HVAC Equipment List

VFD Inventory														
Equip ID	Manufacturer	Model #	Qty	Application	Size (hp)	Voltage	Phase	Amps	Installation Year	Life Expectancy	Replacement Cost	CIP Replacement Year	Depreciation Schedule	SN / Notes
Unlabeled VFD1 to HV&AC 1	Eaton	VS005411A	1	VFD	5.0	0-480	3	8	2000	17	$2,400			SN XXXXXXXX, Option Board B5 in slot C, date 5/12/10, systetware XXXXXXXX, locked in manual currently
VFD to HVAC5	Motor Drive International	MVFD4005H2667-2	1	VFD	5.0	0-460	3	8	2000	17	$2,400			XXXXXXXX
Unlabeled to CWP 3,4	Eaton	VS02541A-N000	2	VFD	25.0	0-480	3	34	~2009	17	$5,700			XXXXXXXX
Unlabeled to CWP 1,2	Eaton	VS007414A-N000	2	VFD	7.5	0-480	3	11	~2009	17	$2,750			SN XXXXXXXX. Drive modified with option board B5 and C2 dated 8/16/10
HW VFD 1	Eaton	VS015414A-N000	1	VFD	15.0	0-480	3	21	~2009	17	$4,000			locked to 100% SN:XXXXXXXX
HW VFD 2	Eaton	VS015414A-N000	1	VFD	15.0	0-480	3	21	~2009	17	$4,000			XXXXXXXX
HV&AC 4 SUPPLY	GPD	GPD 506V-B001	1	VFD	15.0	0-460	3	12	2000	17	$4,000			XXXXXXXX
HV&AC 4 RETURN	GPD	GPD 506v-B004	1	VFD	3.0	0-460	3	5	2000	17	$2,100			XXXXXXXX
HV&AC 3 SUPPLY	GPD	GPD 506V-B021	1	VFD	10.0	0-460	3	21	2000	17	$3,150			XXXXXXXX
HV&AC 3 RETURN	GPD	GPD506V-B008	1	VFD	3.0	0-460	3	9	2000	17	$2,100			XXXXXXXX
HV&AC 2 RETURN	GPD	CIMR-P5M43P7	1	VFD	5.0	0-460	3	9	2000	17	$2,400			XXXXXXXX
HV&AC 2 SUPPLY	EATON	V010410A	1	VFD	10.0	0-460	3	16	2000	17	$3,150			XXXXXXXX

HVAC Equipment List

Other Systems												
Equip ID	**Manufacturer**	**Model #**	**Qty**	**Serves**	**Tons**	**Size (hp)**	**Yrs Old**	**Expected Life (yrs)**	**Replacement Cost**	**CIP Replacement Year**	**Depreciation Schedule**	**Notes**
Chiller-1	Carrier	30HXC146RAE661BA	1	CHW System	145		15	23	$128,000			FLV: 0.754 kW/ton, IPLV: 0.649 kW/ton, Screw Chlr
Chiller-2	Trane	RTAA0704YM01A3D0BDFKMNR	1	CHW System	70		12	23	$58,000			FLV: 1.18 kW/ton, IPLV: 0.876 kW/ton, Screw Chlr
Chiller-3	Liebert	DDO350A16	1	Sever rm			2	23	$210,000			SN: 1041C30904
CT-1	Marley	Aquatower		CHW system 1		10.0	29	20	$207,000			Evaporating plates SEVERLY overridden with calcium build up from hard water.
CU-1,2	Carrier	38AR2007 601	2	HV-5	12.5		12	20	$24,000			HP Assumed, serves HV&AC 5
Compr-1		Mixed	1	Pneumatics		10	29	20	$8,200			SEVERE leakage, more explanation in compressor section
Pneumatic Controls	Johnson Controls	Mixed		ALL			28	20	$250,000			JCI installed proprietary controls, Meta-sys. Most in working order, several problems with space temperature and night set backs. Recommended retrofit with open source programing and full
CRAC-unlabeled	Fujitsu	ASU36CLX	1	Basement Electrical rm, R126	3				$6,000			Basement electrical room. Shuts down when OSA temp gets around 20 F. Controlled by wall mounted tstat set to 66F.
DWH	AO SMITH	M-0701947	1	West			5	20	$2,100			XXXXXXXX in XXXXXXXX out
* Expected Life Estimates from AHSRAE Handbook - HVAC Applications 36.3												

