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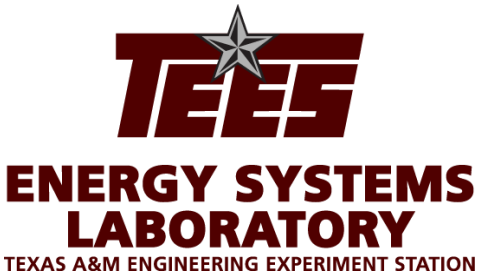

TAMU Project

Energy Consumption Data Quality Assurance/Quality Control Assessment Report for the

Month of November 2016

Prepared for

Utility & Energy Services

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Executive Summary

This report analyzes the energy use data collected from 584 meters in 202 buildings and complexes (approximately 20,468,000 GSF) on the campus of Texas A&M University in College Station, Texas. The report consists of five sections: 1) The summary of the monthly energy consumption per meter ID, 2) The quality control and assurance analysis of incorrect or incomplete energy use patterns, 3) Energy consumption time series plots, 4) Energy Balance plots, and 5) Energy Balance plots with filled-in consumption data. Section one contains the summary of monthly energy consumption for each of the TAMU buildings. Section two includes the reviews on each of those building energy use patterns that presented problems in the metered data. Section three and four are a collection of the plots generated for the energy use analysis, as reference to indicate and validate the quality of the metered energy data. The Section five includes the energy balance plots with filled-in energy data.

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I. Summary of Monthly Consumption

Table I-1 November 2016 Monthly Consumption for TAMU Buildings

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
0270	Emerging Technologies Building	305,316	007469	ELE	187,482	kWh	
0270	Emerging Technologies Building	305,316	007470	ELE	49,934	kWh	
0270	Emerging Technologies Building	305,316	007471	CHW	1,357,147	mBtu	
0270	Emerging Technologies Building	305,316	007475	HHW	363,942	mBtu	
0275	Liberal Arts and Arts & Humanities Building	107,500	007715	ELE	59,231	kWh	
0275	Liberal Arts and Arts & Humanities Building	107,500	007716	CHW	402,018	mBtu	
0275	Liberal Arts and Arts & Humanities Building	107,500	007717	HHW	98,202	mBtu	
0290	Wells Residence Hall	67,283	006870	ELE	48,133	kWh	
0290	Wells Residence Hall	67,283	001984	CHW	722,837	mBtu	(2)
0290	Wells Residence Hall	67,283	001988	HHW	495,539	mBtu	(2)
0291	Rudder Residence Hall	67,283	000351	ELE	51,104	kWh	
0291	Rudder Residence Hall	67,283	002132	CHW	706,733	mBtu	(1), (2)
0291	Rudder Residence Hall	67,283	002136	HHW	413,254	mBtu	(1), (2)
0292	Eppright Residence Hall	67,283	000002	ELE	47,053	kWh	
0292	Eppright Residence Hall	67,283	002262	CHW	364,034	mBtu	
0292	Eppright Residence Hall	67,283	002266	HHW	204,140	mBtu	
0293	Appelt Residence Hall	82,767	000003	ELE	59,559	kWh	
0293	Appelt Residence Hall	82,767	002062	CHW	756,295	mBtu	(2)
0293	Appelt Residence Hall	82,767	002066	HHW	377,717	mBtu	(2)
0294	Lechner Residence Hall	59,541	000004	ELE	49,585	kWh	
0294	Lechner Residence Hall	59,541	002285	CHW	640,776	mBtu	
0294	Lechner Residence Hall	59,541	002289	HHW	532,750	mBtu	
0296-0297	Mitchell Inst. For Fundamental Phys & Astronomy	189,617	006536	ELE	129,146	kWh	
0296-0297	Mitchell Inst. For Fundamental Phys & Astronomy	189,617	006537	ELE	111,225	kWh	
0296-0297	Mitchell Inst. For Fundamental Phys & Astronomy	189,617	006534	CHW	791,874	mBtu	
0296-0297	Mitchell Inst. For Fundamental Phys & Astronomy	189,617	006535	HHW	215,438	mBtu	
0353	Bright Aerospace Building	148,837	001569	ELE	164,075	kWh	
0353	Bright Aerospace Building	148,837	002746	CHW	1,064,807	mBtu	(2)
0353	Bright Aerospace Building	148,837	002757	HHW	82,003	mBtu	
0358	Davis Football Player Development Center	20,026	007699	ELE	27,447	kWh	
0358	Davis Football Player Development Center	20,026	007701	CHW	122,825	mBtu	
0358	Davis Football Player Development Center	20,026	007702	HHW	9,458	mBtu	
0361	Bright Football Complex	124,971	008461	ELE	207,925	kWh	
0361	Bright Football Complex	124,971	002547	CHW	931,904	mBtu	
0361	Bright Football Complex	124,971	002551	HHW	192,148	mBtu	
0367	Kyle Field	489,000	000336	ELE	179,020	kWh	
0367	Kyle Field	489,000	008861	ELE	124,449	kWh	
0367	Kyle Field	489,000	008862	ELE	130,569	kWh	
0367	Kyle Field	489,000	008863	ELE	212,236	kWh	
0367	Kyle Field	489,000	008864	ELE	225,025	kWh	
0367	Kyle Field	489,000	008865	ELE	85,919	kWh	
0367	Kyle Field	489,000	008866	ELE	188,227	kWh	
0367	Kyle Field	489,000	008867	ELE	231,567	kWh	
0367	Kyle Field	489,000	008868	ELE	99,899	kWh	
0367	Kyle Field	489,000	008852	CHW	2,306,446	mBtu	
0367	Kyle Field	489,000	008026	CHW	2,301,231	mBtu	
0367	Kyle Field	489,000	008856	HHW	153,289	mBtu	
0367	Kyle Field	489,000	008027	HHW	1,070,098	mBtu	
0376	Chemistry Building Addition	115,797	006229	ELE	174,753	kWh	
0376	Chemistry Building Addition	115,797	006230	ELE	119,190	kWh	
0376	Chemistry Building Addition	115,797	007115	CHW	1,827,337	mBtu	
0376	Chemistry Building Addition	115,797	007119	HHW	1,175,636	mBtu	#, (1)
0383	Koldus Building	110,272	001488	ELE	156,908	kWh	
0383	Koldus Building	110,272	002863	CHW	511,817	mBtu	
0383	Koldus Building	110,272	002874	HHW	187,577	mBtu	
0384	Sanders Corps of Cadets Center	19,363	001554	ELE	24,499	kWh	
0384	Sanders Corps of Cadets Center	19,363	002583	CHW	173,539	mBtu	
0384	Sanders Corps of Cadets Center	19,363	002587	HHW	106,403	mBtu	
0325-0385	CE TTI Office & Lab Building	157,844	009122	ELE	160,860	kWh	
0325-0385	CE TTI Office & Lab Building	157,844	009123	CHW	827,324	mBtu	
0325-0385	CE TTI Office & Lab Building	157,844	009124	HHW	212,090	mBtu	
0386	Jack E. Brown Chemical Engineering Building	205,000	001428	ELE	151,534	kWh	
0386	Jack E. Brown Chemical Engineering Building	205,000	001429	ELE	328,131	kWh	
0386	Jack E. Brown Chemical Engineering Building	205,000	002250	CHW	2,287,312	mBtu	
0386	Jack E. Brown Chemical Engineering Building	205,000	006871	CHW	106,482	mBtu	
0386	Jack E. Brown Chemical Engineering Building	205,000	002254	HHW	463,830	mBtu	

Table I-1 November 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
0387	Richardson Petroleum Engineering Building	113,700	005870	ELE	83,193	kWh	
0387	Richardson Petroleum Engineering Building	113,700	005872	ELE	103,389	kWh	*
0387	Richardson Petroleum Engineering Building	113,700	005805	CHW	674,058	mBtu	
0387	Richardson Petroleum Engineering Building	113,700	005809	HHW	80,717	mBtu	
0391-0392	James J. Cain'51 and Mechanical Engineering Office Building	173,481	001573	ELE	190,222	kWh	
0391-0392	James J. Cain'51 and Mechanical Engineering Office Building	173,481	002906	CHW	1,159,926	mBtu	
0391-0392	James J. Cain'51 and Mechanical Engineering Office Building	173,481	002910	HHW	292,289	mBtu	
0394	Underwood Residence Hall	81,730	000014	ELE	58,367	kWh	
0394	Underwood Residence Hall	81,730	002117	CHW	469,212	mBtu	
0394	Underwood Residence Hall	81,730	002121	HHW	295,653	mBtu	
0398	Langford Architecture Center Building A	116,619	003806	ELE	112,963	kWh	
0398	Langford Architecture Center Building A	116,619	003951	CHW	623,597	mBtu	
0398	Langford Architecture Center Building A	116,619	003955	HHW	302,578	mBtu	
0400-0402-1405	Spence Hall, Briggs Hall, and Ash II LLC	108,555	009386	ELE	87,216	kWh	
0400	Spence Hall Dorm 1	38,907	009290	ELE	13,763	kWh	
0400	Spence Hall Dorm 1	38,907	009291	ELE	16,473	kWh	
0400-1405	Spence Hall and Ash II LLC	72,038	009292	CHW	392,022	mBtu	
0400-1405	Spence Hall and Ash II LLC	72,038	009296	HHW	162,377	mBtu	
1405	Ash II LLC	33,131	009387	CHW	180,543	mBtu	
1405	Ash II LLC	33,131	009391	HHW	63,089	mBtu	
0402	Briggs Hall Dorm 3	36,517	009322	ELE	16,326	kWh	
0402	Briggs Hall Dorm 3	36,517	009323	ELE	12,141	kWh	
0402	Briggs Hall Dorm 3	36,517	009324	CHW	238,498	mBtu	
0402	Briggs Hall Dorm 3	36,517	009328	HHW	73,671	mBtu	
0401-0403-1404	Kiest Hall, Fountain Hall, and Plank LLC	108,752	009370	ELE	86,145	kWh	
0401	Kiest Hall Dorm 2	38,815	009306	ELE	13,455	kWh	
0401	Kiest Hall Dorm 2	38,815	009307	ELE	13,936	kWh	
0401-1404	Kiest Hall, and Plank LLC	72,052	009308	CHW	448,164	mBtu	
0401-1404	Kiest Hall, and Plank LLC	72,052	009312	HHW	175,326	mBtu	
1404	Plank LLC	33,237	009372	CHW	232,595	mBtu	
1404	Plank LLC	33,237	009376	HHW	73,197	mBtu	
0403	Fountain Hall Dorm 4	36,700	009338	ELE	14,352	kWh	*
0403	Fountain Hall Dorm 4	36,700	009339	ELE	12,289	kWh	
0403	Fountain Hall Dorm 4	36,700	009340	CHW	215,869	mBtu	
0403	Fountain Hall Dorm 5	36,700	009344	HHW	64,609	mBtu	
0404-0406-1403	Gainer Hall, Leonard Hall and Ash LLC	90,072	009401	ELE	70,568	kWh	
0406-1403	Leonard Hall - Dorm 7 and Ash LLC	53,508	007982	CHW	345,031	mBtu	
0406-1403	Leonard Hall - Dorm 7 and Ash LLC	53,508	007983	HHW	110,647	mBtu	
0406	Leonard Hall - Dorm 7	36,222	008011	ELE	12,155	kWh	
0406	Leonard Hall - Dorm 7	36,222	008012	ELE	14,055	kWh	
1403	H. Grady Ash, Jr. '58 Leadership Learning Center	17,286	008005	CHW	107,515	mBtu	
1403	H. Grady Ash, Jr. '58 Leadership Learning Center	17,286	008006	HHW	15,496	mBtu	
0404	Gainer Hall Dorm 5	36,564	009354	ELE	12,775	kWh	
0404	Gainer Hall Dorm 5	36,564	009355	ELE	11,575	kWh	
0404	Gainer Hall Dorm 5	36,564	009356	CHW	239,506	mBtu	
0404	Gainer Hall Dorm 5	36,564	009360	HHW	76,579	mBtu	
0405-0407-1402	Lacy Hall - Dorm 6, Harrell Hall and Leadership Learning Center	91,310	007721	ELE	75,133	kWh	
0407-1402	Harrell Hall - Dorm 8 and Buzbee LLC	54,443	007722	CHW	334,402	mBtu	
0407-1402	Harrell Hall - Dorm 8 and Buzbee LLC	54,443	007723	HHW	88,867	mBtu	
0405	Lacy Hall - Dorm 6	36,867	007922	ELE	27,676	kWh	
0405	Lacy Hall - Dorm 6	36,867	007918	CHW	254,071	mBtu	
0405	Lacy Hall - Dorm 6	36,867	007919	HHW	115,898	mBtu	
0407	Harrell Hall - Dorm 8	36,943	007729	ELE	27,653	kWh	
1402	Buzbee Leadership Learning Center	17,500	007725	CHW	170,018	mBtu	
1402	Buzbee Leadership Learning Center	17,500	007726	HHW	18,380	mBtu	
0412	Moses Residence Hall	40,828	000027	ELE	32,224	kWh	
0412	Moses Residence Hall	40,828	002384	CHW	455,171	mBtu	
0412	Moses Residence Hall	40,828	002395	HHW	208,067	mBtu	
0415	Davis-Gary Residence Hall	40,828	000030	ELE	29,268	kWh	
0415	Davis-Gary Residence Hall	40,828	002532	CHW	453,522	mBtu	
0415	Davis-Gary Residence Hall	40,828	002543	HHW	231,655	mBtu	
0419	Legett Residence Hall	45,134	000031	ELE	18,137	kWh	(2)
0419	Legett Residence Hall	45,134	002218	CHW	266,772	mBtu	(2)
0419	Legett Residence Hall	45,134	002222	HHW	122,469	mBtu	(2)
0420	Milner Hall	48,268	009144	ELE	23,783	kWh	
0420	Milner Hall	48,268	009145	CHW	115,798	mBtu	
0420	Milner Hall	48,268	009146	HHW	69,294	mBtu	

Table I-1 November 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
0422	Walton Residence Hall	51,494	000378	ELE	57,190	kWh	
0422	Walton Residence Hall	51,494	002364	HHW	45,476	mBtu	
0424	Hotard Hall	18,500	000032	ELE	13,514	kWh	
0424	Hotard Hall	18,500	002657	CHW	78,797	mBtu	(1)
0424	Hotard Hall	18,500	002668	HHW	51,167	mBtu	(1)
0425	Henderson Hall	22,185	001553	ELE	14,588	kWh	
0425	Henderson Hall	22,185	002607	CHW	153,834	mBtu	
0425	Henderson Hall	22,185	002611	HHW	85,668	mBtu	
0426-0427-0428	FHK Complex	154,349	000331	ELE	121,432	kWh	
0426-0427-0428	FHK Complex	154,349	002848	CHW	1,066,190	mBtu	
0426-0427-0428	FHK Complex	154,349	002859	HHW	736,154	mBtu	
0430	Schumacher Residence Hall	38,957	000034	ELE	33,597	kWh	
0430	Schumacher Residence Hall	38,957	002015	CHW	273,604	mBtu	
0430	Schumacher Residence Hall	38,957	002030	HHW	144,901	mBtu	
0359	Architecture Building B	28,545	005518	ELE	21,320	kWh	
0432	Architecture Building C	73,020	005584	ELE	82,733	kWh	
0359-0432	Architecture Building B&C	101,565	006419	CHW	613,743	mBtu	
0359-0432	Architecture Building B&C	101,565	006423	HHW	291,517	mBtu	
0434	Luedecke Building (Cyclotron)	80,646	005555	ELE	166,204	kWh	
0434	Luedecke Building (Cyclotron)	80,646	005558	ELE	957,513	kWh	
0434	Luedecke Building (Cyclotron)	80,646	006664	CHW	1,662,942	mBtu	
0434	Luedecke Building (Cyclotron)	80,646	006668	HHW	98,887	mBtu	
0435	Harrington Education Center Office Tower	130,844	001546	ELE	111,571	kWh	
0435	Harrington Education Center Office Tower	130,844	002792	CHW	668,446	mBtu	
0435	Harrington Education Center Office Tower	130,844	002796	HHW	382,037	mBtu	
0436	Reed-McDonald Building	77,435	006868	ELE	87,089	kWh	
0436	Reed-McDonald Building	77,435	002419	CHW	710,959	mBtu	
0436	Reed-McDonald Building	77,435	002423	HHW	355,836	mBtu	
0438	Harrington Education Center Classroom Building	61,860	003630	ELE	35,118	kWh	
0438	Harrington Education Center Classroom Building	61,860	002784	CHW	168,510	mBtu	
0438	Harrington Education Center Classroom Building	61,860	002788	HHW	931	mBtu	
0433-0440-0441-0442-0447	Mosher Commons Krueger Dunn Aston	577,584	009099	ELE	378,317	kWh	
0433	Mosher Residence Hall	155,430	009083	ELE	102,843	kWh	(2)
0433	Mosher Residence Hall	155,430	002485	CHW	1,557,376	mBtu	(2)
0433	Mosher Residence Hall	155,430	002489	HHW	738,347	mBtu	(2)
0440	Commons Hall	84,500	009237	CHW	210,060	mBtu	
0440	Commons Hall	84,500	009238	HHW	5,563	mBtu	
0441	Krueger Residence Hall	112,133	009091	ELE	82,711	kWh	
0441	Krueger Residence Hall	112,133	002504	CHW	608,054	mBtu	(2)
0441	Krueger Residence Hall	112,133	002500	HHW	371,212	mBtu	#, (1), (2)
0442	Dunn Residence Hall	112,133	009095	ELE	119,831	kWh	
0442	Dunn Residence Hall	112,133	002519	CHW	797,311	mBtu	
0442	Dunn Residence Hall	112,133	002515	HHW	435,412	mBtu	
0447	Aston Residence Hall	113,388	009087	ELE	72,590	kWh	
0447	Aston Residence Hall	113,388	002474	CHW	527,638	mBtu	(1), (2)
0447	Aston Residence Hall	113,388	002470	HHW	611,312	mBtu	
0443	Oceanography & Meteorology Building	180,316	005322	ELE	168,824	kWh	
0443	Oceanography & Meteorology Building	180,316	005323	ELE	60,279	kWh	
0443	Oceanography & Meteorology Building	180,316	006388	CHW	777,027	mBtu	#, (1), (2)
0443	Oceanography & Meteorology Building	180,316	006392	HHW	284,777	mBtu	(2)
0444	Peterson Building	84,831	004714	ELE	152,951	kWh	
0444	Peterson Building	84,831	002922	CHW	923,481	mBtu	
0444	Peterson Building	84,831	006435	HHW	347,833	mBtu	
0445-0517	Teague Research Center and DPC Annex	89,735	003948	ELE	28,729	kWh	
0445-0517	Teague Research Center and DPC Annex	89,735	004719	ELE	48,968	kWh	*
0445	Teague Research Center	63,515	006411	CHW	197,899	mBtu	
0445	Teague Research Center	63,515	006415	HHW	40,223	mBtu	
0517	DPC Annex	26,220	006563	CHW	354,928	mBtu	
0517	DPC Annex	26,220	006567	HHW	140,962	mBtu	(2)
0446	Rudder Theatre Complex	209,293	002977	ELE	100,788	kWh	
0446	Rudder Theatre Complex	209,293	002980	ELE	31,288	kWh	
0446	Rudder Theatre Complex	209,293	004297	CHW	1,547,531	mBtu	
0446	Rudder Theatre Complex	209,293	004309	HHW	1,042,793	mBtu	
0446	Rudder Tower	92,947	001550	ELE	25,741	kWh	*
0446	Rudder Tower	92,947	001551	ELE	61,740	kWh	
0446	Rudder Tower	92,947	002455	CHW	410,191	mBtu	(1)
0446	Rudder Tower	92,947	002459	HHW	186,765	mBtu	(1)

