatt Corporation
Bank of New Jersey	Kates, Nussman, Rapone, Ellis & Farhi, LLP
BASF	Marriot Corporation
Ocean County Improvement Authority (BCIA)	Merrill Lynch
Bogota Savings	Nabisco Brands
Borough of Bergenfield	NBC Studios
Burlington Holdings	Newport Development
Brandywine Holdings	Porro, Novello, Francis
Burger King	Sheraton Corporation
Con Edison	Sokol, Behot & Fiorenzo
Crestfoam Industries	Unilever
Danna and Associates	U.S. Housing & Urban Development (HUD)
Durkin & Boggia	Villa Contacting Company