HVAC Equipment List

Transformers Inventory														
Equipment	KVA	Make	Model #	Type	Impedance %	NEMA	Location	SN	Notes	Installation Year	Life Expectancy	Replacement Cost	CIP Replacement Year	Depreciation Schedule
XFMR TL	150	General Electric	9T23Q9877G80	QL	2.8	AA	Basement Electrical (B131)	XXXXXXXX	humming	1984	30	$15,000		
XFMR LDP	150	Square D	150T3H	SO	6.7	AA	West Electrical (B126)	XXXXXXXX	humming	2000	30	$15,000		
XMFR T2	75	General Electric	9T23Q9875G80	QL	2.7	AA	2nd floor electrical	XXXXXXXX		2000	30	$6,500		
XFMR TE	45	General Electric	9T23Q9874G80	QL	2.8	AA	Basement Electrical (B131)	XXXXXXXX		1984	30	$5,000		
XFMR EL	45	Square D	EE45T3H	SO	6.2	AA	West Electrical (B126)	XXXXXXXX		1984	30	$5,000		
XMFR L3X	30	General Electric	9T23Q9562G03A	QLFK	4	AA	Third Floor Electrical (350)	NA	slightly humming	1984	30	$4,200		
XMFR EL3	30	Square D	30T3H	SO	5.6	AA	Third Floor Electrical (350)	XXXXXXXX		1984	30	$4,200		
None	25	Square D	DT1171H25T5	SCR	4.9	AA	Elevator Room	XXXXXXXX		1984	30	$3,400		

*New high efficiency transformers are available and recommended when an old unit is replaced.

HVAC Equipment List

Actuator Inventory						
Equip ID	Serves	Location	Make	Model #	Inch	Notes
None	AH1 HW coils	Mech Rm	Johnson Controls	14-283-8	1 1/2	1 1/2 inch three way valve from original construction moves extremely slow closed approx. 1 hr from open to 25%, opens fine
None	AH1 CW coils	Mech Rm	Johnson Controls	11-13779	1 1/2	1 1/2 inch three way valve from original construction moves extremely slow closed approx. 1 hr from open to 25%, opens fine
None	HVAC 1 HW	B131	Siemens	599-01082	4	Working condition, slow to react to DDC
None	HVAC 2 HW	215	Johnson Controls	NA	2	
None	HVAC 2 CW	215	Johnson Controls	NA	2	
None	HVAC 3 HW	2nd Floor Electrical	Johnson Controls	NA	2	
None	HVAC 3 CW	2nd Floor Electrical	Johnson Controls	NA	2	Not responding to DDC controls, failed in closed position
None	HVAC 4 HW	245	Johnson Controls	NA	2	
None	HVAC 4 CW	245	Johnson Controls	NA	2	
HTG-VLV	HVAC 5 HW	B131	Johnson Controls	VA4233-GGA-2	2	
CLG-VLV	HVAC 5 CW	B131	Johnson Controls	VA4233-GGA-2	2	
106	office 106	B131 HVAC1 supply damper	Siemens	3313001	4	Spring Range 3-13psi
115	conference 104	B131 HVAC1 supply damper	Siemens	3313001	4	Broken with a note from 11/7/12 JCI John "bad damper part on order" serves conference room
114	computer room 114	B131 HVAC1 supply damper	Barber Colman	8438	4	Spring Range 3-13psi
115	dispatch 115	B131 HVAC1 supply damper	Siemens	3313001	4	Spring Range 3-13psi