Table I-1 November 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
0448	Adams Band Hall	55,248	000978	ELE	59,722	kWh	
0448	Adams Band Hall	55,248	002555	CHW	473,193	mBtu	
0448	Adams Band Hall	55,248	002566	HHW	306,164	mBtu	
0449	Biological Sciences Building - West	96,038	003978	ELE	183,785	kWh	
0449	Biological Sciences Building - West	96,038	003981	CHW	932,873	mBtu	
0449	Biological Sciences Building - West	96,038	003985	HHW	253,459	mBtu	
0450	Duncan Dining Hall	128,482	000300	ELE	113,919	kWh	
0450	Duncan Dining Hall	128,482	002998	CHW	588,669	mBtu	
0450	Duncan Dining Hall	128,482	003009	HHW	239,656	mBtu	
0454	MSC (East Main)	392,000	007600	ELE	295,202	kWh	
0454	MSC (West Main)	392,000	007601	ELE	214,476	kWh	
0454	MSC BOR	392,000	008047	ELE	18,233	kWh	
0454	MSC	392,000	007584	CHW	2,015,106	mBtu	
0454	MSC BOR	392,000	004184	CHW	348,258	mBtu	
0454	MSC	392,000	007585	HHW	397,803	mBtu	
0454	MSC BOR	392,000	004196	HHW	264,037	mBtu	
0456	Military Sciences Building	43,808	006939	CHW	557,645	mBtu	*
0456	Military Sciences Building	43,808	006943	HHW	241,367	mBtu	*
0457	TAES Annex Building	16,364	005863	ELE	13,701	kWh	
0457	TAES Annex Building	16,364	005913	CHW	50,204	mBtu	
0457	TAES Annex Building	16,364	005917	HHW	29,327	mBtu	#, (1)
0461	Coke Building	24,466	004008	ELE	28,713	kWh	
0461	Coke Building	24,466	005307	CHW	83,232	mBtu	
0461	Coke Building	24,466	004023	HHW	1,889	mBtu	
0462	Academic Building	82,555	005861	ELE	22,096	kWh	
0462	Academic Building	82,555	005903	ELE	38,774	kWh	
0462	Academic Building	82,555	005905	CHW	486,870	mBtu	
0462	Academic Building	82,555	005909	HHW	296,453	mBtu	
0463	Psychology Building	48,215	001575	ELE	43,075	kWh	
0463	Psychology Building	48,215	002941	CHW	332,560	mBtu	
0463	Psychology Building	48,215	002945	HHW	63,995	mBtu	
0464	State Chemist Building	20,027	005839	ELE	5,532	kWh	
0464	State Chemist Building	20,027	005837	ELE	5,884	mBtu	
0464	State Chemist Building	20,027	005841	HHW	115	mBtu	
0465	Butler Hall	29,699	003997	ELE	30,889	kWh	
0465	Butler Hall	29,699	004000	CHW	197,665	mBtu	
0465	Butler Hall	29,699	004004	HHW	104,934	mBtu	
0467	Biological Sciences Building - East	62,273	001543	ELE	182,910	kWh	
0467	Biological Sciences Building - East	62,273	003851	CHW	626,118	mBtu	#, (1), (2)
0467	Biological Sciences Building - East	62,273	003862	HHW	179,824	mBtu	(2)
0468	Evans Library	712,093	000304	ELE	249,107	kWh	
0468	Evans Library	712,093	000318	ELE	138,117	kWh	
0468	Evans Library	712,093	000319	ELE	94,151	kWh	
0468	Evans Library	712,093	000320	ELE	81,350	kWh	
0468	Evans Library	712,093	006429	ELE	92,659	kWh	
0468	Evans Library	712,093	003701	CHW	873,862	mBtu	
0468	Evans Library	712,093	003895	CHW	1,137,654	mBtu	
0468	Evans Library	712,093	003903	CHW	200,905	mBtu	
0468	Evans Library	712,093	003911	CHW	1,112,537	mBtu	
0468	Evans Library	712,093	003712	HHW	144,762	mBtu	
0468	Evans Library	712,093	003899	HHW	332,908	mBtu	
0468	Evans Library	712,093	003907	HHW	61,548	mBtu	
0468	Evans Library	712,093	003922	HHW	64,863	mBtu	
0468	Evans Library	712,093	005303	HHW	43,071	mBtu	
0469	Central Campus Parking Garage	251,304	000306	ELE	46,288	kWh	*
0469	Central Campus Parking Garage	2,844	003716	CHW	18,008	mBtu	
0469	Central Campus Parking Garage	2,844	003720	HHW	5,551	mBtu	
0470	Glasscock History Bldg	39,887	006407	ELE	19,042	kWh	*
0470	Glasscock History Bldg	39,887	006638	CHW	133,297	mBtu	
0470	Glasscock History Bldg	39,887	006642	HHW	48,878	mBtu	
0471	Pavilion	40,062	001455	ELE	39,560	kWh	
0471	Pavilion	40,062	002769	CHW	144,802	mBtu	
0471	Pavilion	40,062	002780	HHW	3,917	mBtu	
0472	Animal Industries	44,856	009042	ELE	50,447	kWh	
0472	Animal Industries	44,856	009109	CHW	267,062	mBtu	
0472	Animal Industries	44,856	009113	HHW	103,808	mBtu	
0473	Williams Administration Building	69,898	007945	ELE	46,832	kWh	
0473	Williams Administration Building	69,898	007946	CHW	277,354	mBtu	(2)
0473	Williams Administration Building	69,898	007947	HHW	126,116	mBtu	(2)

Table I-1 November 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
0474	YMCA Building	36,035	007524	ELE	23,361	kWh	
0474	YMCA Building	36,035	007525	CHW	94,386	mBtu	
0474	YMCA Building	36,035	007526	HHW	10,396	mBtu	
0476	Francis Hall	36,850	008015	ELE	38,109	kWh	
0476	Francis Hall	36,850	008033	CHW	232,824	mBtu	
0476	Francis Hall	36,850	008034	HHW	24,832	mBtu	
0477	Anthropology Building	51,592	001558	ELE	32,927	kWh	
0477	Anthropology Building	51,592	003664	CHW	259,898	mBtu	
0477	Anthropology Building	51,592	003668	HHW	102,267	mBtu	
0478	Scoates Hall	62,228	007961	ELE	54,777	kWh	(2)
0478	Scoates Hall	62,228	007968	CHW	229,454	mBtu	(2)
0478	Scoates Hall	62,228	007969	HHW	53,112	mBtu	(2)
0480	Bolton Hall	39,686	006845	ELE	30,292	kWh	
0480	Bolton Hall	39,686	007012	CHW	134,890	mBtu	
0480	Bolton Hall	39,686	007016	HHW	35,692	mBtu	
0481	Heaton Hall	13,640	005712	ELE	NA	kWh	*
0481	Heaton Hall	13,640	007531	CHW	255,470	mBtu	
0481	Heaton Hall	13,640	007535	HHW	211,602	mBtu	
0482	Fermier Hall	19,074	005779	ELE	12,856	kWh	
0482	Fermier Hall	19,074	005878	CHW	60,528	mBtu	(2)
0482	Fermier Hall	19,074	005881	HHW	8,762	mBtu	(2)
0483	Thompson Hall	81,404	003688	ELE	62,259	kWh	*
0483	Thompson Hall	81,404	003887	CHW	179,573	mBtu	*, #, (1)
0483	Thompson Hall	81,404	003891	HHW	29,116	mBtu	*, #, (1)
0484	Chemistry Building	205,393	007152	ELE	93,742	kWh	*
0484	Chemistry Building	205,393	007556	ELE	12,942	kWh	
0484	Chemistry Building	205,393	007557	ELE	122,889	kWh	#, (1)
0484	Chemistry Building	205,393	007559	ELE	164,610	kWh	
0484	Chemistry Building	205,393	007028	CHW	1,184,040	mBtu	*
0484	Chemistry Building	205,393	007223	CHW	2,025,396	mBtu	
0484	Chemistry Building	205,393	007032	HHW	278,674	mBtu	*
0484	Chemistry Building	205,393	007227	HHW	883,047	mBtu	
0490	Halbouty Geosciences Building	120,874	006691	ELE	64,218	kWh	
0490	Halbouty Geosciences Building	120,874	006695	ELE	107,350	kWh	
0490	Halbouty Geosciences Building	120,874	006896	CHW	970,752	mBtu	
0490	Halbouty Geosciences Building	120,874	006913	CHW	492,221	mBtu	
0490	Halbouty Geosciences Building	120,874	006900	HHW	401,103	mBtu	
0490	Halbouty Geosciences Building	120,874	006917	HHW	218,690	mBtu	
0492	Civil Engineering Building	56,537	005783	ELE	56,494	kWh	*
0492	Civil Engineering Building	56,537	005950	CHW	316,381	mBtu	#, (1)
0492	Civil Engineering Building	56,537	005954	HHW	119,803	mBtu	#, (1)
0495	Sbisa Dining Hall	94,233	000352	ELE	141,166	kWh	
0495	Sbisa Dining Hall	94,233	000353	ELE	122,807	kWh	
0495	Sbisa Dining Hall	94,233	001951	CHW	1,063,804	mBtu	
0495	Sbisa Dining Hall	94,233	001957	HHW	215,122	mBtu	
0496	Utilities & Energy Services Central Office	46,110	007706	ELE	10,715	kWh	(2)
0496	Utilities & Energy Services Central Office	46,110	006929	CHW	93,503	mBtu	(2)
0496	Utilities & Energy Services Central Office	46,110	006933	HHW	27,294	mBtu	(2)
0499	Engineering Innovation Center	28,339	001561	ELE	28,120	kWh	
0499	Engineering Innovation Center	28,339	002672	CHW	81,375	mBtu	(2)
0499	Engineering Innovation Center	28,339	002683	HHW	53,383	mBtu	
0501	Concrete Materials Laboratory	9,600	005791	ELE	7,112	kWh	
0506	Nagle Hall	32,306	001484	ELE	12,669	kWh	(2)
0506	Nagle Hall	32,306	003619	CHW	229,382	mBtu	(2)
0506	Nagle Hall	32,306	003623	HHW	34,513	mBtu	(2)
0507	Veterinary Medical Science Building	69,367	003013	ELE	74,289	kWh	
0507	Veterinary Medical Science Building	69,367	003640	CHW	905,327	mBtu	
0507	Veterinary Medical Science Building	69,367	003644	HHW	438,689	mBtu	
0508	Veterinary Teaching Hospital	96,416	003022	ELE	86,310	kWh	
0508-1026	Veterinary Teaching Hospital and Veterinary Medicine Administration	191,096	004166	CHW	1,602,202	mBtu	
0508-1026	Veterinary Teaching Hospital and Veterinary Medicine Administration	191,096	004170	HHW	648,705	mBtu	
0511	Heep Laboratory Building	40,476	005787	ELE	65,720	kWh	
0511	Heep Laboratory Building	40,476	005821	CHW	444,058	mBtu	#, (1)
0511	Heep Laboratory Building	40,476	005825	HHW	190,446	mBtu	
0512	All Faiths Chapel	8,999	004340	ELE	7,408	kWh	
0512	All Faiths Chapel	8,999	004288	CHW	39,541	mBtu	(2)
0512	All Faiths Chapel	8,999	004293	HHW	48,632	mBtu	#, (1)
0513	Doherty Building	42,336	000299	ELE	50,107	kWh	
0513	Doherty Building	42,336	002898	CHW	597,323	mBtu	
0513	Doherty Building	42,336	002902	HHW	371,016	mBtu	

Table I-1 November 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
0514	Munnerlyn Astronomy & Space Sciences Engineering	22,134	007558	ELE	12,298	kWh	
0514	Munnerlyn Astronomy & Space Sciences Engineering	22,134	007487	CHW	49,623	mBtu	
0514	Munnerlyn Astronomy & Space Sciences Engineering	22,134	007491	HHW	4,830	mBtu	
0516	Computing Services Center	30,014	005259	ELE	502,917	kWh	
0516	Computing Services Center	30,014	003959	CHW	1,448,739	mBtu	
0516	Computing Services Center	30,014	003963	HHW	2	mBtu	
0520	Beutel Health Center	63,318	003785	ELE	67,674	kWh	
0520	Beutel Health Center	63,318	003933	CHW	352,512	mBtu	
0520	Beutel Health Center	63,318	003944	HHW	79,986	mBtu	
0521	Heldenfels Hall	104,949	001547	ELE	100,044	kWh	
0521	Heldenfels Hall	104,949	002962	CHW	757,680	mBtu	
0521	Heldenfels Hall	104,949	002973	HHW	193,171	mBtu	
0524	Blocker Building	257,953	001545	ELE	206,073	kWh	
0524	Blocker Building	257,953	002914	CHW	1,164,598	mBtu	
0524	Blocker Building	257,953	002918	HHW	52,216	mBtu	(2)
0548	Clements Residence Hall	62,156	000048	ELE	34,932	kWh	
0548	Clements Residence Hall	62,156	002729	CHW	643,770	mBtu	
0548	Clements Residence Hall	62,156	002740	HHW	395,786	mBtu	
0549	Haas Residence Hall	69,668	001398	ELE	50,136	kWh	
0549	Haas Residence Hall	69,668	002983	CHW	896,232	mBtu	
0549	Haas Residence Hall	69,668	002994	HHW	690,630	mBtu	
0550	McFadden Residence Hall	62,156	000339	ELE	42,124	kWh	
0550	McFadden Residence Hall	62,156	002188	CHW	747,793	mBtu	
0550	McFadden Residence Hall	62,156	002192	HHW	541,672	mBtu	
0652	Neeley Residence Hall	69,668	000056	ELE	47,253	kWh	
0652	Neeley Residence Hall	69,668	002147	CHW	354,616	mBtu	(2)
0652	Neeley Residence Hall	69,668	002151	HHW	219,704	mBtu	(2)
0653	Hobby Residence Hall	62,156	000057	ELE	44,176	kWh	
0653	Hobby Residence Hall	62,156	002401	CHW	679,161	mBtu	
0653	Hobby Residence Hall	62,156	002405	HHW	386,648	mBtu	
0682	Wisenbaker Engineering Research Center	177,704	005246	ELE	254,144	kWh	
0682	Wisenbaker Engineering Research Center	177,704	003879	CHW	961,719	mBtu	
0682	Wisenbaker Engineering Research Center	177,704	003883	HHW	233,837	mBtu	
0740	McNew Laboratory	20,904	005874	ELE	50,408	kWh	*, (2)
0740	McNew Laboratory	20,904	005974	CHW	404,579	mBtu	(2)
0740	McNew Laboratory	20,904	005968	HHW	40,846	mBtu	#, (1), (2)
0806	Soil Testing Labs	5,544	006875	ELE	16,677	kWh	
0815	Entomology Research Lab	17,618	005799	ELE	27,544	kWh	
0815	Entomology Research Lab	17,618	006043	CHW	123,301	mBtu	(2)
0880	TVMC-Small Animal Building	3,260	005958	CHW	23,404	mBtu	
0880	TVMC-Small Animal Building	3,260	005962	HHW	183	mBtu	(2)
0972	Laboratory Animal Care Building	52,178	007063	ELE	129,872	kWh	*
0972	Laboratory Animal Care Building	52,178	007067	ELE	48,391	kWh	
0972	Laboratory Animal Care Building	52,178	007071	CHW	1,485,682	mBtu	
0972	Laboratory Animal Care Building	52,178	006991	HHW	337,552	mBtu	
1020	Vivarium III	12,234	005857	ELE	22,692	kWh	
1020	Vivarium III	12,234	005997	CHW	193,686	mBtu	# (1)
1020	Vivarium III	12,234	006001	HHW	99,233	mBtu	# (1)
1026	Veterinary Medicine Administration	94,680	006072	ELE	132,238	kWh	
1026	Veterinary Medicine Administration	94,680	006049	CHW	985,520	mBtu	
1026	Veterinary Medicine Administration	98,680	006053	HHW	567,881	mBtu	(2)
1041	Texas Vet Med Diagnostic Lab	55,169	001466	ELE	98,157	kWh	*
1041	Texas Vet Med Diagnostic Lab	55,169	001539	ELE	80,823	kWh	*
1041	Texas Vet Med Diagnostic Lab	55,169	003817	CHW	539,327	mBtu	*
1041	Texas Vet Med Diagnostic Lab	55,169	004137	CHW	750,540	mBtu	*
1041	Texas Vet Med Diagnostic Lab	55,169	003821	HHW	153,417	mBtu	*
1041	Texas Vet Med Diagnostic Lab	55,169	004130	HHW	167,482	mBtu	*
1042	Forest Science Laboratory Building	9,632	006036	ELE	25,262	kWh	
1085	Veterinary Small Animal Hospital	103,440	004136	ELE	231,044	kWh	
1085	Veterinary Small Animal Hospital	103,440	003656	CHW	1,318,166	mBtu	
1085	Veterinary Small Animal Hospital	103,440	003660	HHW	420,558	mBtu	
1089	Utilities Energy Office Annex	2,937	006964	ELE	3,692	kWh	# (1)
1146	Biological Control Facility	13,492	005795	ELE	31,748	kWh	
1146	Biological Control Facility	13,492	005887	CHW	137,779	mBtu	# (1)
1146	Biological Control Facility	13,492	005891	HHW	56,565	mBtu	# (1)
1156	Physical Plant Administration & Shops	101,704	007483	ELE	102,679	kWh	
1156	Physical Plant Administration & Shops	101,704	007679	CHW	204,584	mBtu	(2)
1156	Physical Plant Administration & Shops	101,704	007683	HHW	117,586	mBtu	

Table I-1 November 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
1184	Veterinary Anatomic Pathology	17,223	001445	ELE	52,585	kWh	
1184	Veterinary Anatomic Pathology	17,223	006995	CHW	181,567	mBtu	
1184	Veterinary Anatomic Pathology	17,223	006999	HHW	86,825	mBtu	
1194	Veterinary Large Animal Hospital	140,865	005256	ELE	98,998	kWh	
1194	Veterinary Large Animal Hospital	140,865	003016	ELE	67,033	kWh	
1194	Veterinary Large Animal Hospital	140,865	007455	ELE	38,567	kWh	
1194	Veterinary Large Animal Hospital	140,865	003648	CHW	1,271,467	mBtu	# (1)
1194	Veterinary Large Animal Hospital	140,865	007456	CHW	231,353	mBtu	
1194	Veterinary Large Animal Hospital	140,865	003652	HHW	738,303	mBtu	# (1)
1194	Veterinary Large Animal Hospital	140,865	007457	HHW	52,805	mBtu	
1197	Veterinary Research Building	114,666	006355	ELE	69,528	kWh	(2)
1197	Veterinary Research Building	114,666	006359	ELE	33,781	kWh	(2)
1197	Veterinary Research Building	114,666	006062	CHW	1,349,872	mBtu	
1197	Veterinary Research Building	114,666	006066	HHW	423,292	mBtu	
1416	Hullabaloo Residence Hall	253,452	007845	ELE	186,533	kWh	
1416	Hullabaloo Residence Hall	253,452	007846	CHW	934,225	mBtu	
1416	Hullabaloo Residence Hall	253,452	007847	HHW	162,722	mBtu	
1450	University Apartments - Laundry at the Gardens	1,428	006885	ELE	6,943	kWh	
1451	University Apartments - The Gardens J	33,535	006981	ELE	16,492	kWh	
1452	University Apartments - The Gardens K	33,535	006979	ELE	16,480	kWh	
1453	University Apartments - The Gardens L	33,535	006884	ELE	17,354	kWh	
1454	University Apartments - The Gardens F	33,535	006980	ELE	19,231	kWh	*
1455	University Apartments - The Gardens G	33,535	006882	ELE	16,499	kWh	*
1456	University Apartments - The Gardens H	33,535	007962	ELE	17,811	kWh	
1457	University Apartments - The Gardens M	33,535	007503	ELE	21,639	kWh	
1458	University Apartments - The Gardens N	33,535	007504	ELE	19,717	kWh	
1459	University Apartments - The Gardens P	33,535	007505	ELE	21,069	kWh	
1460	University Apartments - The Gardens Q	33,535	007506	ELE	18,322	kWh	
1497	Utilities & Energy Services Business Office	3,480	007082	ELE	3,520	kWh	*
1497	Utilities & Energy Services Business Office	3,480	006341	CHW	11,227	mBtu	
1497	Utilities & Energy Services Business Office	3,480	006345	HHW	479	mBtu	
1501	Kleberg Center	165,031	007449	ELE	260,317	kWh	
1501	Kleberg Center	165,031	002624	CHW	1,029,173	mBtu	
1501	Kleberg Center	165,031	002628	HHW	722,423	mBtu	
1502	Heep Center	158,979	001556	ELE	252,769	kWh	
1502	Heep Center	158,979	002599	CHW	1,467,901	mBtu	
1502	Heep Center	158,979	002603	HHW	272,768	mBtu	
1503	Cater-Mattil Hall	27,958	007977	ELE	89,701	kWh	
1503	Cater-Mattil Hall	27,958	008001	CHW	320,556	mBtu	
1504	Reynolds Medical Sciences Building	169,859	003975	ELE	258,586	kWh	
1504	Reynolds Medical Sciences Building	169,859	003989	CHW	1,707,230	mBtu	(2)
1504	Reynolds Medical Sciences Building	169,859	003993	HHW	664,922	mBtu	(2)
1505	Rosenthal Meat Science & Technology Center	30,889	003627	ELE	130,541	kWh	
1505	Rosenthal Meat Science & Technology Center	30,889	002573	CHW	170,924	mBtu	# (1)
1505	Rosenthal Meat Science & Technology Center	30,889	002577	HHW	31,380	mBtu	
1506	Horticulture-Forest Science Building	118,648	001544	ELE	153,325	kWh	
1506	Horticulture-Forest Science Building	118,648	003967	CHW	500,652	mBtu	
1506	Horticulture-Forest Science Building	118,648	003971	HHW	143,785	mBtu	
1507	Biochemistry-Biophysics Building	166,079	001459	ELE	168,530	kWh	
1507	Biochemistry-Biophysics Building	166,079	001460	ELE	159,939	kWh	
1507	Biochemistry-Biophysics Building	166,079	003025	CHW	1,379,592	mBtu	# (1)
1507	Biochemistry-Biophysics Building	166,079	003029	HHW	803,954	mBtu	
1508	Price Hobgood Ag. Engineering Research Lab	27,666	005638	ELE	24,025	kWh	
1508	Price Hobgood Ag. Engineering Research Lab	27,666	006005	CHW	101,554	mBtu	
1508	Price Hobgood Ag. Engineering Research Lab	27,666	006009	HHW	10,190	mBtu	
1509	Medical Sciences Library	84,183	000350	ELE	108,241	kWh	
1509	Medical Sciences Library	84,183	003777	CHW	581,669	mBtu	
1509	Medical Sciences Library	84,183	003781	HHW	108,841	mBtu	
1510	Wehner Building	259,681	006849	ELE	206,777	kWh	
1510	Wehner Building	259,681	006685	ELE	249,965	kWh	
1510	Wehner Building	259,681	002687	CHW	1,403,730	mBtu	
1510	Wehner Building	259,681	002691	HHW	204,932	mBtu	
1511	West Campus Library Facility	68,125	004342	ELE	93,416	kWh	
1511	West Campus Library Facility	68,125	004313	CHW	568,411	mBtu	
1511	West Campus Library Facility	68,125	004318	HHW	122,992	mBtu	
1512	Southern Crop Improvement Greenhouse	48,154	005931	ELE	87,344	kWh	# (1)
1513	Borlaug Center for Southern Crop Improvement	68,739	005802	ELE	313,613	kWh	
1513	Borlaug Center for Southern Crop Improvement	68,739	005936	CHW	879,715	mBtu	
1513	Borlaug Center for southern Crop Improvement	68,739	005895	HHW	214,604	mBtu	

Table I-1 November 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
1518	TX School of Rural Public Health A	69,079	005273	ELE	74,908	kWh	
1519	TX School of Rural Public Health B	24,761	005274	ELE	48,583	kWh	#, (1)
1520	TX School of Rural Public Health C	13,264	005275	ELE	96,251	kWh	#, (1)
1518-1519-1520	TX School of Rural Public Health A,B,C	107,104	005294	CHW	742,190	mBtu	
1518-1519-1520	TX School of Rural Public Health A,B,C	107,104	005298	HHW	252,886	mBtu	
1525	Nuclear Magnetic Resonance Facility	37,282	006718	ELE	84,445	kWh	
1525	Nuclear Magnetic Resonance Facility	37,282	006715	CHW	650,470	mBtu	
1525	Nuclear Magnetic Resonance Facility	37,282	006716	HHW	418,950	mBtu	
1530	Interdisciplinary Life Sciences Building	218,540	006286	ELE	389,461	kWh	
1530	Interdisciplinary Life Sciences Building	218,540	006288	ELE	209,646	kWh	
1530	Interdisciplinary Life Sciences Building	218,540	006290	CHW	2,733,912	mBtu	
1530	Interdisciplinary Life Sciences Building	218,540	006294	HHW	1,062,794	mBtu	
1535	Agriculture and Life Sciences Building	168,353	007205	ELE	117,091	kWh	
1535	Agriculture and Life Sciences Building	168,353	007206	CHW	481,888	mBtu	
1535	Agriculture and Life Sciences Building	168,353	007207	HHW	33,880	mBtu	
1536	AgriLife Services Building	80,907	007571	ELE	45,206	kWh	
1536	AgriLife Services Building	80,907	007572	CHW	181,509	mBtu	
1536	AgriLife Services Building	80,907	007573	HHW	33,926	mBtu	
1538	Agriculture Program Visitors Center	12,923	007209	ELE	11,364	kWh	
1538	Agriculture Program Visitors Center	12,923	007210	CHW	58,581	mBtu	
1538	Agriculture Program Visitors Center	12,923	007211	HHW	14,278	mBtu	
1540	Physical Education Activity Program Building	116,900	007881	ELE	73,660	kWh	
1540	Physical Education Activity Program Building	116,900	007878	CHW	391,806	mBtu	
1540	Physical Education Activity Program Building	116,900	007879	HHW	154,119	mBtu	
1550	Olsen Field at Bluebell Park	60,537	007560	ELE	91,254	kWh	
1554	Reed Arena	230,000	007582	ELE	168,379	kWh	
1554	Reed Arena	230,000	006243	ELE	681	kWh	*
1554	Reed Arena	230,000	006244	ELE	85,829	kWh	*
1554-1558	Reed Arena and Cox-McFerrin Center	328,185	007576	CHW	1,701,199	mBtu	
1554-1558	Reed Arena and Cox-McFerrin Center	328,185	007578	HHW	700,881	mBtu	
1558	Cox-McFerrin Center for Aggie Basketball	98,185	007581	ELE	78,227	kWh	
1558	Cox-McFerrin Center for Aggie Basketball	98,185	007575	CHW	465,140	mBtu	(2)
1558	Cox-McFerrin Center for Aggie Basketball	98,185	007577	HHW	210,720	mBtu	(2)
1559	West Campus Parking Garage	1,541,457	001453	ELE	160,195	kWh	
1559	West Campus Parking Garage	13,000	004322	CHW	28,576	mBtu	
1559	West Campus Parking Garage	13,000	004327	HHW	10,877	mBtu	
1560	Student Recreation Center	334,642	000363	ELE	331,871	kWh	(2)
1560	Student Recreation Center	334,642	000366	ELE	369,037	kWh	(2)
1560	Student Recreation Center	334,642	002933	CHW	3,204,536	mBtu	(2)
1560	Student Recreation Center	334,642	002937	HHW	1,944,850	mBtu	(2)
1589-1590	White Creek Apartment 1 and White Creek Apts Activity Center	176,454	009197	ELE	102,968	kWh	
1589-1590	White Creek Apartment 1 and White Creek Apts Activity Center	176,454	009198	CHW	452,168	mBtu	
1589-1590	White Creek Apartment 1 and White Creek Apts Activity Center	176,454	009199	HHW	111,062	mBtu	
1591	White Creek Apartment 2	179,467	008528	ELE	116,228	kWh	
1591	White Creek Apartment 2	179,467	008529	CHW	432,890	mBtu	
1591	White Creek Apartment 2	179,467	008533	HHW	100,188	mBtu	
1592	White Creek Apartment 3	179,467	008538	ELE	115,591	kWh	
1592	White Creek Apartment 3	179,467	008539	CHW	472,798	mBtu	
1592	White Creek Apartment 3	179,467	008543	HHW	89,787	mBtu	
1600	Gilchrist TTI Building	67,143	005286	ELE	50,467	kWh	
1600	Gilchrist TTI Building	67,143	002649	CHW	228,294	mBtu	
1600	Gilchrist TTI Building	67,143	002653	HHW	63,078	mBtu	# (1)
1601	International Ocean Discovery Building	86,576	006351	ELE	115,781	kWh	(2)
1601	International Ocean Discovery Building	86,576	006382	CHW	182,292	mBtu	(2)
1601	International Ocean Discovery Building	86,576	008144	CHW	36,317	mBtu	(2)
1601	International Ocean Discovery Building	86,576	008145	HHW	16,949	mBtu	# (1) (2)
1604	Offshore Technology Research Center	40,014	006659	ELE	91,760	kWh	
1604	Offshore Technology Research Center	40,014	006660	ELE	0	kWh	(2)
1604	Offshore Technology Research Center	40,014	008142	CHW	480,201	mBtu	
1604	Offshore Technology Research Center	40,014	008143	HHW	218,335	mBtu	
1606	George Bush Presidential Library & Museum	121,678	000244	ELE	102,146	kWh	
1606	George Bush Presidential Library & Museum	121,678	002808	CHW	873,760	mBtu	
1606	George Bush Presidential Library & Museum	121,678	002812	HHW	354,595	mBtu	
1607	Allen Building	133,327	000243	ELE	100,615	kWh	
1607	Allen Building	133,327	002800	CHW	452,767	mBtu	
1607	Allen Building	133,327	002804	HHW	67,420	mBtu	
1608	Annenberg Presidential Conference Center	65,688	000245	ELE	70,872	kWh	
1608	Annenberg Presidential Conference Center	65,688	002761	CHW	603,331	mBtu	
1608	Annenberg Presidential Conference Center	65,688	002765	HHW	346,446	mBtu	

Table I-1 November 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
1609	TTI Headquarters	66,707	006495	ELE	56,513	kWh	
1609	TTI Headquarters	66,707	006496	CHW	289,109	mBtu	
1609	TTI Headquarters	66,707	006497	HHW	76,094	mBtu	
1611	Engineering Research Building	68,807	008462	ELE	190,108	kWh	
1611	Engineering Research Building	68,807	008463	CHW	1,267,340	mBtu	
1611	Engineering Research Building	68,807	008467	HHW	605,488	mBtu	
1800	General Services Complex	203,369	005441	ELE	175,228	kWh	
1800	General Services Complex	203,369	005468	CHW	677,552	mBtu	
1800	General Services Complex	203,369	005472	HHW	58,809	mBtu	
1809	New TVMDL	NA	009180	ELE	NA	kWh	*
1809	New TVMDL	NA	009181	ELE	NA	mBtu	*
1809	New TVMDL	NA	009174	CHW	NA	mBtu	*
1810	Office of the State Chemist Building	31,735	009073	ELE	57,157	kWh	
1810	Office of the State Chemist Building	31,735	005460	CHW	190,569	mBtu	
1810	Office of the State Chemist Building	31,735	005464	HHW	71,036	mBtu	
1811	Vet Med Research Bldg Addition	52,993	006705	ELE	220,629	kWh	
1811	Vet Med Research Bldg Addition	52,993	006706	CHW	636,708	mBtu	
1811	Vet Med Research Bldg Addition	52,993	006707	HHW	288,300	mBtu	
1812	Veterinary Medicine Building 1	138,460	009404	ELE	185,945	kWh	*
1813	Veterinary Medicine Building 2	116,492	009418	ELE	196,991	kWh	*
1814	Veterinary Medicine Building 3	135,470	009405	ELE	1,924	kWh	*
1812-1813-1814	Veterinary Medicine Building 1, 2 and 3	390,422	009406	CHW	2,631,357	mBtu	
1812-1813-1814	Veterinary Medicine Building 1, 2 and 3	390,422	009410	HHW	992,556	mBtu	
1900	Texas Institute for Genomic Medicine	34,120	005548	ELE	86,489	kWh	
1900	Texas Institute for Genomic Medicine	34,120	005545	CHW	709,036	mBtu	*
1900	Texas Institute for Genomic Medicine	34,120	005546	HHW	309,703	mBtu	* # (1)
1904	Texas A&M Institute for Preclinical Studies A	113,559	006364	ELE	225,456	kWh	
1904	Texas A&M Institute for Preclinical Studies A	113,559	006365	CHW	1,474,581	mBtu	
1904	Texas A&M Institute for Preclinical Studies A	113,559	006366	HHW	708,618	mBtu	
1910	National Center for Therapeutics Manufacturing	149,924	007517	ELE	190,620	kWh	
1910	National Center for Therapeutics Manufacturing	149,924	007518	ELE	171,499	kWh	
1910	National Center for Therapeutics Manufacturing	149,924	007519	CHW	3,175,585	mBtu	
1910	National Center for Therapeutics Manufacturing	149,924	007520	HHW	1,291,638	mBtu	
1911	Multi-Species Research Building	21,000	009138	ELE	27,061	kWh	
1911	Multi-Species Research Building	21,000	009129	CHW	285,467	mBtu	
1911	Multi-Species Research Building	21,000	009133	HHW	177,056	mBtu	
10226	NCTM Manufacturing Building	113,397	007648	CHW	2,782,586	mBtu	
10226	NCTM Manufacturing Building	113,397	007649	HHW	985,335	mBtu	
10226	NCTM Manufacturing Building	113,397	008133	HHW	142,831	mBtu	

1 mBtu = 1 000 Btu

NA: Not available
Monthly consumption in blue: Modified values
* : Missing data
# : Questionable data
(1): Consumption estimated and documented in the report *Part II - Data Analysis: Energy Use Estimation and Observations Section 2*
(2): Observation(s) documented in the report *Part II - Data Analysis: Energy Use Estimation and Observations Section 3*
(3): Missing data or changed consumption levels due to construction

II. Data Analysis: Energy Use Estimation and Observation

II-1 Meters with Missing Energy Consumption Data

During the month of November 2016, 33 meters in 24 buildings and complexes have missing daily data. The missing data have been filled in using consumption models based on the past data if available or using linear interpolation or some sort of average, and the monthly consumption has been estimated with the filled-in daily consumption. Table II-1 is the list of meters with missing data.

Table II-1 Meters with missing data during November 2016

Building No.	Building Name	MeterID	Type	Unit	Original Monthly Consumption	Estimated Monthly Consumption	# of Days	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
0387	Richardson Petroleum Engineering Building	005872	ELE	kWh	103,389	*	2													A				A												
0403	Fountain Hall Dorm 4	009338	ELE	kWh	12,648	14,352	4	A	A	A	A																									
0445-0517	Teague Research Center and DPC Annex	004719	ELE	kWh	48,968	*	1														A														
0446	Rudder Tower	001550	ELE	kWh	25,741	*	1	A																												
0456	Military Sciences Building	006939	CHW	mBtu	NA	557,645	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0456	Military Sciences Building	006943	HHW	mBtu	NA	241,367	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0469	Central Campus Parking Garage	000306	ELE	kWh	46,288	*	10		LI	LI	LI						LI	LI	LI	LI	LI	LI	LI												
0470	Glasscock History Bldg	006407	ELE	kWh	19,042	*	1																										LI			
0481	Heaton Hall	005712	ELE	kWh	NA	***	30																													
0483	Thompson Hall	003688	ELE	kWh	25,942	62,259	20											M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0483	Thompson Hall	003887	CHW	mBtu	123,547	**	20											M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0483	Thompson Hall	003891	HHW	mBtu	19,061	**	20											M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0484	Chemistry Building	007152	ELE	kWh	93,742	*	1																										LI			
0484	Chemistry Building	007028	CHW	mBtu	347,921	1,184,040	15																M	M	M	M	M	M	M	M	M	M	M	M	M	M
0484	Chemistry Building	007032	HHW	mBtu	135,140	278,674	15																M	M	M	M	M	M	M	M	M	M	M	M	M	M
0492	Civil Engineering Building	005783	ELE	kWh	56,494	*	1																	LI												
0740	McNew Laboratory	005874	ELE	kWh	50,408	*	2						LI			LI																				
0972	Laboratory Animal Care Building	007063	ELE	kWh	129,872	*	2																													
1041	Texas Vet Med Diagnostic Lab	001466	ELE	kWh	NA	98,157	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1041	Texas Vet Med Diagnostic Lab	001539	ELE	kWh	NA	80,823	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1041	Texas Vet Med Diagnostic Lab	003817	CHW	mBtu	NA	539,327	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1041	Texas Vet Med Diagnostic Lab	004137	CHW	mBtu	NA	750,540	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1041	Texas Vet Med Diagnostic Lab	003821	HHW	mBtu	NA	153,417	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1041	Texas Vet Med Diagnostic Lab	004130	HHW	mBtu	NA	167,482	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1454	University Apartments - The Gardens F	006980	ELE	kWh	NA	19,231	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1455	University Apartments - The Gardens G	006882	ELE	kWh	NA	16,499	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1497	Utilities & Energy Services Business Office	007082	ELE	kWh	3,520	*	1																													
1554	Reed Arena	006243	ELE	kWh	NA	681	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1554	Reed Arena	006244	ELE	kWh	NA	85,829	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1809	New TVMDL	009180	ELE	kWh	NA	***	30																													
1809	New TVMDL	009181	ELE	kWh	NA	***	30																													
1809	New TVMDL	009174	CHW	mBtu	NA	***	30																													
1812	Veterinary Medicine Building 1	009404	ELE	kWh	NA	185,945	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1813	Veterinary Medicine Building 2	009418	ELE	kWh	NA	196,991	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1814	Veterinary Medicine Building 3	009405	ELE	kWh	NA	1,924	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1900	Texas Institute for Genomic Medicine	005546	CHW	mBtu	709,036	*	2																													
1900	Texas Institute for Genomic Medicine	005546	HHW	mBtu	1,674,965	**	2																												M	M

* Monthly consumption evaluated from the cumulative data is not affected by the missing data.
** See Table II-2 for the estimated consumption.
*** Consumption is not estiamted because reliable consumtpion model is not available.
NA: Not available

II-2 Meters with Estimated Consumption for Problematic Data

During the month of November 2016, 35 meters in 27 buildings have estimated daily consumption because the recorded consumption is found to be problematic or questionable. For each of these meters, alternative consumption has been estimated using the best possible method. Table II-2 lists these meters with indications of the days with estimated data. Detailed descriptions for individual cases follow.

Table II-2 Meters with problematic data during November 2016

Building No.	Building Name /MeterID(s)	Type	Unit	Original Monthly Consumption	Estimated Monthly Consumption	# of days	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
0291	**Rudder Residence Hall**																																			
	002132	CHW	mBtu	816,714	706,733	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	002136	HHW	mBtu	535,281	413,254	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0376	**Chemistry Building Addition**																																			
	007119	HHW	mBtu	824,660	1,175,636	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0424	**Hotard Hall**																																			
	002657	CHW	mBtu	84,388	78,797	3																		M	M	M										
	002668	HHW	mBtu	40,044	51,167	19						M	M	M	M	M	M	M						M	M	M	M	M	M	M	M		M	M	M	M
0441	**Krueger Residence Hall**																																			
	002500	HHW	mBtu	284,783	371,212	11	A	A	A	A	A											A	A	A	A								A	A		
0447	**Aston Residence Hall**																																			
	002474	CHW	mBtu	398,382	527,638	13																		M	M	M	M	M	M	M	M	M	M	M	M	M
0443	**Oceanography & Meteorology Building**																																			
	006388	CHW	mBtu	443,393	777,027	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0446	**Rudder Tower**																																			
	002455	CHW	mBtu	556,078	410,191	17														M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	002459	HHW	mBtu	277,173	186,765	12																		M	M	M	M	M	M	M	M	M	M	M	M	M
0457	**TAES Annex Building**																																			
	005917	HHW	mBtu	20,952	29,327	12																		M	M	M	M	M	M	M	M	M	M	M	M	M
0467	**Biological Sciences Building - East**																																			
	003851	CHW	mBtu	271,155	626,118	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0483	**Thompson Hall**																																			
	003887	CHW	mBtu	**	179,573	3	M	M	M																											
	003891	HHW	mBtu	**	29,116	2	M	M																												
0484	**Chemistry Building**																																			
	007557	ELE	kWh	26,657	122,889	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0492	**Civil Engineering Building**																																			
	005950	CHW	mBtu	176,889	316,381	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	005954	HHW	mBtu	6	119,803	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0511	**Heep Laboratory Building**																																			
	005821	CHW	mBtu	553,374	444,058	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0512	**All Faiths Chapel**																																			
	004293	HHW	mBtu	1	48,632	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0740	**McNew Laboratory**																																			
	005968	HHW	mBtu	0	40,846	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1020	**Vivarium III**																																			
	005997	CHW	mBtu	246,464	193,686	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	006001	HHW	mBtu	13,978	99,233	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1089	**Utilities Energy Office Annex**																																			
	006964	ELE	kWh	4,793	3,692	19												M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1146	**Biological Control Facility**																																			
	005887	CHW	mBtu	113,804	137,779	12																	M	M	M	M	M	M	M	M	M	M	M	M		
	005891	HHW	mBtu	38,482	56,565	12																	M	M	M	M	M	M	M	M	M	M	M	M		
1194	**Veterinary Large Animal Hospital**																																			
	003648	CHW	mBtu	1,382,811	1,271,467	5					M	M	M	M	M																					
	003652	HHW	mBtu	813,498	738,303	6					M	M	M	M	M	M																				
1505	**Rosenthal Meat Science & Technology Center**																																			
	002573	CHW	mBtu	152,142	170,924	9	M	M	M	M	M	M	M	M	M																					
1507	**Biochemistry-Biophysics Building**																																			
	003025	CHW	mBtu	4,347,561	1,379,592	14								M	M	M	M	M	M	M	M	M	M	M	M	M	M									
1512	**Southern Crop Improvement Greenhouse**																																			
	005931	ELE	kWh	150,299	87,344	28			M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1519	**TX School of Rural Public Health B**																																			
	005274	ELE	kWh	96,251	48,583	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1520	**TX School of Rural Public Health C**																																			
	005275	ELE	kWh	48,583	96,251	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1600	**Gilchrist TTI Building**																																			
	002653	HHW	mBtu	56,744	63,078	7	M	M	M	M	M	M	M																							
1601	**International Ocean Discovery Building**																																			
	008145	HHW	mBtu	11,700	16,949	5					M			M											M	M										M
1900	**Texas Institute for Genomic Medicine**																																			
	005546	HHW	mBtu	**	309,703	28	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M			

NA: Not available

** See Table II-1 for the original consumption.

Notes: The colored cells means the consumption for the day appears to be problematic. The letter in the colored cell indicates the method for estimation. M: model, F: multiplication factor, L: linear interpolation, A: average, and C: correction of the reset cumulative reading

Rudder Residence Hall (TAMU Bldg #291)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	002132	30	11/1/2016 – 11/30/2016	Model
HHW	002136	30	11/1/2016 – 11/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The consumption level is higher than the level during the past year.	8/13/2016 – Ongoing
HHW	The consumption level is higher than the level during the past year.	8/13/2016 – Ongoing

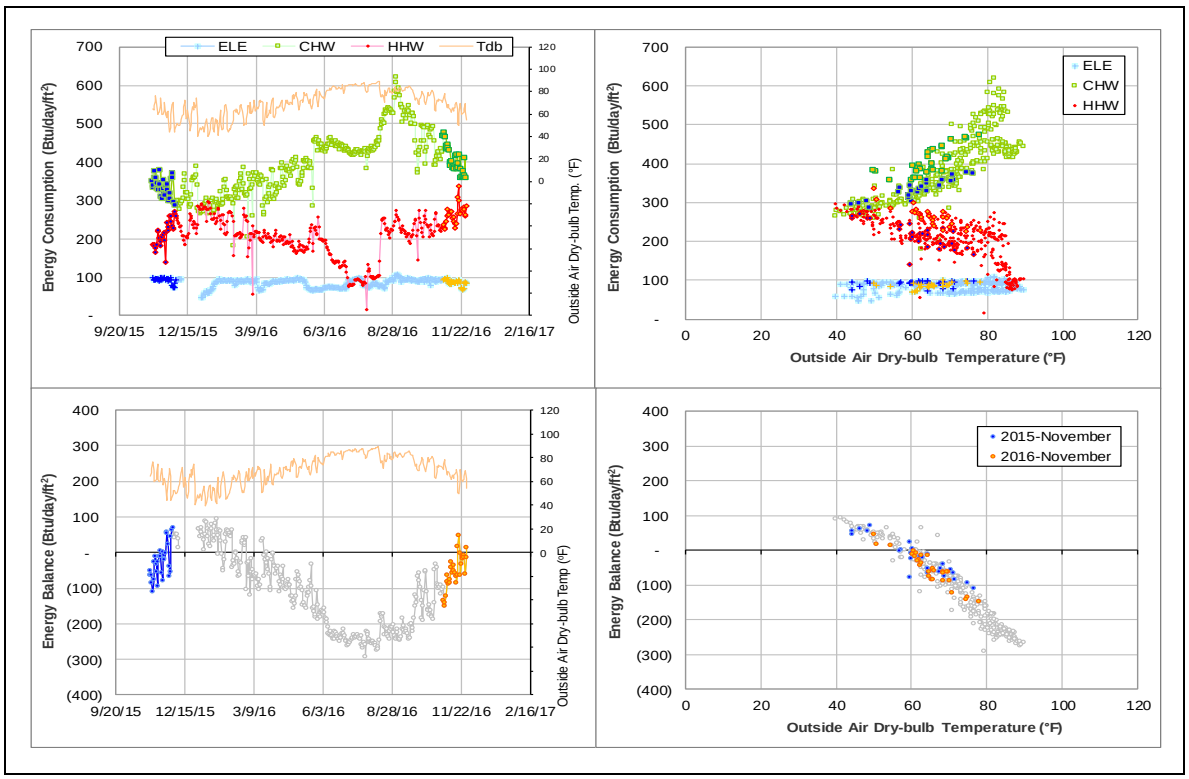
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	002132	8/14/2016 – 9/7/2016	Flow Rate	High
		9/8/2016 – Ongoing	Flow Rate	Low
			Delta-T	High
HHW	002136	8/14/2016 – 9/7/2016	Flow Rate	High
			Delta-T	High
		8/30/2016 – Ongoing	Flow Rate	High
			Delta-T	Low