HVAC Equipment List

V.A.V Terminal Unit Schedule (VAV)									
Equip ID	Make	Model	Inlet Size (inches)	CFM		Maximum Operating N.C. @ 1.0 PD	Installation Year	Life Expectancy	Replacement Cost
				Maximum	Minimum				
VAV-1	Titus	ESV-3000	8	711	355	<25	1984	20	$1,500
VAV-2	Titus	ESV-3000	6	380	190	<25	1984	20	$1,500
VAV-3	Titus	ESV-3000	9	820	410	<25	1984	20	$1,500
VAV-4	Titus	ESV-3000	6	390	195	<25	1984	20	$1,500
VAV-5	Titus	ESV-3000	6	390	195	<25	1984	20	$1,500
VAV-6	Titus	ESV-3000	5	330	165	<25	1984	20	$1,500
VAV-7	Titus	ESV-3000	6	370	185	<25	1984	20	$1,500
VAV-8	Titus	ESV-3000	5	330	165	<25	1984	20	$1,500
VAV-9	Titus	ESV-3000	5	350	175	<25	1984	20	$1,500
VAV-10	Titus	ESV-3000	8	741	370	<25	1984	20	$1,500
VAV-11	Titus	ESV-3000	12	1632	816	<25	1984	20	$1,500
VAV-12	Titus	ESV-3000	14	2436	1218	<25	1984	20	$1,500
VAV-13	Titus	ESV-3000	7	510	255	<25	1984	20	$1,500
VAV-14	Titus	ESV-3000	5	300	150	<25	1984	20	$1,500
VAV-15	Titus	ESV-3000	12	1440	720	<25	1984	20	$1,500
VAV-16	Titus	ESV-3000	5	330	330	<25	1984	20	$1,500
VAV-17	Titus	ESV-3000	5	240	120	<25	1984	20	$1,500
VAV-18	Titus	ESV-3000	10	1310	655	<25	1984	20	$1,500
VAV-19	Titus	ESV-3000	8	750	375	<25	1984	20	$1,500
VAV-20	Titus	ESV-3000	5	340	170	<25	1984	20	$1,500
VAV-21	Titus	ESV-3000	9	1050	630	<25	1984	20	$1,500
VAV-22	Titus	ESV-3000	4	180	108	<25	1984	20	$1,500
VAV-23	Titus	ESV-3000	4	180	108	<25	1984	20	$1,500
VAV-24	Titus	ESV-3000	5	270	162	<25	1984	20	$1,500
VAV-25	Titus	ESV-3000	5	310	186	<25	2000	20	$1,500
VAV-26	Titus	ESV-3000	7	600	360	<25	2000	20	$1,500
VAV-27	Titus	ESV-3000	9	960	576	<25	2000	20	$1,500
VAV-28	Titus	ESV-3000	10	1166	700	<25	2000	20	$1,500
VAV-29	Titus	ESV-3000	6	450	450	<25	2000	20	$1,500
VAV-30	Titus	ESV-3000	7	520	312	<25	2000	20	$1,500
VAV-31	Titus	ESV-3000	5	230	138	<25	2000	20	$1,500
VAV-32	Titus	ESV-3000	7	490	294	<25	2000	20	$1,500
VAV-33	Titus	ESV-3000	5	250	150	<25	2000	20	$1,500
VAV-34	Titus	ESV-3000	6	400	240	<25	2000	20	$1,500
VAV-35	Titus	ESV-3000	9	840	504	<25	2000	20	$1,500
VAV-36	Titus	ESV-3000	7	580	348	<25	2000	20	$1,500
VAV-37	Titus	ESV-3000	6	360	216	<25	2000	20	$1,500
VAV-38	Titus	ESV-3000	7	520	312	<25	2000	20	$1,500

HVAC Equipment List

Reheat V.A.V Terminal Unit Schedule (RVV)																
Equip ID	Make	Model	Inlet Sixe (inches)	Maximum CFM		S.P Down Stream (in WG)	Reheat MBH	GPM	ROW	Head Loss (ft)	EWT (F)	LWT (F)	Maximum Operating N.C. @ 1.0 PD	Installation Year	Life Expectancy	Replacement Cost
				Cooling	Heating											
RVV-1	Titus	ESV-3000	6	360	180	0.75	4.9	1	1	5	190	170	<25	2000	20	$1,500
RVV-2	Titus	ESV-3000	10	1220	610	0.75	16.5	2	1	5	190	170	<25	2000	20	$1,500
RVV-3	Titus	ESV-3000	5	240	120	0.75	3.3	1	1	5	190	170	<25	2000	20	$1,500
RVV-4	Titus	ESV-3000	14	2310	1155	0.75	31	3	1	5	190	170	<25	2000	20	$1,500
RVV-5	Titus	ESV-3000	14	2310	1155	0.75	31	3	1	5	190	170	<25	2000	20	$1,500
RVV-6	Titus	ESV-3000	10	1200	800	0.75	35	3.5	1	5	190	170	<25	2000	20	$1,500
RVV-7	Titus	ESV-3000	9	830	415	0.75	11.2	1	1	5	190	170	<25	2000	20	$1,500
RVV-8	Titus	ESV-3000	9	900	540	0.5	5.8	1	1	5	190	170	<25	2000	20	$1,500
RVV-9	Titus	ESV-3000	4	210	126	0.5	1.4	1	1	5	190	170	<25	2000	20	$1,500
RVV-10	Titus	ESV-3000	7	500	300	0.5	3.2	1	1	5	190	170	<25	2000	20	$1,500
RVV-11	Titus	ESV-3000	8	699	420	0.5	4.5	1	1	5	190	170	<25	2000	20	$1,500
RVV-12	Titus	ESV-3000	14	2250	1350	0.5	75	7.5	2	5	190	170	<25	2000	20	$1,500
RVV-13	Titus	ESV-3000	14	2280	1368	0.5	14.8	1.5	1	5	190	170	<25	2000	20	$1,500
RVV-14	Titus	ESV-3000	5	270	162	0.5	1.7	1	1	5	190	170	<25	2000	20	$1,500
RVV-15	Titus	ESV-3000	4	220	132	0.5	1.4	1	1	5	190	170	<25	2000	20	$1,500
RVV-16	Titus	ESV-3000	6	435	261	0.5	2.8	1	1	5	190	170	<25	2000	20	$1,500
RVV-17	Titus	ESV-3000	5	240	144	0.5	1.6	1	1	5	190	170	<25	2000	20	$1,500
RVV-18	Titus	ESV-3000	5	350	210	0.5	2.3	1	1	5	190	170	<25	2000	20	$1,500
RVV-19	Titus	ESV-3000	5	230	138	0.5	1.5	1	1	5	190	170	<25	2000	20	$1,500
RVV-20	Titus	ESV-3000	5	250	150	0.5	1.6	1	1	5	190	170	<25	2000	20	$1,500