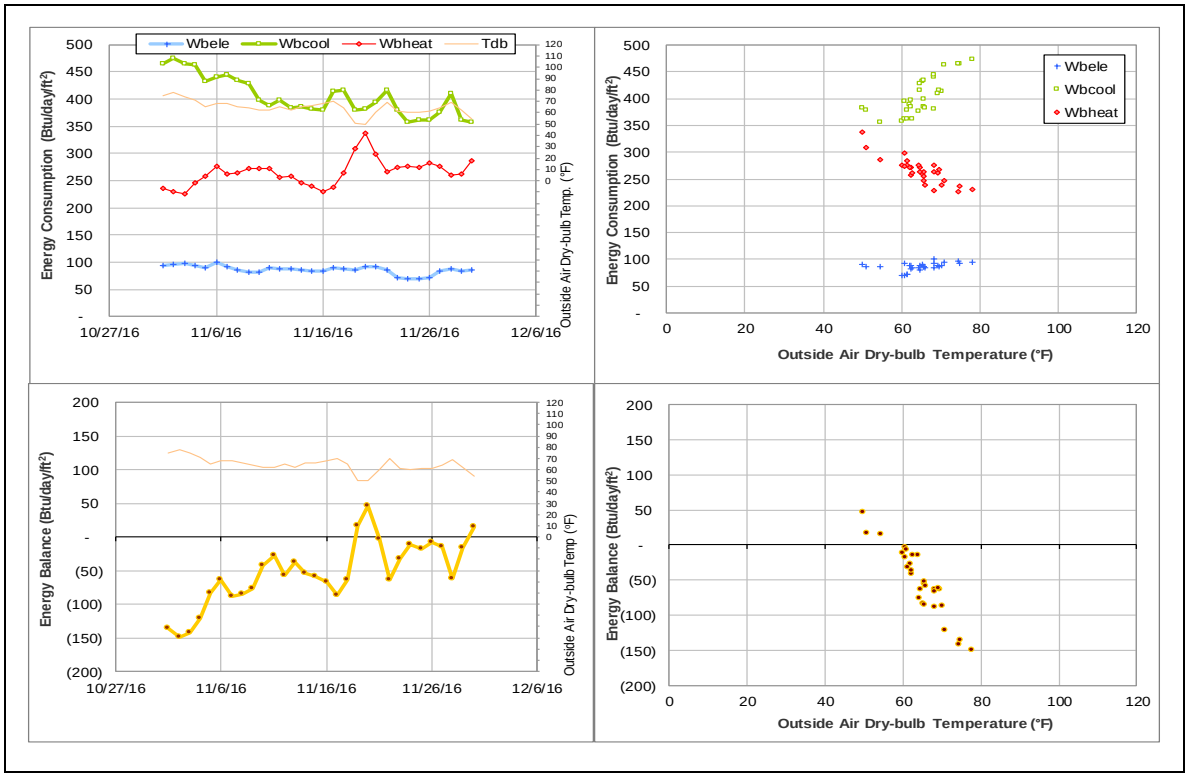
Quantitative descriptions and comments

Both CHW and HHW increased to a level significantly higher than last year. CHW saw a gradual increase in flow rate starting 8/13/2016 from circa 300 gpm to circa 460 gpm and pulled the consumption up by more than 150 Btu/day/ft^2 higher than last year. Although The flow rate dropped down to 320 gpm on 9/7/2016, Delta-T had a simultaneous increase which retained the high consumption level with only a 50 Btu/day-sf decrease. In the meantime, HHW saw a rapid two-step increase on 8/14/2016 by more than 100 Btu/day-sf with increase in both flow rate (35 to 50 gpm) and Delta-T. The flow rate started to further increase on 8/30/2016 and reached 110 gpm on 9/1/2016, but Delta-T decreased accordingly so the consumption did not have significant change. More data are needed to verify whether a new pattern is forming. Models are used to estimate the consumption of these periods. See also section II-3.

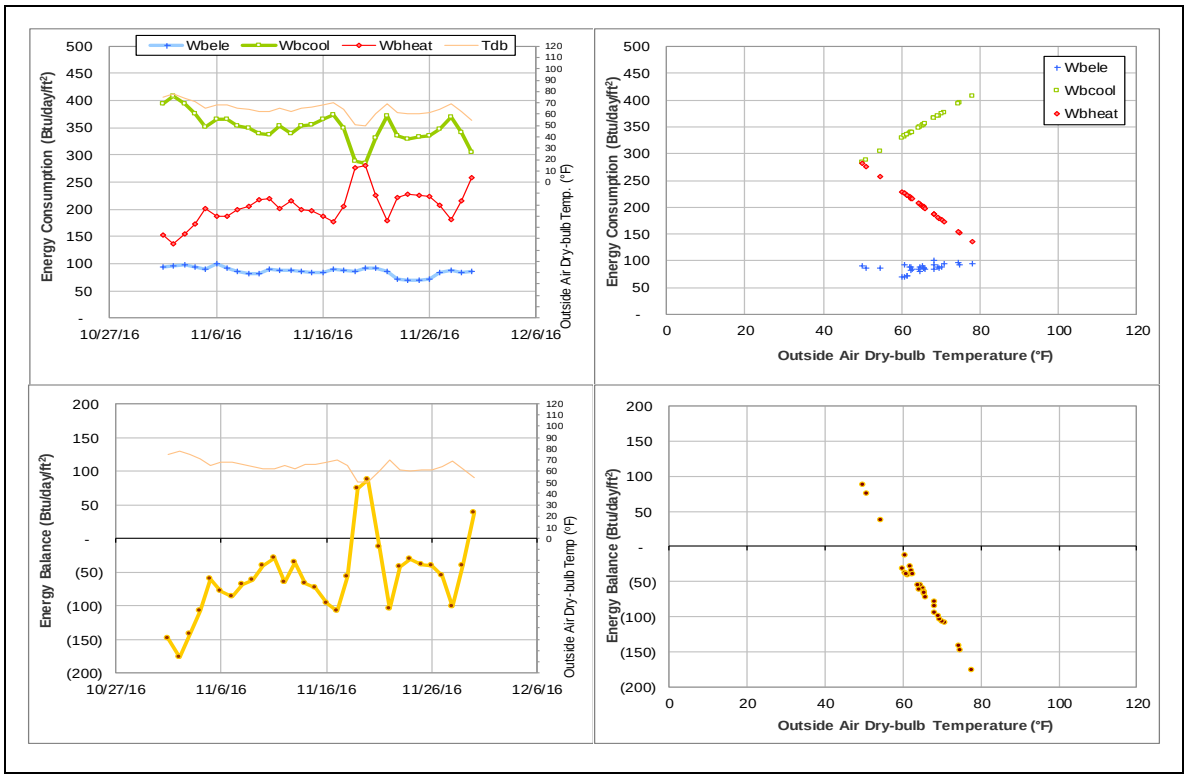
Explanatory Figure: 13 months energy balance plot with original data



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



Chemistry Building Addition (TAMU Bldg #376)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	007119	30	11/1/2016 – 11/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The metered values appear to be faulty.	8/12/2016 – Ongoing

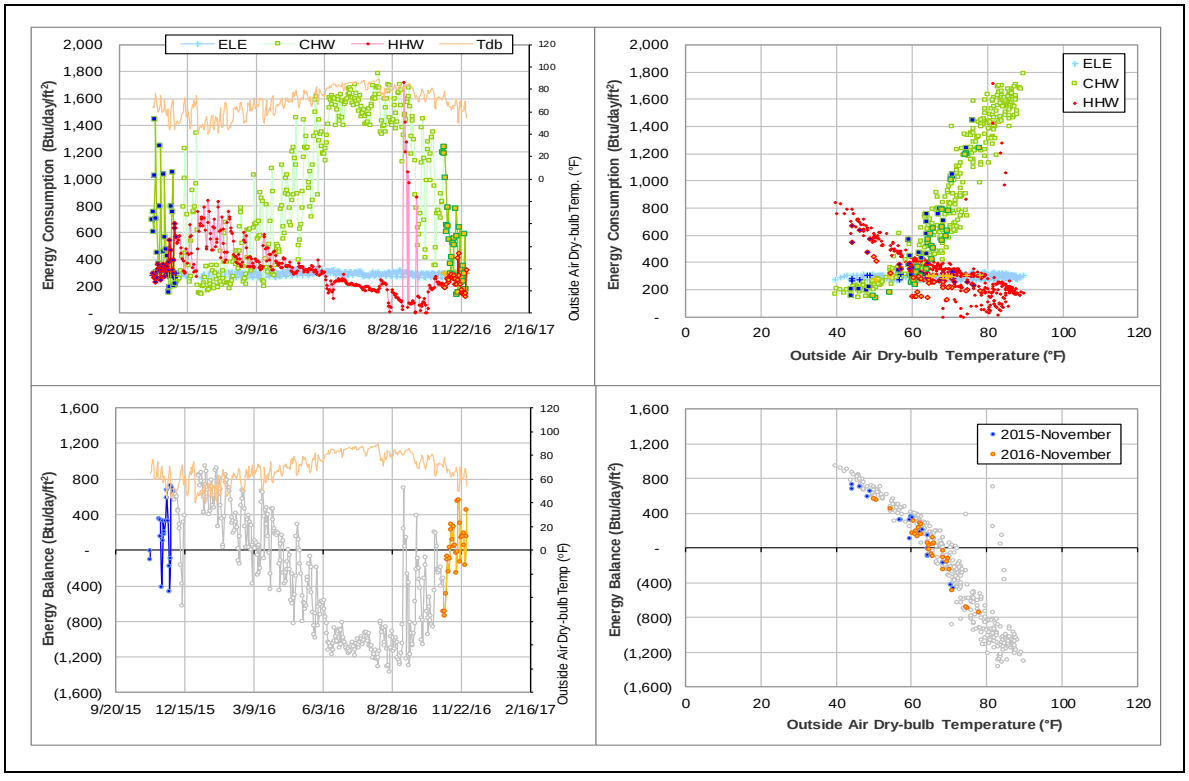
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	007119	8/12/2016 – Ongoing	Supply Temp and/or Return Temp	Faulty

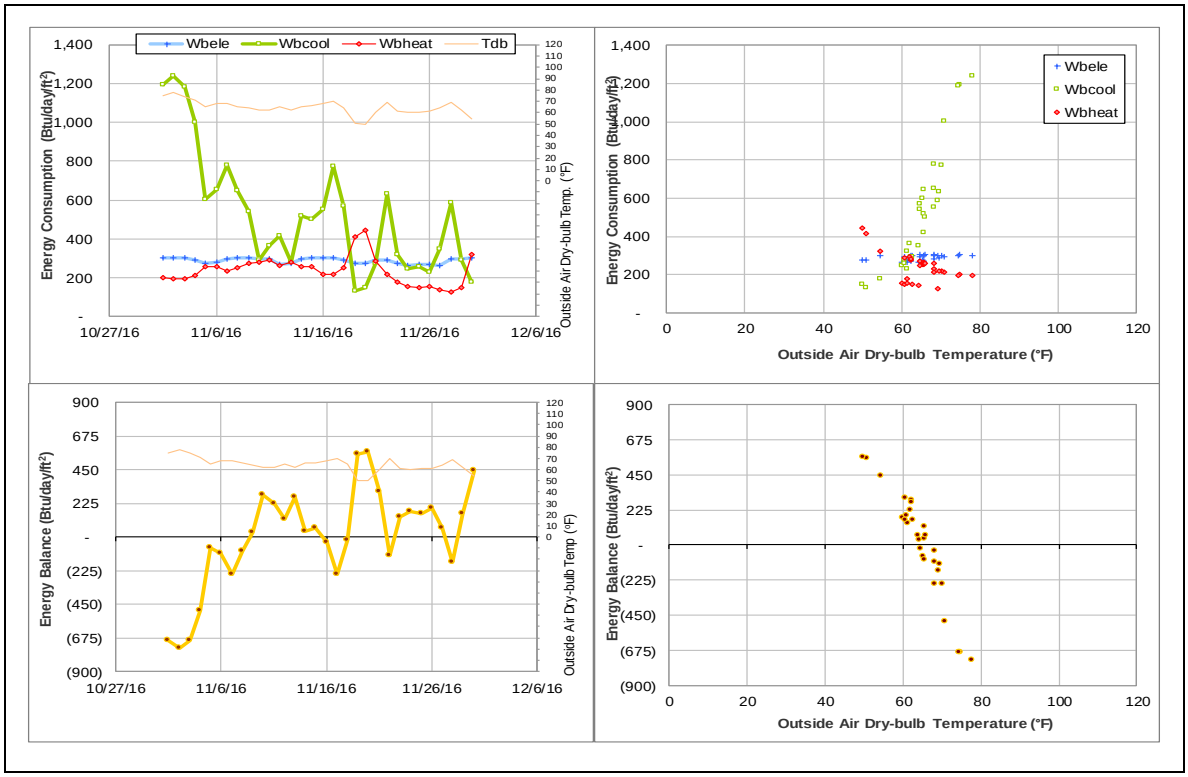
Quantitative descriptions and comments

Starting 8/12/2016, the temperature readings for HHW meter are faulty. Obviously erroneous values and negative Delta-T can be observed during this period. Although there has been no more negative Delta-T values in 11/2016, the consumption level did not recover to the level before the faulty period. Thus it is suspected that the temperature readings are still faulty but the error is camouflaged by higher Delta-T values in the cold season. The consumption calculation is based on these faulty values, therefore the whole month is estimated by a model.

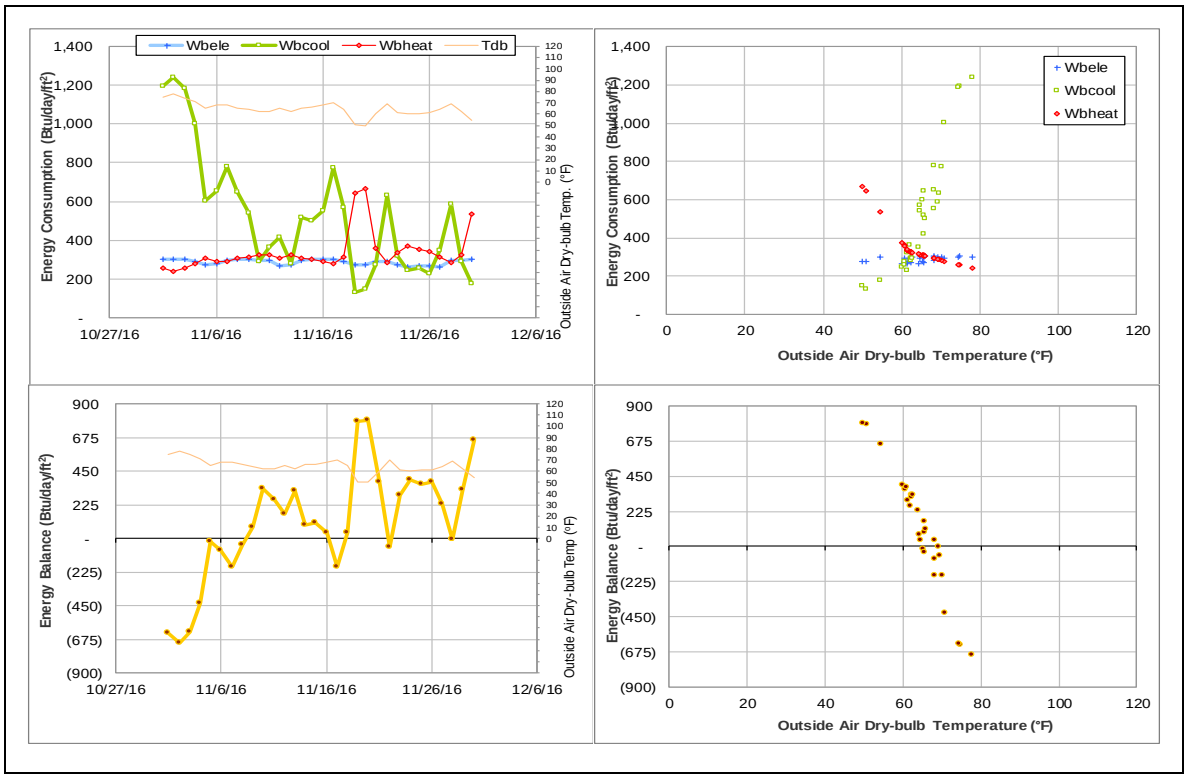
Explanatory Figure: 13 months energy balance plot with original data



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



Hotard Hall (TAMU Bldg #424)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	002657	3	11/19/2016 – 11/21/2016	Model
HHW	002668	19	11/6/2016 – 11/12/2016 11/18/2016 – 11/26/2016 11/28/2016 – 11/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The consumption increased for a short period.	11/19/2016 – 11/21/2016
HHW	The consumption dropped for a short period.	11/6/2016 – 11/12/2016
	The consumption increased for a short period.	11/18/2016 – 11/21/2016
	The consumption dropped for a short period.	11/22/2016 – 11/26/2016 11/28/2016 – 11/30/2016

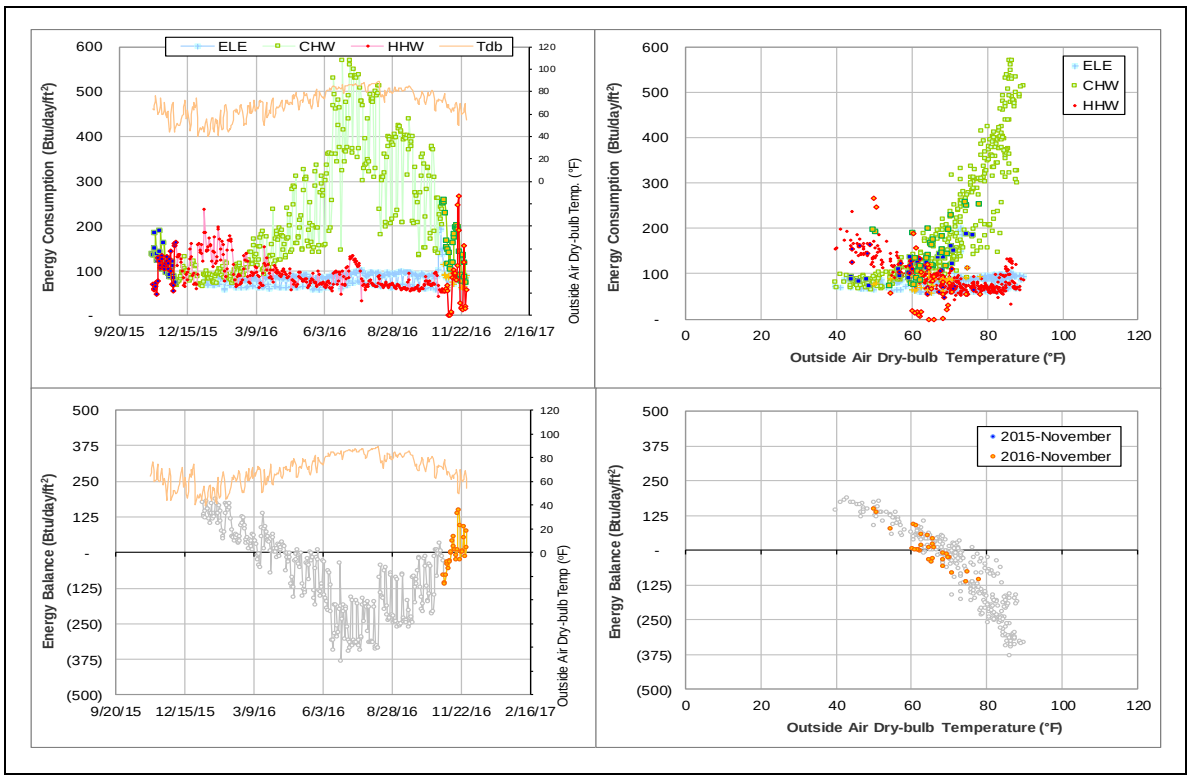
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	002657	11/19/2016 – 11/21/2016	Flow rate	High
HHW	002668	11/6/2016 – 11/12/2016	Flow rate	Zero
		11/18/2016 – 11/21/2016	Flow rate	High
		11/22/2016 – 11/26/2016 11/28/2016 – 11/30/2016	Flow rate	Zero

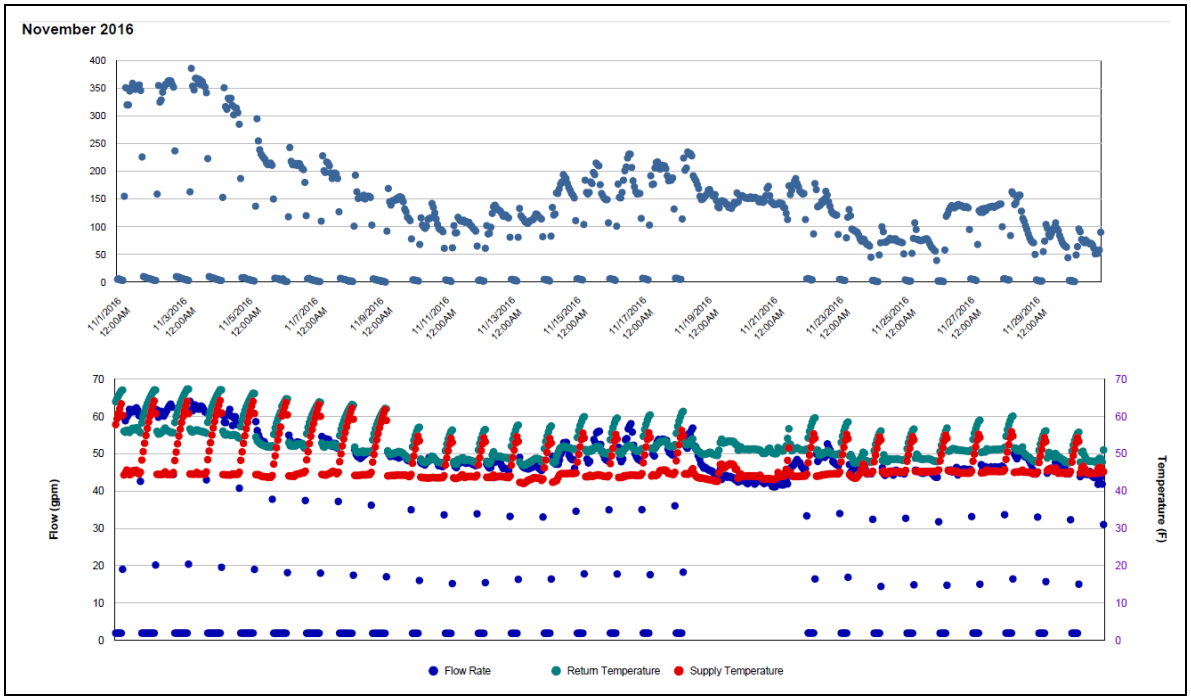
Quantitative descriptions and comments

The diurnal periodic pattern of CHW did not show on 11/19 – 11/21/2016 resulting in higher daily consumption during these days. HHW flow dropped to zero on 11/6 – 11/12, 11/22 – 11/26, 11/28 – 11/30/2016, and was abnormally high on 11/18 – 11/21. The temperature response looks reasonable at all occurrences of these changes, as water temperatures approached room temperature when the flow was low and retained when the flow stayed on. Thus there is not enough evidence to conclude meter malfunctioning. Still, this building did not behave normally on aforementioned days, and these days are estimated by models.