HVAC Equipment List

HV&AC Air Handler Unit Schedule																		
				Supply Fan					Return Fan									
Equip ID	Make	Model	SN	CFM	ESP (in WG)	RPM	HP	Volt/ph	CFM	ESP (in WG)	RPM	HP	Volt/ph	Installation Year	Expected Life (yrs)	Replacement Cost	CIP Replacement Year	Depreciation Schedule
AHU-1	Buffalo						75	460/3				25	460/3	1984	30	$168,000		
HV&AC-1	Temtrol	WF-BZ18	81084	6035	1.5	1750	5	460/3	-	-	-	-	-	2000	30	$26,600		
HV&AC-2	Temtrol			8467	2.5	1970	10	460/3	8467	1.5	1075	3	460/3	2000	30	$37,300		
HV&AC-3	Temtrol			12952	2.5	1605	15	460/3	12273	1.5	837	5	460/3	2000	30	$57,000		
HV&AC-4	Temtrol			6421	2.5	2075	7.5	460/3	6421	1.5	1140	2	460/3	2000	30	$28,300		
HV&AC-5	Temtrol	WF-DH13	U101770-001-00	6120	2	1820	5	460/3	-	-	-	-	-	2000	30	$26,900		
HV&AC-6	Temtrol			6300		1750		460/3						2000	30	$27,700		

17.24286
24.19143
37.00571
18.34571
17.48571
18

HVAC Equipment List

Motor Inventory																				
Equip ID	Manufacturer	Model #	Qty	Application	Size (hp)	Voltage	Amps	RPM	Frame	NEMA EFF%	Power Factor	Insulation Class	SF	Des	Code	Installation Year	Life Expectancy	Replacement Cost	CIP Replacement	Depreciation Schedule	SN / notes
None	Montgomery	5C93RA819A800	1	elevator motor	25	240	85.3	850	NA	NA	NA	NA	NA	NA	NA	1984	18	$2,200			shunt wound
AH 1 SF	General Electric	5KS365BS205D21	1	fan motor	75	230/460	180.2/90.1	1780	365T	94.1	0.85	F	1.15	BFC	G	~2000	18	$6,000			TM625422
AH 1 RF	General Electric	NA	1	fan motor	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	~1990	18	$2,200			Totally incased in insulation can't get to motor name plate
Pumps 3,4	Baldor	M2531T	2	pump motor	25	208-230/460	2	1760	284T	91.7	0.83	B	1.15	B	G	1984	18	$2,200			39L031W918H1
Pumps 1,2	Gould	6-338345-03	2	pump motor	7.5	208-230/460	18.3/9.15	1750	E213T	88.5	0.867	B	1.15	B	J	1984	18	$950			SN 71509
CWP 1,2	Baldor	JMM3311T	2	pump motor	7.5	208-230/460	23-22/11	1725	213JM	85.5	0.75	B	1.15	B	H	1998	18	$950			Located in B131, rotation clockwise when looking from behind, pump
HWP 1	Baldor	JMM2513T	1	pump motor	15	230-460	41/20.5	1760	254JM	88.5	0.78	B	1.15	B	H	1998	18	$1,500			
HWP 2	Baldor	JMM2513T	1	pump motor	15	230-460	41-38	1760	254JM	91	0.81	F	1.15	A	J	~1984	18	$1,500			
HV&AC 4 SF	Baldor	EM3311T	1	fan motor	7.5	0.5	19.2/9.6	1770	213T	91.7	0.79	F	1.15	A	J	~2000	18	$950			37F614S186
HV&AC 2 RF	Baldor	EM3211T	1	fan motor	3	230-460	8.2/4.1	1760	182T	89.5	0.77	F	1.15	B	K	~2000	18	$650			36G548Y434G1
HV&AC 3 SF	Baldor	EM2513T	1	fan motor	15	230-460	35.4/17.7	1765	254T	93	0.86	F	1.15	B	G	~2000	18	$1,500			39K037W916
HV&AC 3 RF	Baldor	EM2118T	1	fan motor	5	230-460	13.2/6.6	1750	184T	89.5	0.8	F	1.15	B	J	~2000	18	$700			36G548S270G1

*Motors traditionally do not have when they were manufactured on their SN. Periodic replacements over the entire building make it hard to determine when each motor was installed. Also maintenance often keep extra motors in-stock and a motor may appear to be old but actually has been recently installed and is in good condition.

Pump Inventory													
Equip ID	Manufacturer	Model #	Impeller Size	RPM	GPM	Head (ft)	hp	Voltage	Notes	Installation Year	Life Expectancy	Replacement Cost	CIP Replacement Year	Depreciation Schedule
HWCP 1,2	Bell & Gossett	3E	9.875	1750	352	85	15	460	Closed Couple Design	1984	20			
CWP 1,2	Bell & Gossett	2-1/2BB	8.75	1750	170	75	7.5	460	Closed Couple Design	1984	20			
CWCP 1	Bell & Gossett	3X3X6.5BF			150	36	3			1984	20			
CWP 3,4	Bell & Gossett	NA							Nameplate NA	1984	20			

	Energy Conservation Opportunity	Estimated Annual Electric Savings (kWh)	Estimated Demand Savings (kW)	Estimated Annual Gas Savings (therms)	Estimated Annual Energy Savings ($)	Estimated Capital Costs ($)	Estimated Simple Payback (years)	System Age (years)	Estimated Remaining System Life* (years)	CIP Replacement Year	Depreciation Schedule	Estimated Non-Improved Replacement Cost ($)	Percentage of Total kWh Saved %	Percentage of Total Therms Saved %
Prescriptive Measures														
1	Replace Air Handling Unit 3-way Valves with 2-way Valves	201,100	0	0	$12,649.19	$46,820	3.7	29	1	FY14		$26,000.00	12%	0%
2	New Cooling Tower and Variable Volume Condenser Water Loop Retrofit	29,750	0	0	$1,871.28	$207,383	110.8	29	-9	FY14		$165,000.00	2%	0%
3	Replace Pneumatic Controls with DDC	210,420	0	2,100	$14,417.72	$250,000	17.3	29	-9	FY15		$20,000 / year	12%	5%
4	Addition of Reheat to VAV Boxes	0	0	900	$506.70	$170,000	335.5	5 to 29	15 to -9	FY16		$100,000.00	0%	2%
5	Replace Domestic Water Heat Exchangers	0	0	6,500	$3,659.50	$37,277	10.2	5 to 29	-5	FY17		$37,000.00	0%	16%
6	Premium Efficiency Motors	1,600	0	0	$100.64	$15,000	149.0	0 to 29	0 to 18	FY17		$5,220/year	0%	0%
7	Condensing Boilers	0	0	6,200	$3,490.60	$164,000	47.0	5 and 12	19 and12	FY20		$130,000.00	0%	16%
8	Replace Basement Electrical Room Mini-Split System	0	0	0	$0.00	$8,000	NA	5	10	n/a		$8,000.00	0%	0%
9	New Chiller Plant	150,135	0	0	$9,443.49	$526,300	55.7	12 and 15	11 and 8	FY20		$374,000.00	9%	0%
	Total	593,005	0	15,700	46139.1145	$1,424,780	30.9						23%	40%
	Current Usage	1,729,491	124	39,637	131140									
	Percent Savings	34%	0%	40%	35%									

*Measures were analyzed separately and interactive effects have not been taken into account.
* Expected Life Estimates from AHSRAE Handbook - HVAC Applications 36.3