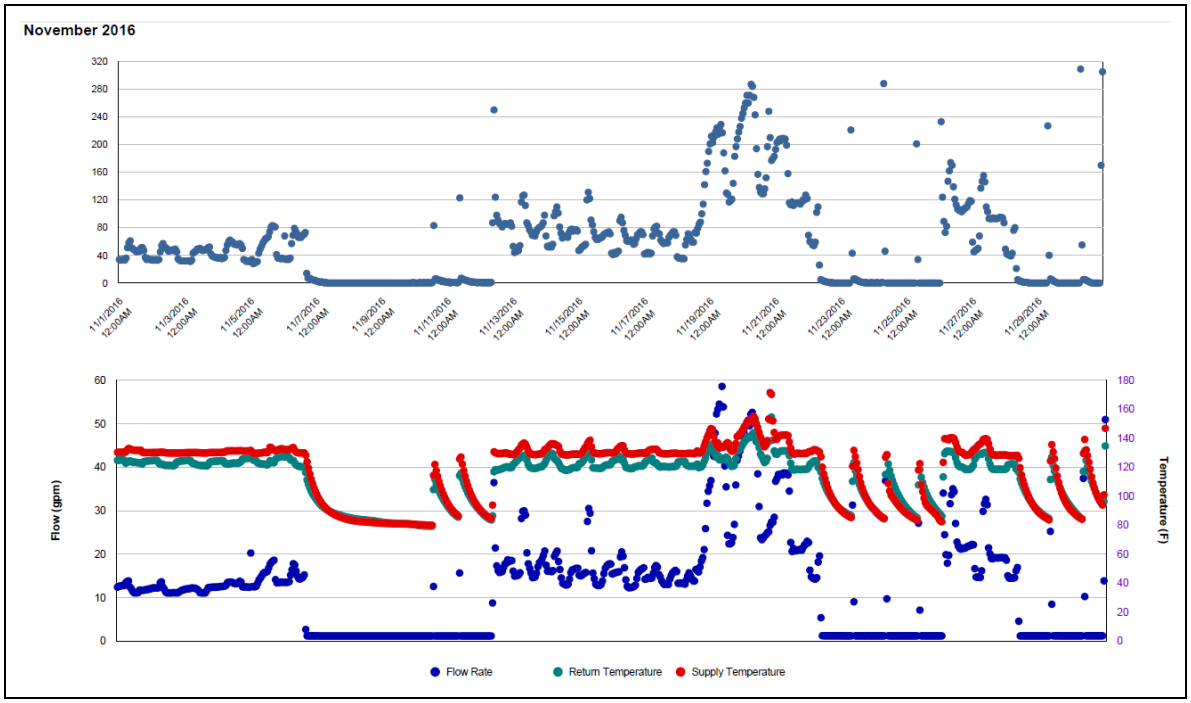
Explanatory Figure: 13 months energy balance plot with original data.



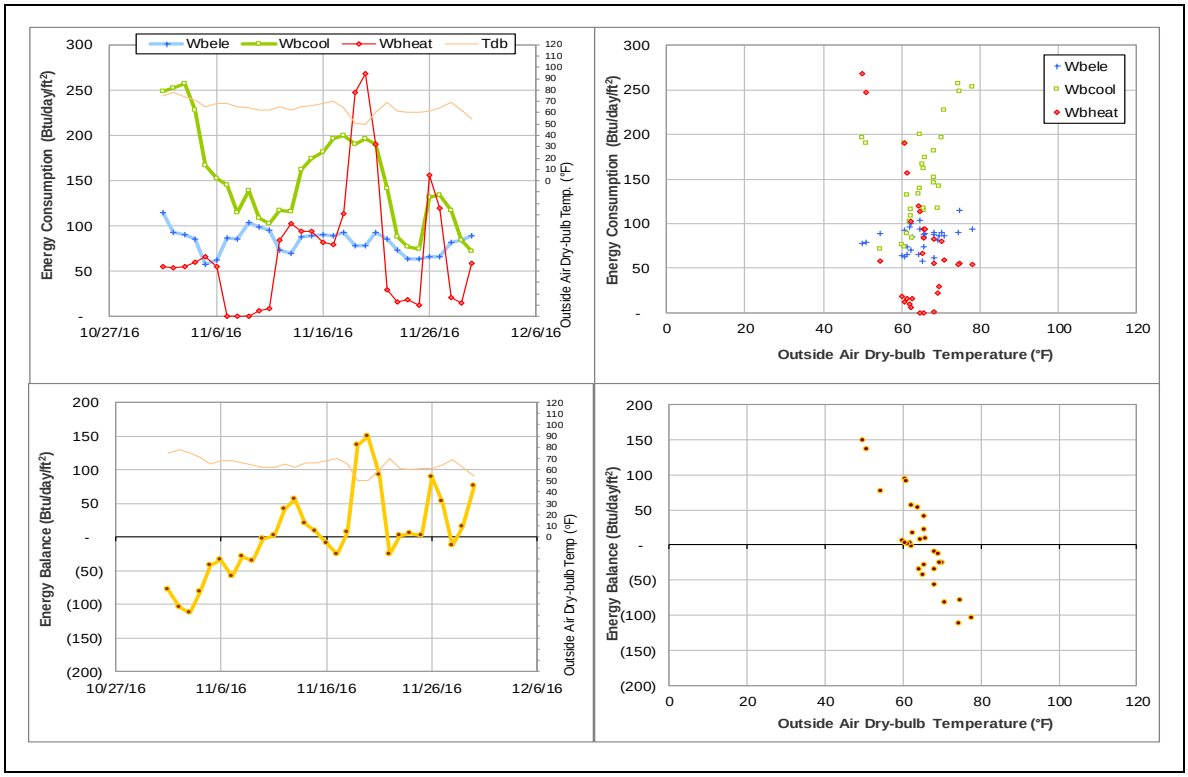
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (CHW during November 2016)



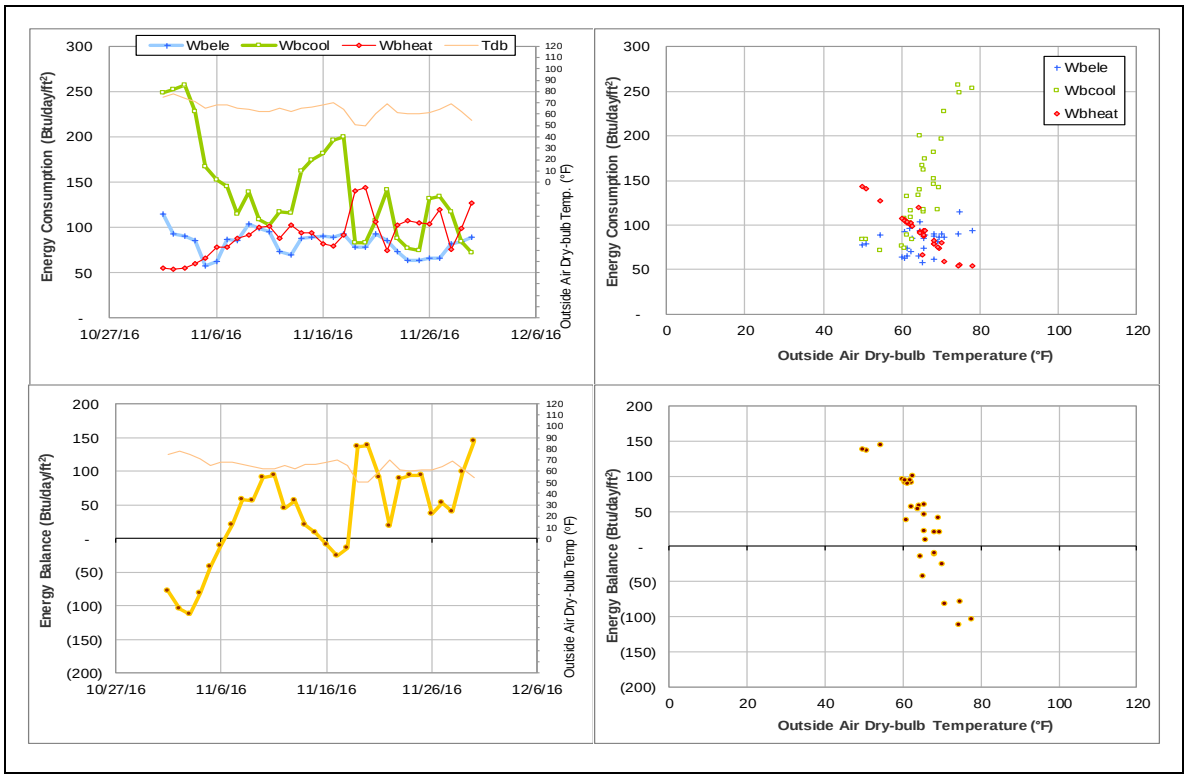
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during October 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



Krueger Residence Hall (TAMU Bldg #441)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	002500	11	11/1/2016 – 11/5/2016 11/16/2016 – 11/19/2016 11/28/2016 – 11/29/2016	Average

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The metered values appear to be faulty.	8/1/2016 – Ongoing

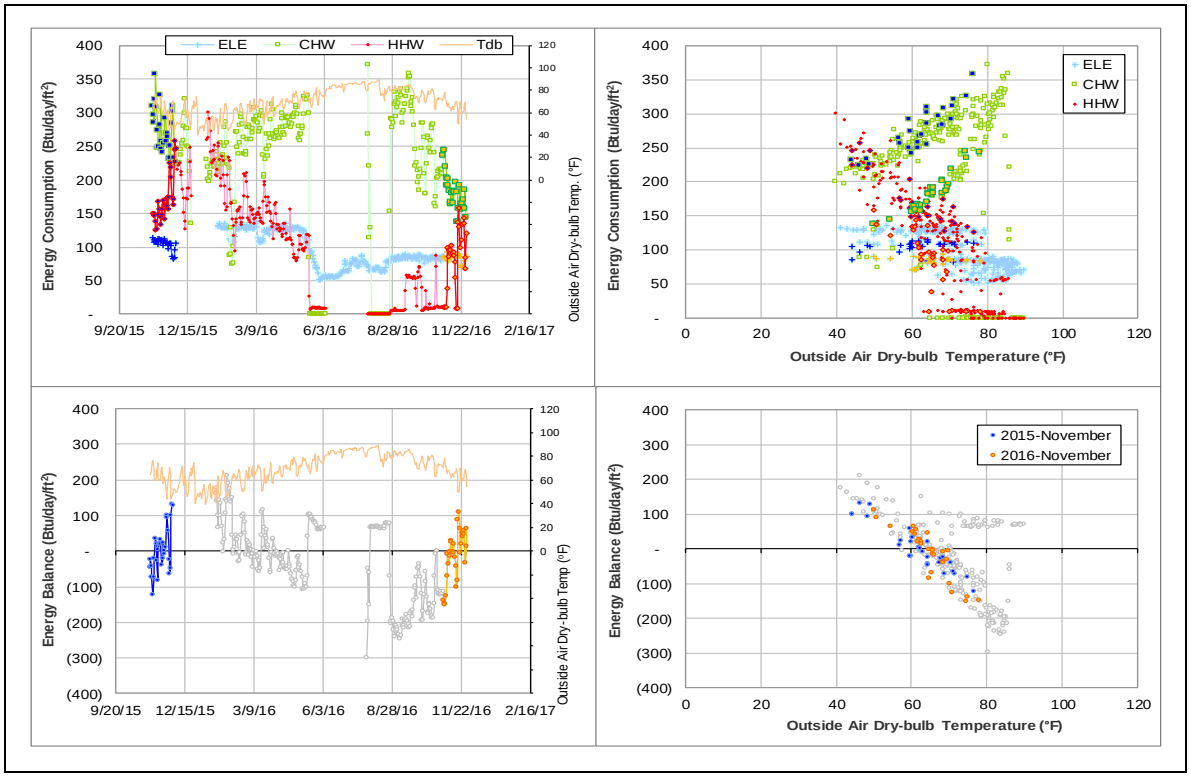
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	002500	8/1/2016 – 8/26/2016	Flow rate, Return temperature, Supply temperature	Constant
		8/27/2016 – Ongoing	Flow Rate	Occasionally constant

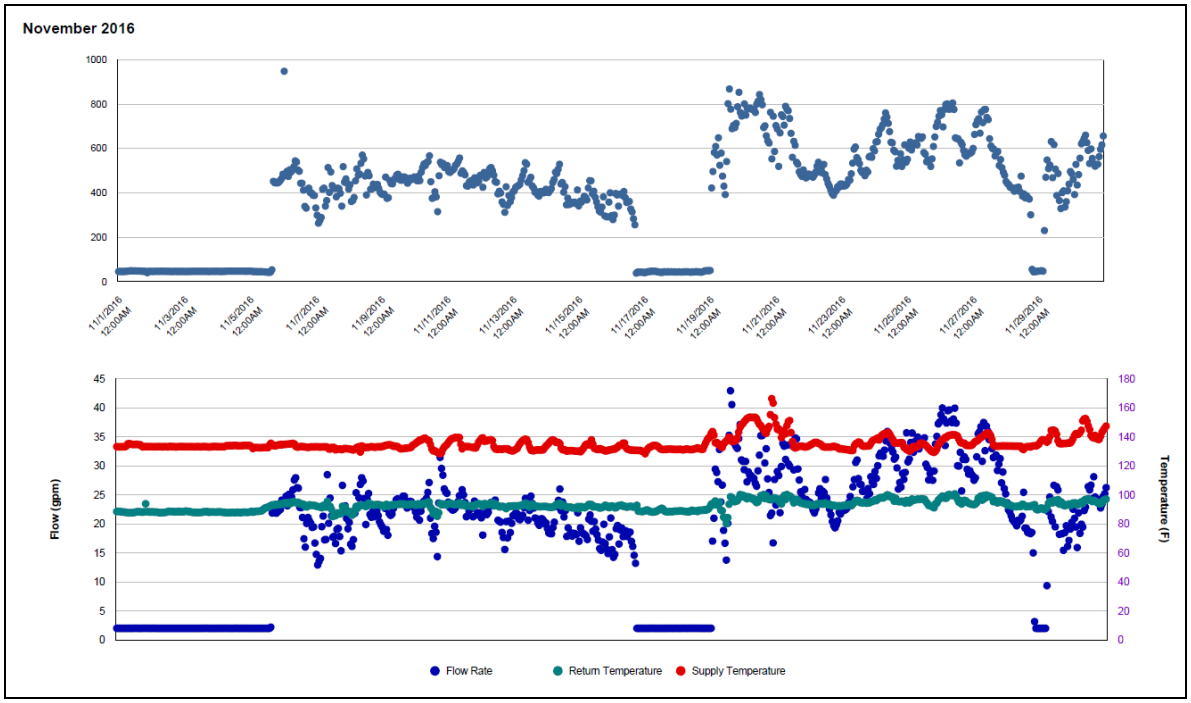
Quantitative descriptions and comments

HHW flow meter has been containing short-period constant values since 8/2016. The days containing constant flow rate readings this month are estimated by taking average of current month available data. See also II-3.

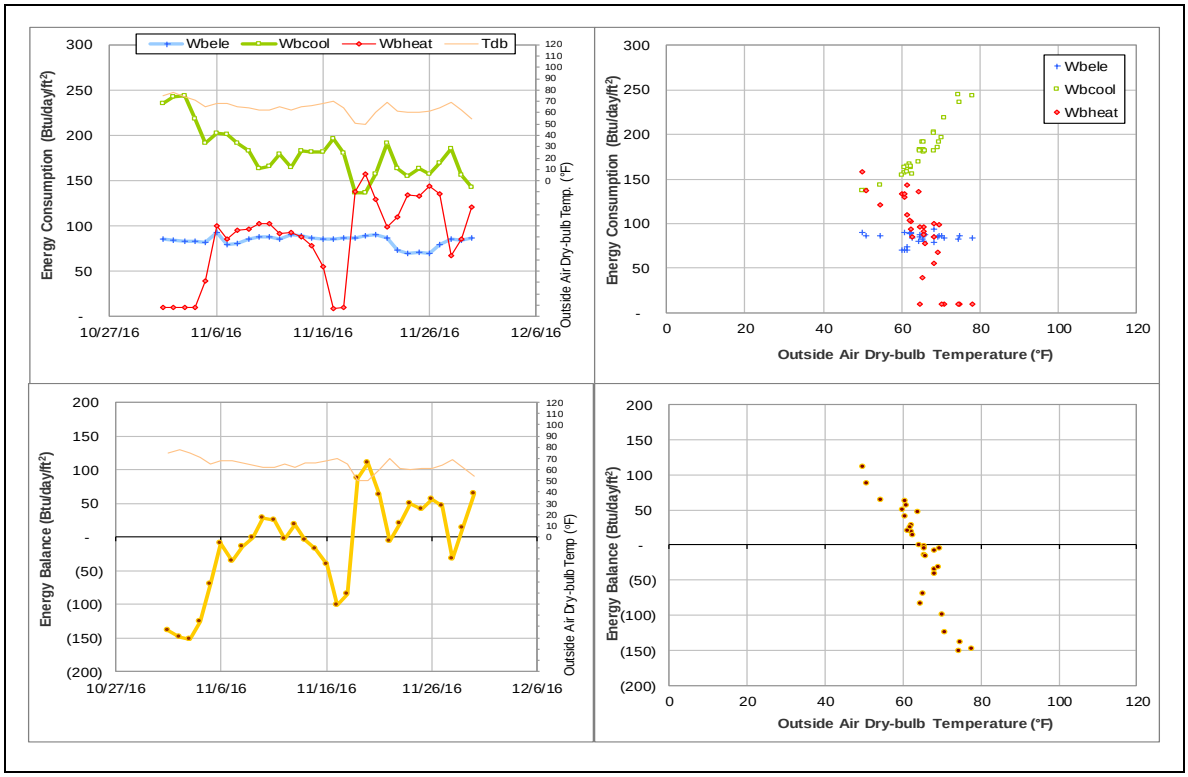
Explanatory Figure: 13 months energy balance plot with original data.



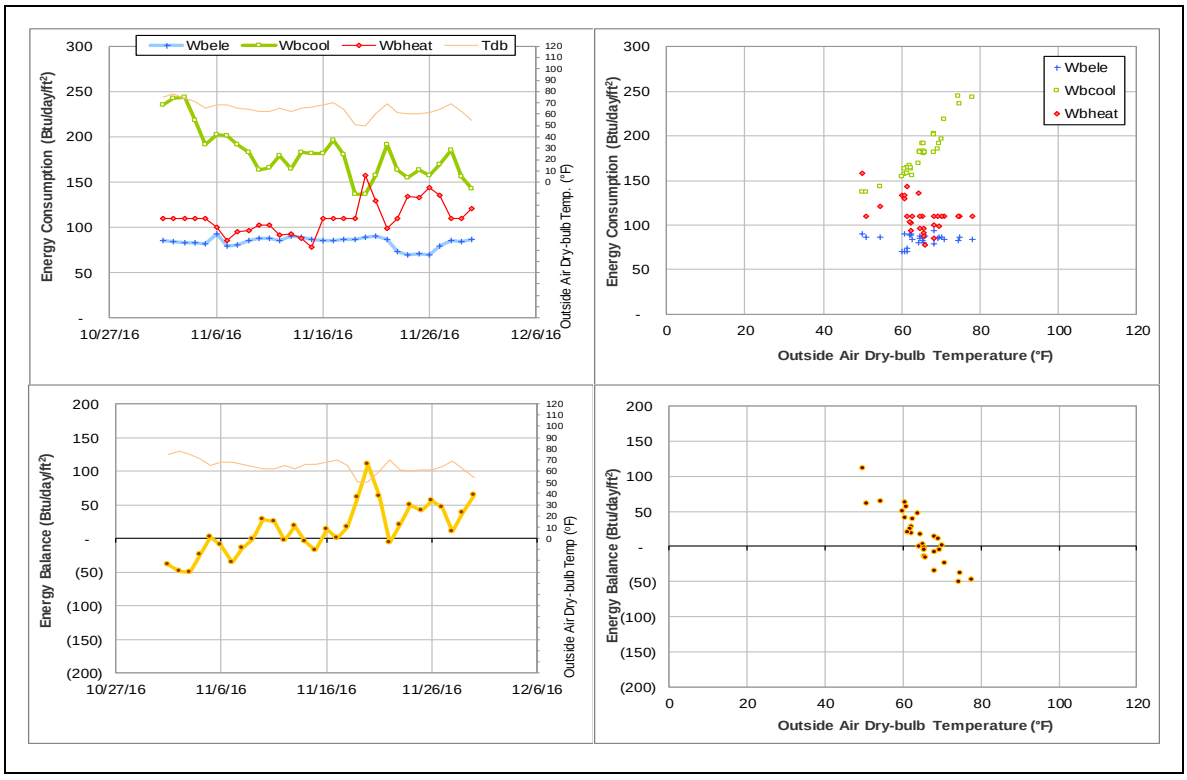
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during November 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



Aston Residence Hall (TAMU Bldg #447)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	002474	13	11/18/2016 – 11/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The consumption level is decreasing gradually.	8/18/2016 – Ongoing

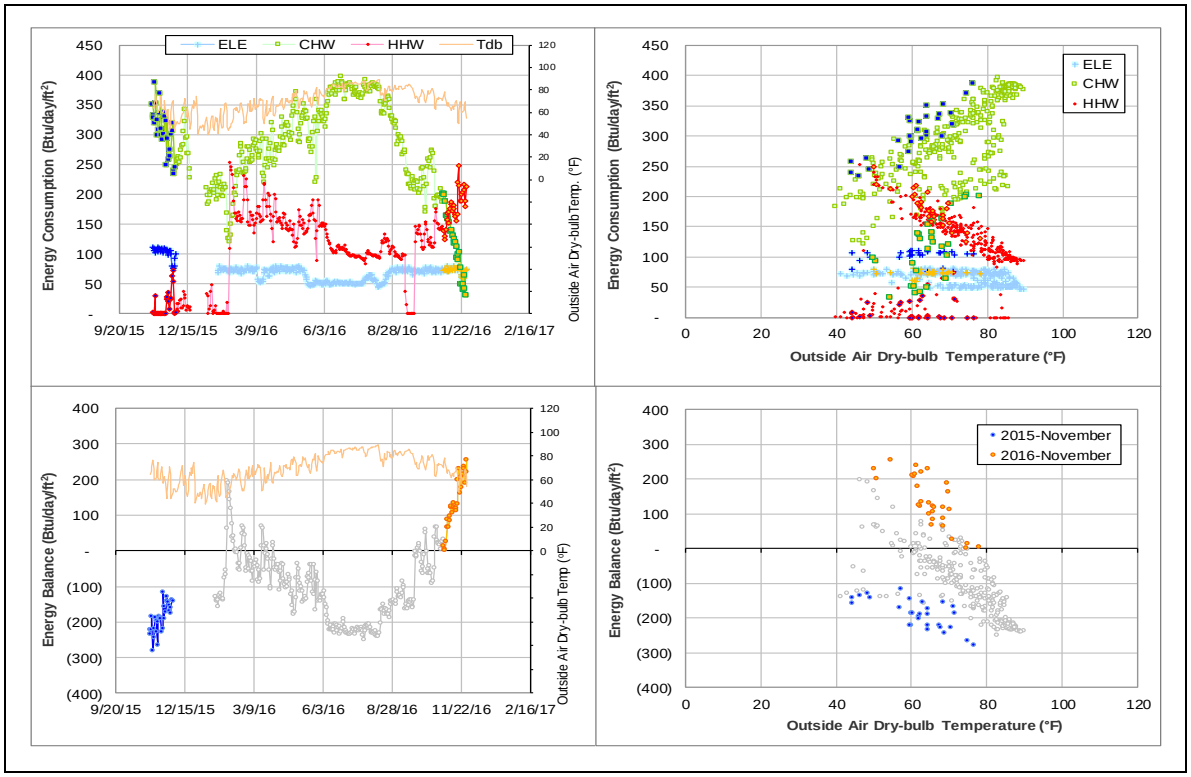
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	002474	8/18/2016 – Ongoing	Delta-T	Low

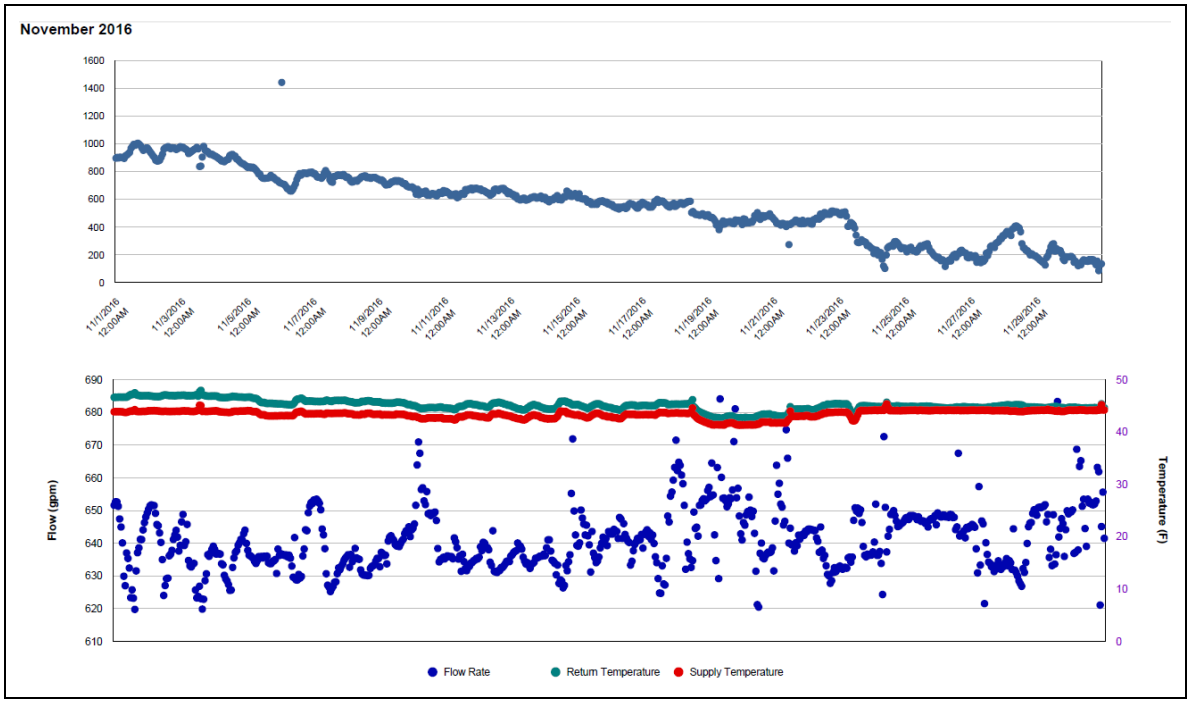
Quantitative descriptions and comments

Delta-T of CHW started to decrease on 11/18/2016 and consumption plummeted to a very low level since then. The low consumption days are estimated by a model. See also II-3.

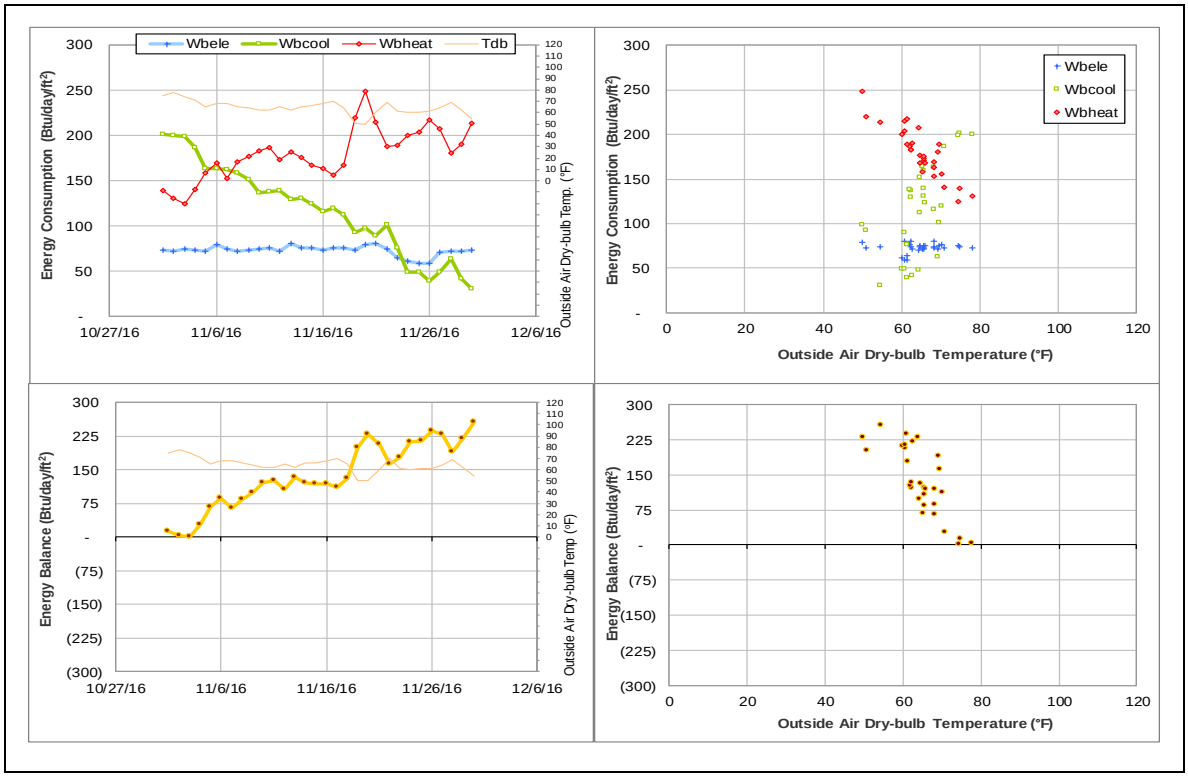
Explanatory Figure: 13 months energy balance plot with original data.



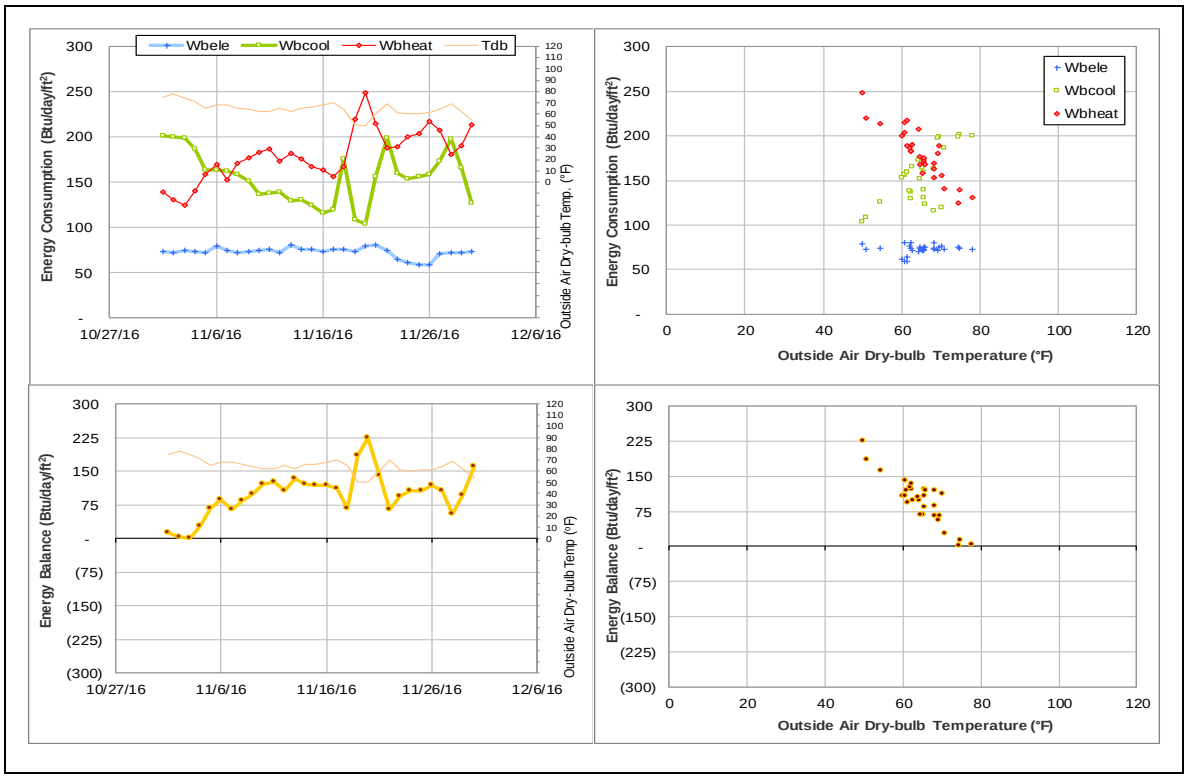
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (CHW during November 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



Oceanography & Meteorology Building (TAMU Bldg #443)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	006388	30	11/1/2016 – 11/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The metered values appear to be faulty.	10/1/2016 – Ongoing

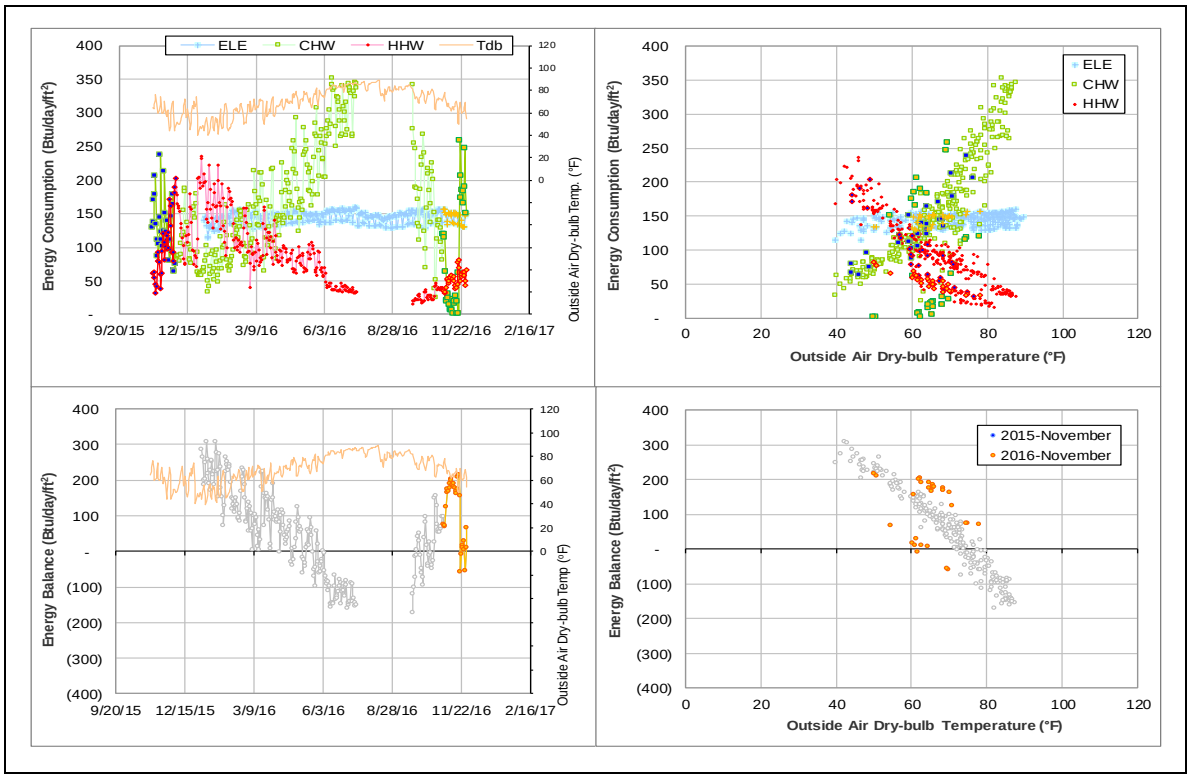
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	006388	10/21/2016 – 10/25/2016 11/5/2016 – 11/22/2016	Delta-T	Contains negative
		11/23/2016 – 11/30/2016	Delta-T	High

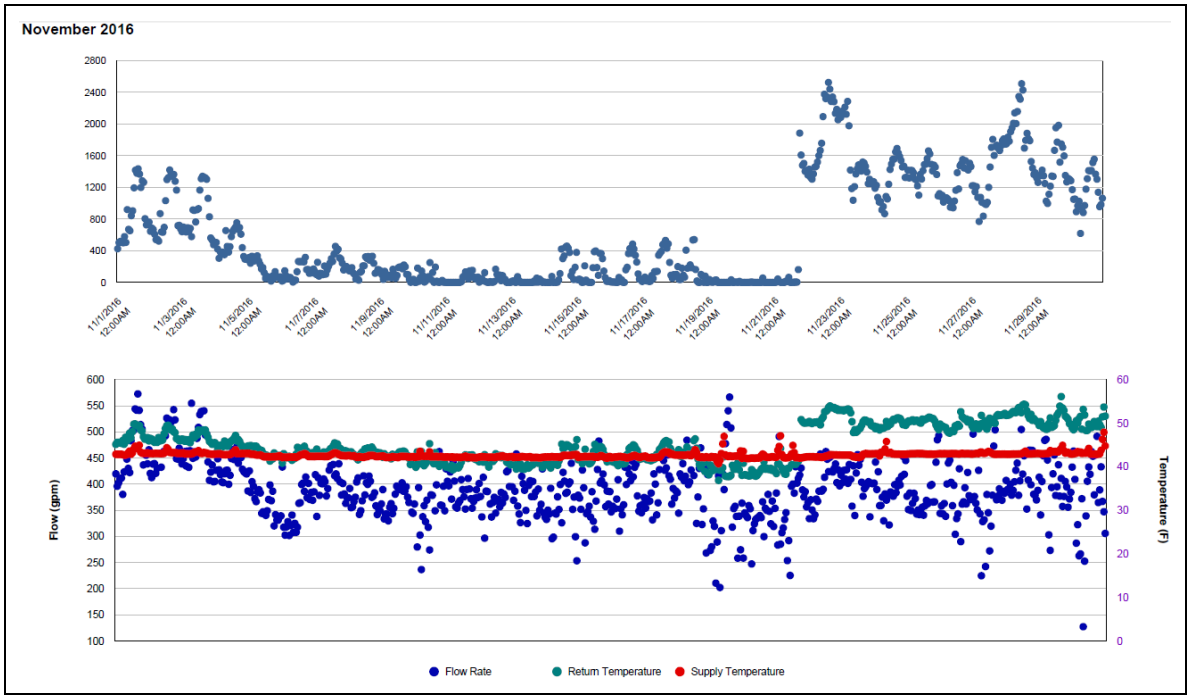
Quantitative descriptions and comments

CHW delta-T appear to contain negative values during 10/21 – 10/25/2016 and 11/5 – 11/22/2016. This renders the whole set of data questionable. Starting 11/22/2016, Delta-T became positive but the consumption and energy balance are still off-pattern. The whole month is estimated by a model. See also section II-3.

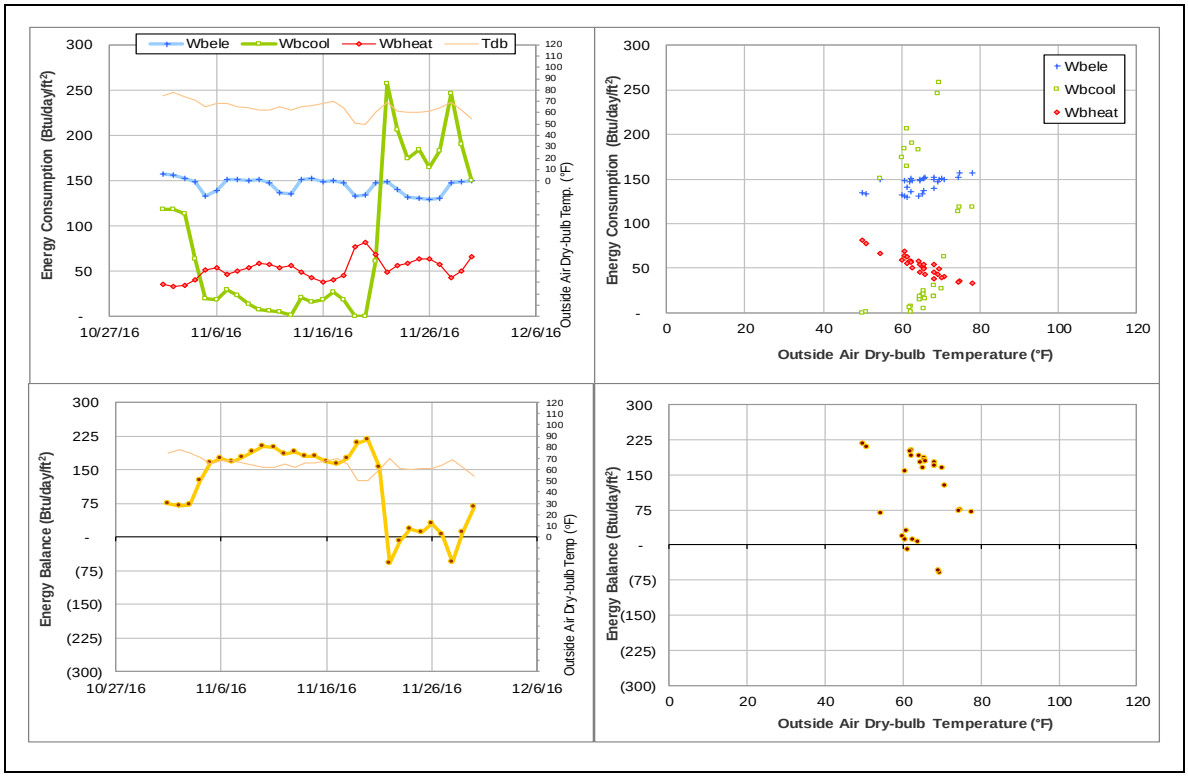
Explanatory Figure: 13 months energy balance plot with original data.



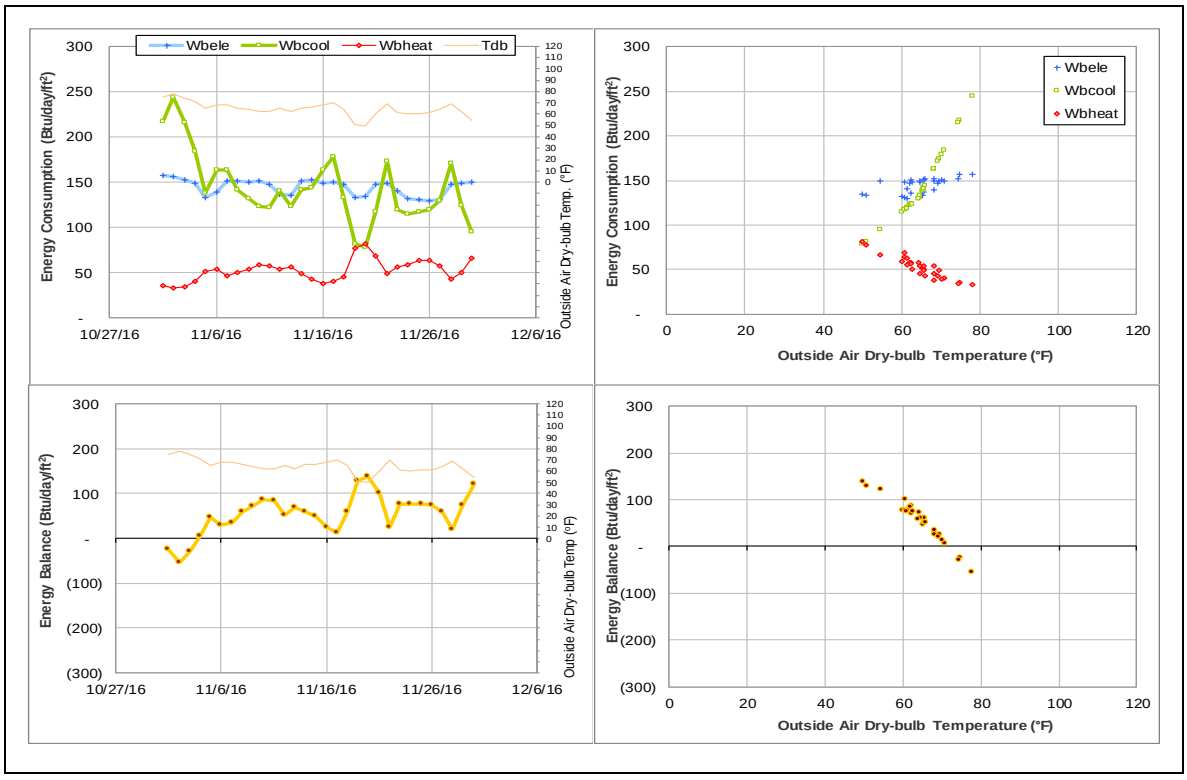
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (CHW during November 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



Rudder Tower (TAMU Bldg #446)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	002455	17	11/14/2016 – 11/30/2016	Model
HHW	002459	12	11/19/2016 – 11/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The consumption level is higher than the level during the past year.	11/14/2016 – 11/30/2016
HHW	The consumption level is higher than the level during the past year.	11/19/2016 – 11/30/2016

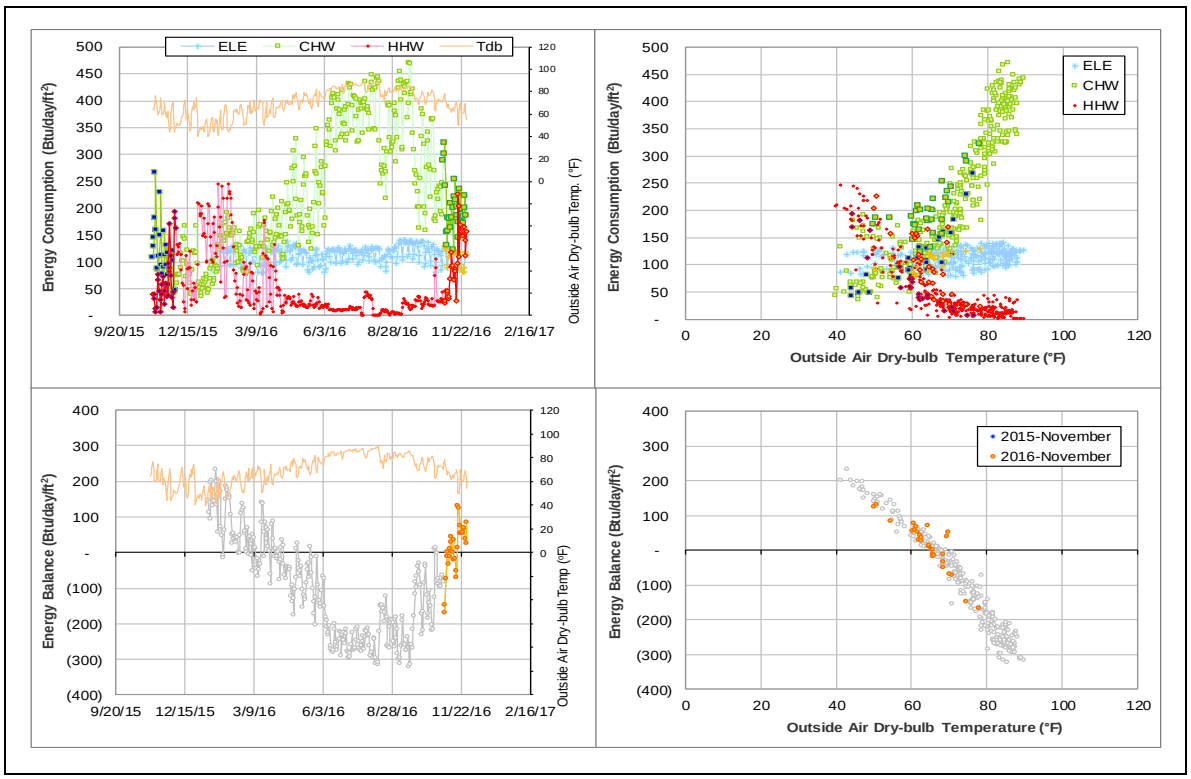
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	002455	11/14/2016 – 11/19/2016	Flow Rate	High
		11/19/2016 – Ongoing	Delta-T	High
HHW	002459	11/19/2016 – 11/30/2016	Return temp	High

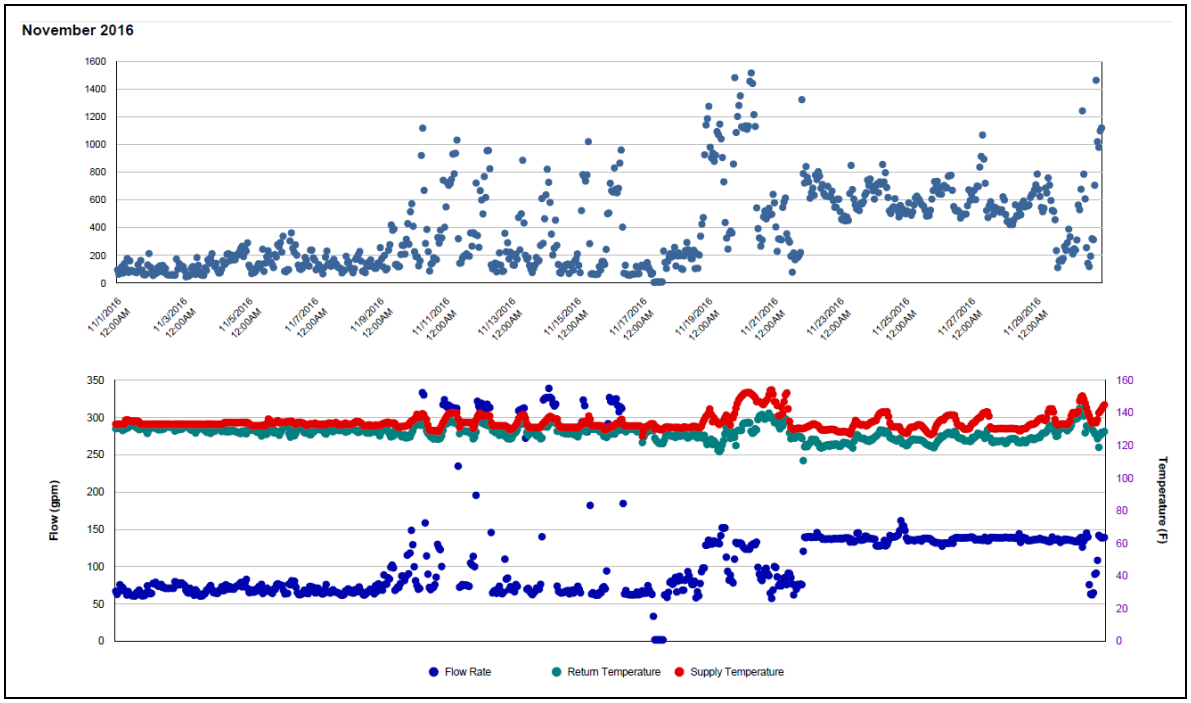
Quantitative descriptions and comments

Both CHW and HHW increased. CHW first had an increase in flow rate in day time on 11/14 – 11/19/2016 from 300 gpm to 500 – 800 gpm (daily peak flow), then had an increase in return temperature since 11/19/2016 from about 50°F to about 58°F. This should be the reason that the CHW consumption did not decrease as temperature decreased. HHW flow increased from around 70 gpm at the beginning of the month to near 150 gpm at the end of the month. These high consumption periods are estimated by models.

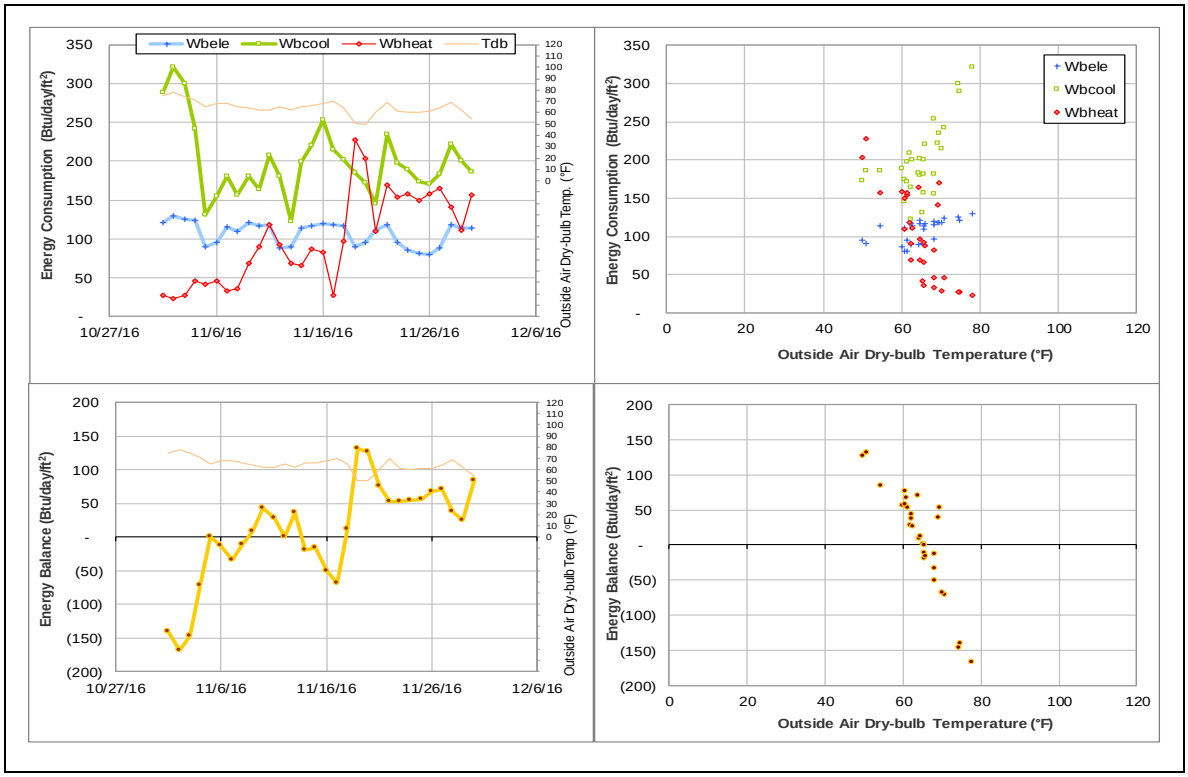
Explanatory Figure: 13 months energy balance plot with original data.



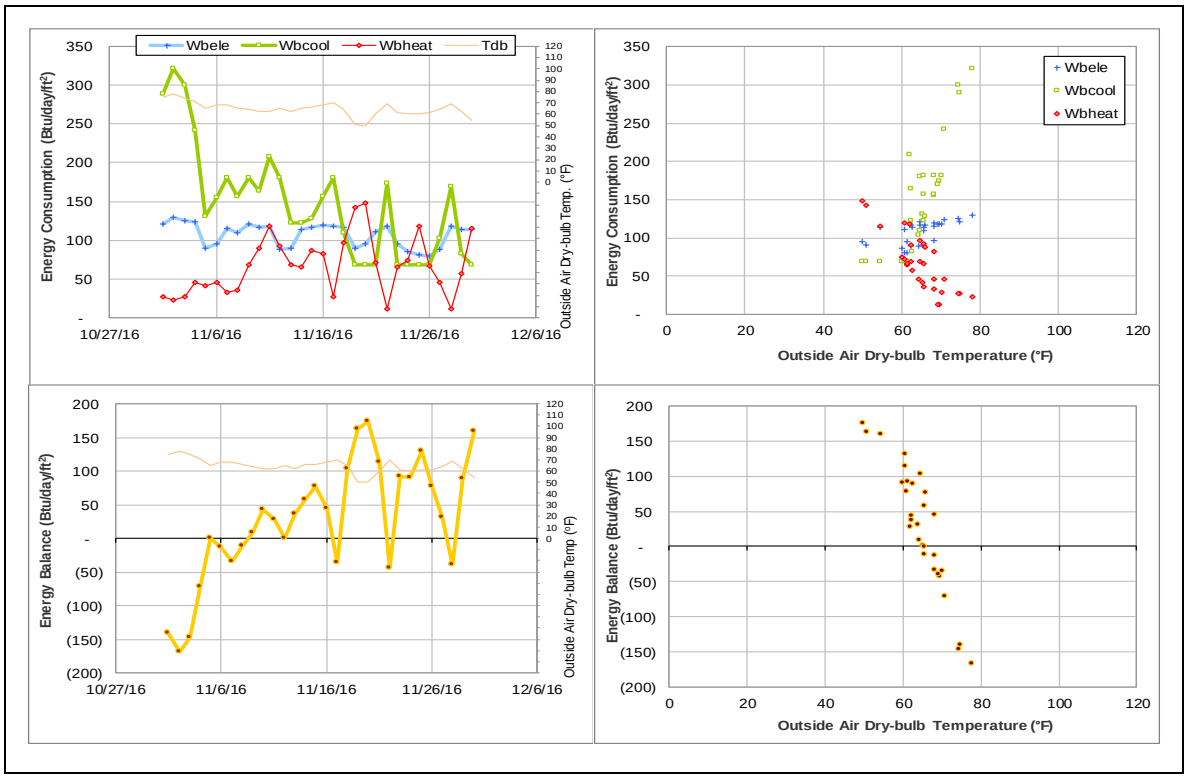
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during November 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



TAES Annex Building (TAMU Bldg #457)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	005917	12	11/19/2016 – 11/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The metered values appear to be faulty.	11/19/2016 – 11/30/2016

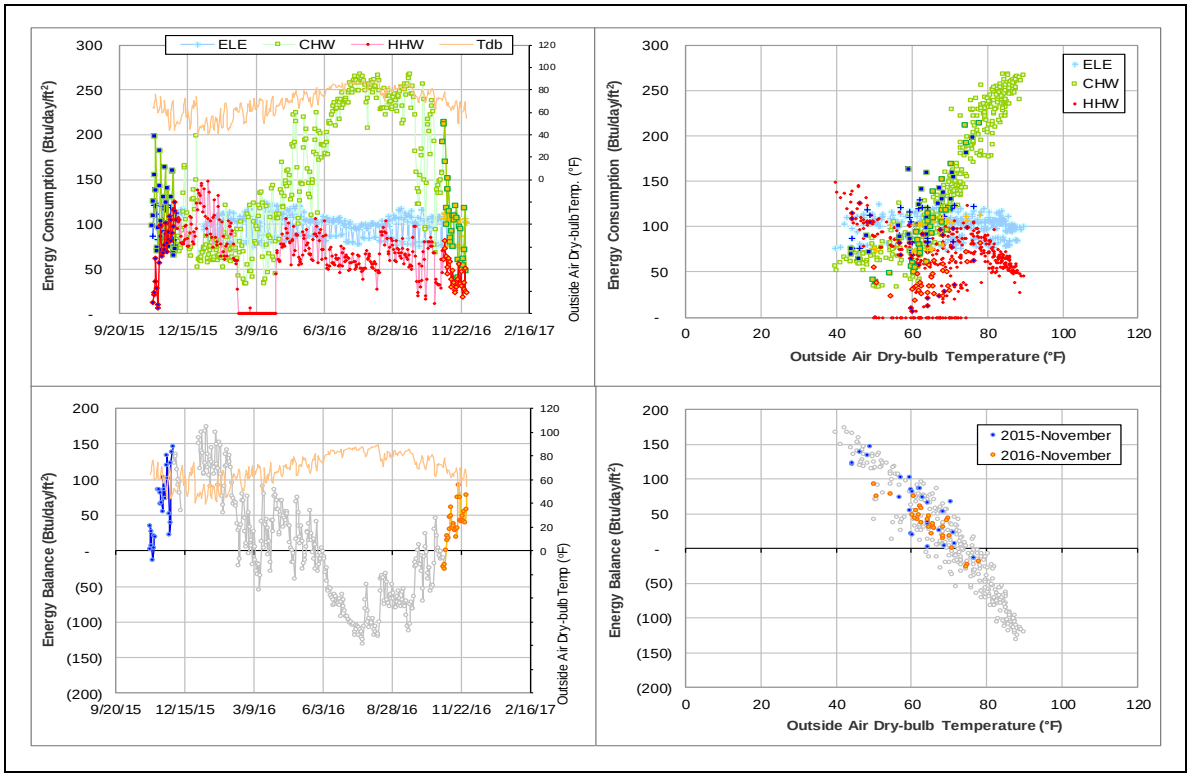
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	005917	11/19/2016 – 11/30/2016	Flow rate	Occasionally constant

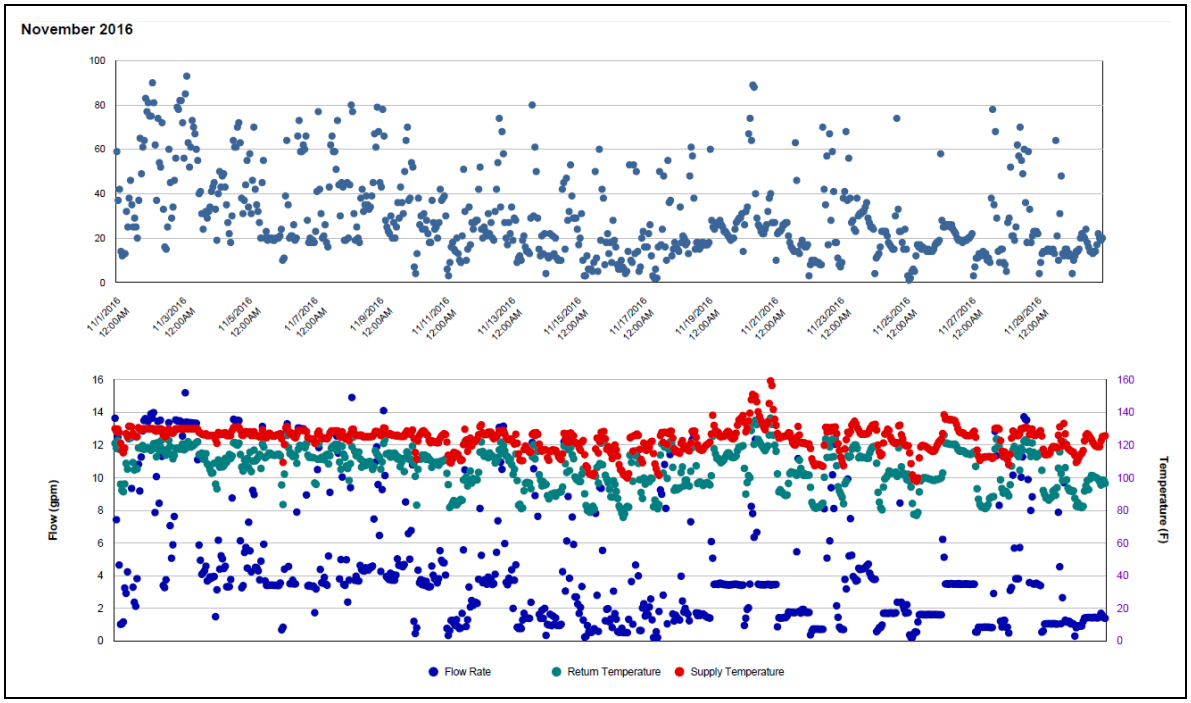
Quantitative descriptions and comments

There are periods in the HHW flow readings that seem to be stuck at constant values starting 11/19/2016. These days are estimated by a model.

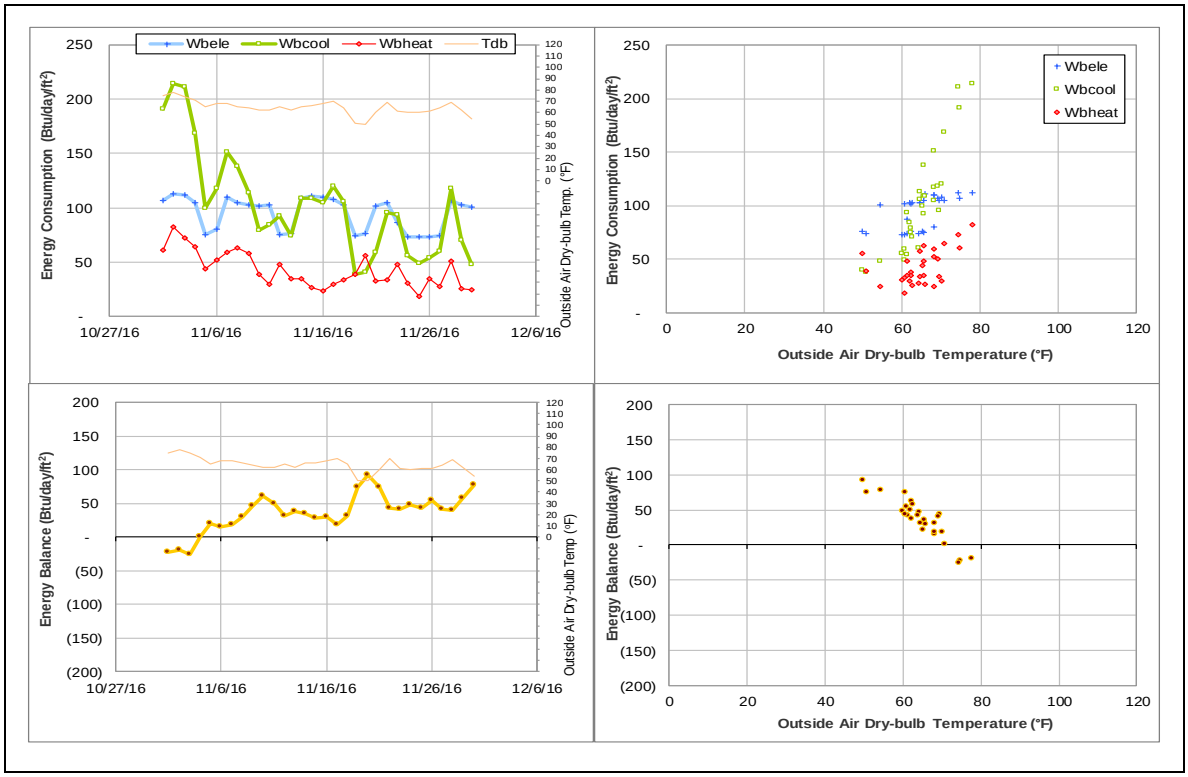
Explanatory Figure: 13 months energy balance plot with original data.



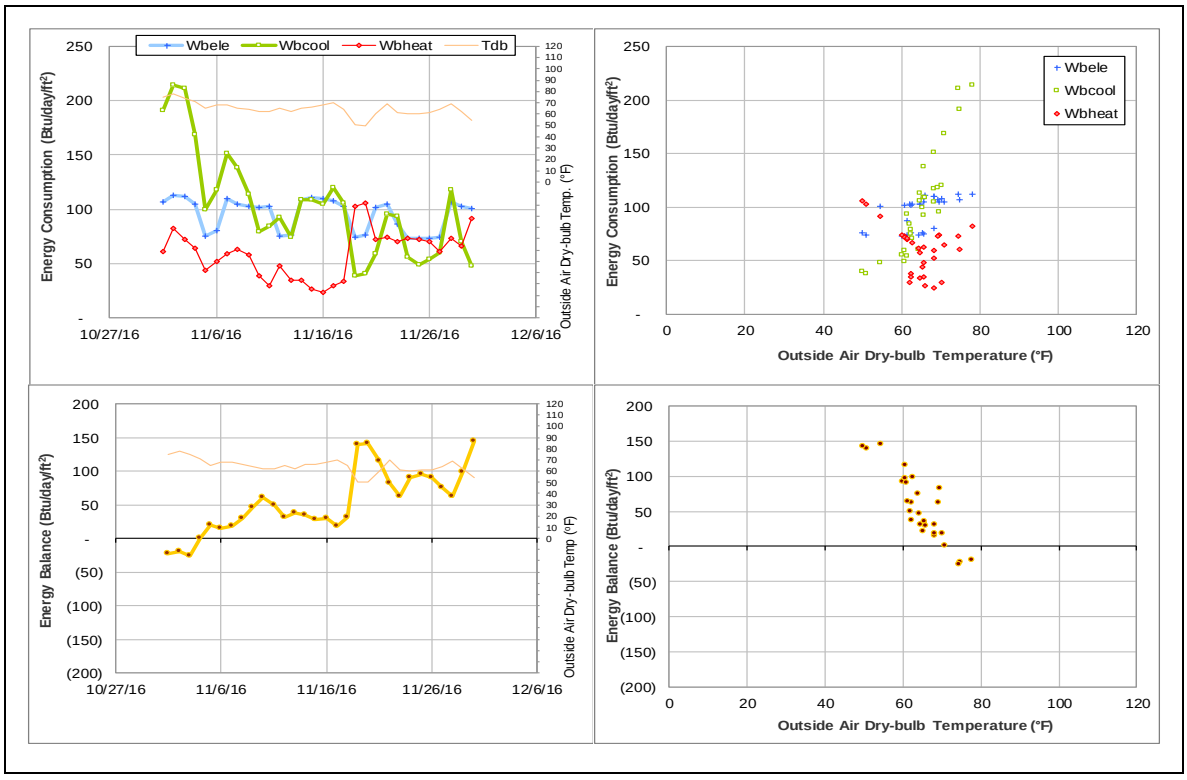
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during November 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



Biological Sciences Building – East (TAMU Bldg #467)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	003851	30	11/1/2016 – 11/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The metered values appear to be faulty.	8/6/2016 – Ongoing

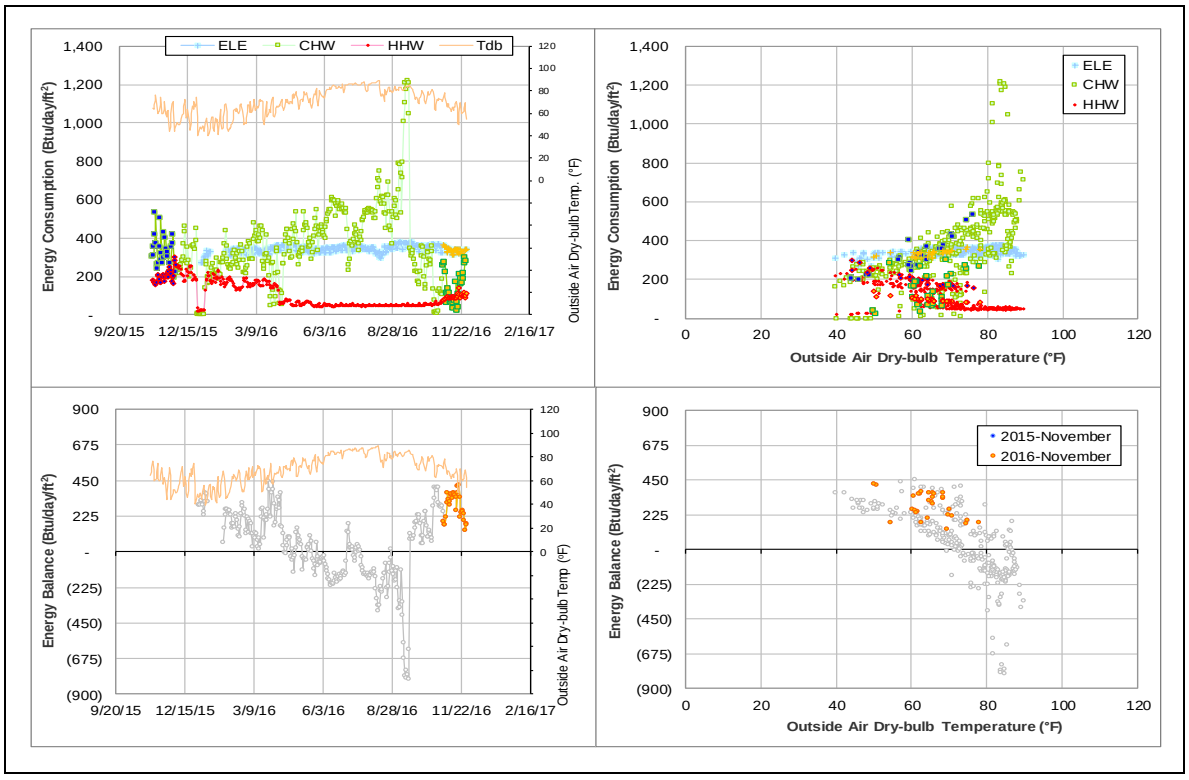
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	003851	8/6/2016 – Ongoing	Supply Temp	Faulty

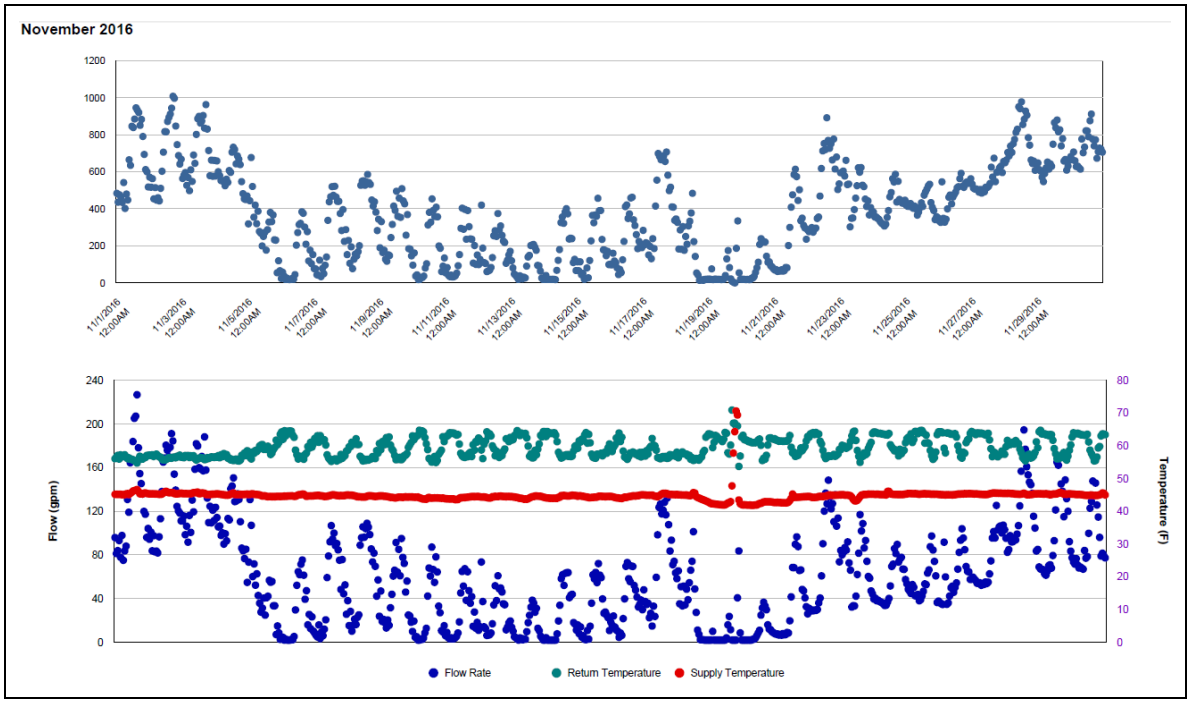
Quantitative descriptions and comments

The CHW supply temp readings started to decrease on 8/6/2016 while all adjacent buildings have stable supply temp at circa 42°F. The supply temp had a period of obviously erroneous values of 20°F during 9/10 – 9/20/2016, and then increased to 45°F. The readings are still questionable and the whole month is estimated using a model. See also section II-3.

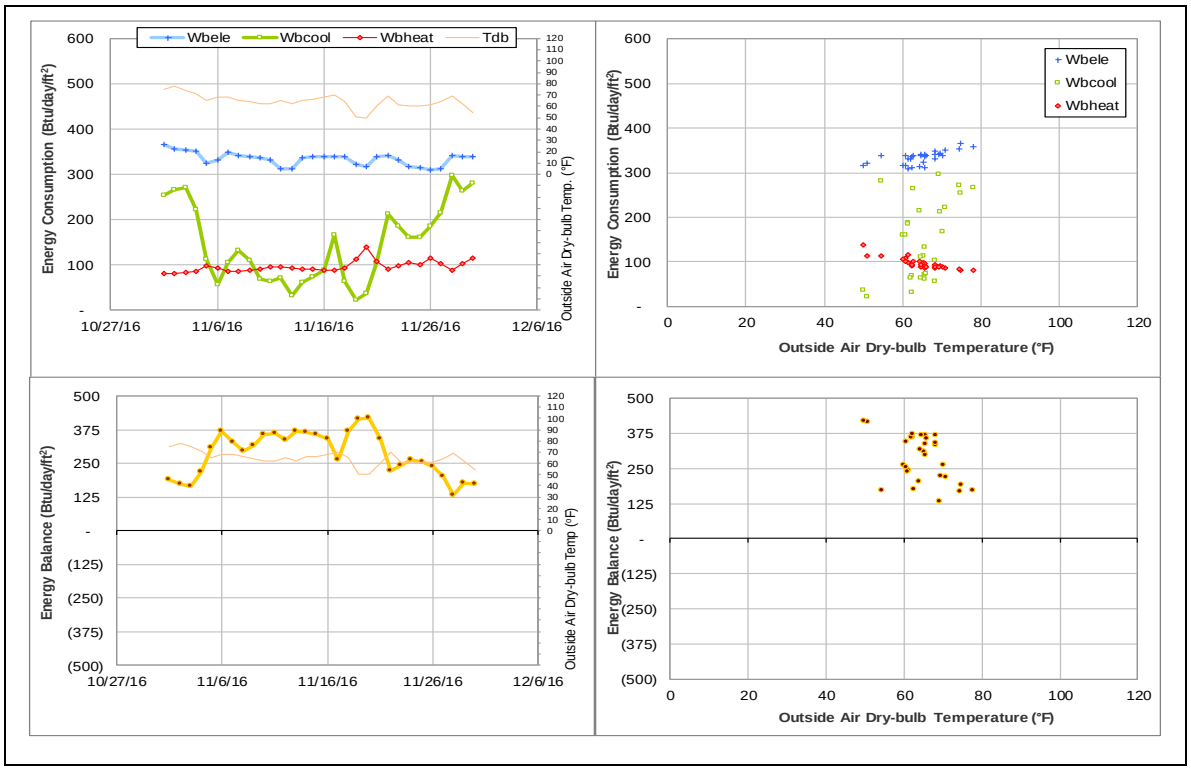
Explanatory Figure: 13 months energy balance plot with original data.



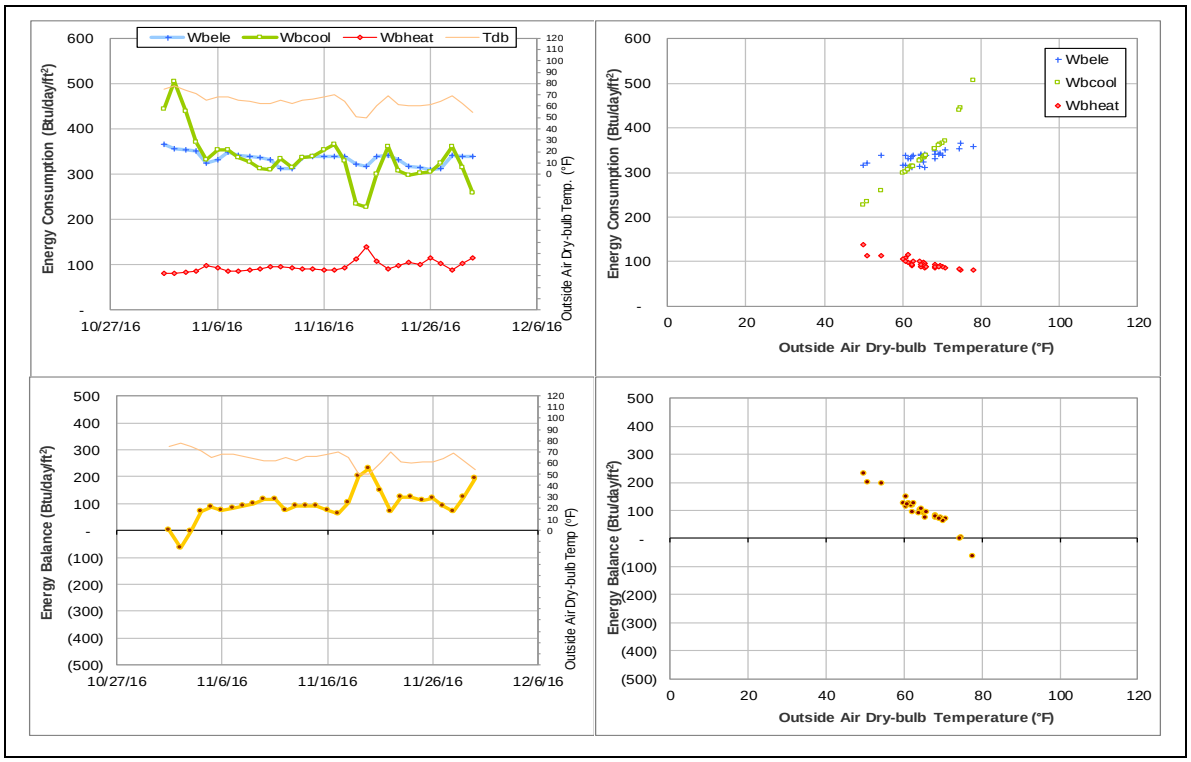
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (CHW during November 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis



Thompson Hall (TAMU Bldg #483)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	003887	3	11/1/2016 – 11/3/2016	Model
HHW	003891	2	11/1/2016 – 11/2/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The metered values appear to be faulty.	7/26/2016 – 10/27/2016, 10/30/2016 – 11/3/2016
HHW	The metered values appear to be faulty.	10/30/2016 – 11/2/2016

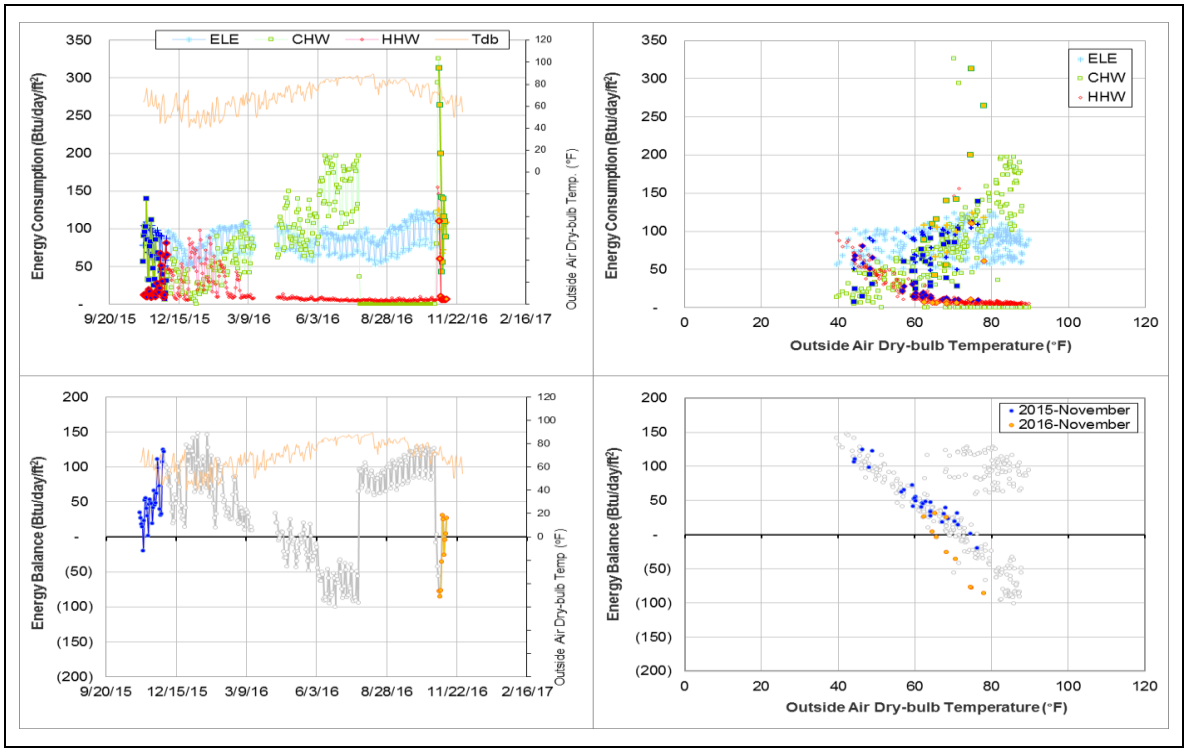
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	003887	7/26/2016 – 10/27/2016	Flow Rate	Faulty
		10/30/2016 – 11/3/2016	Flow Rate	Increased
			Return Temperature	Decreased
HHW	003891	10/30/2016 – 11/2/2016	Flow Rate	Increased
			Return Temperature	Decreased

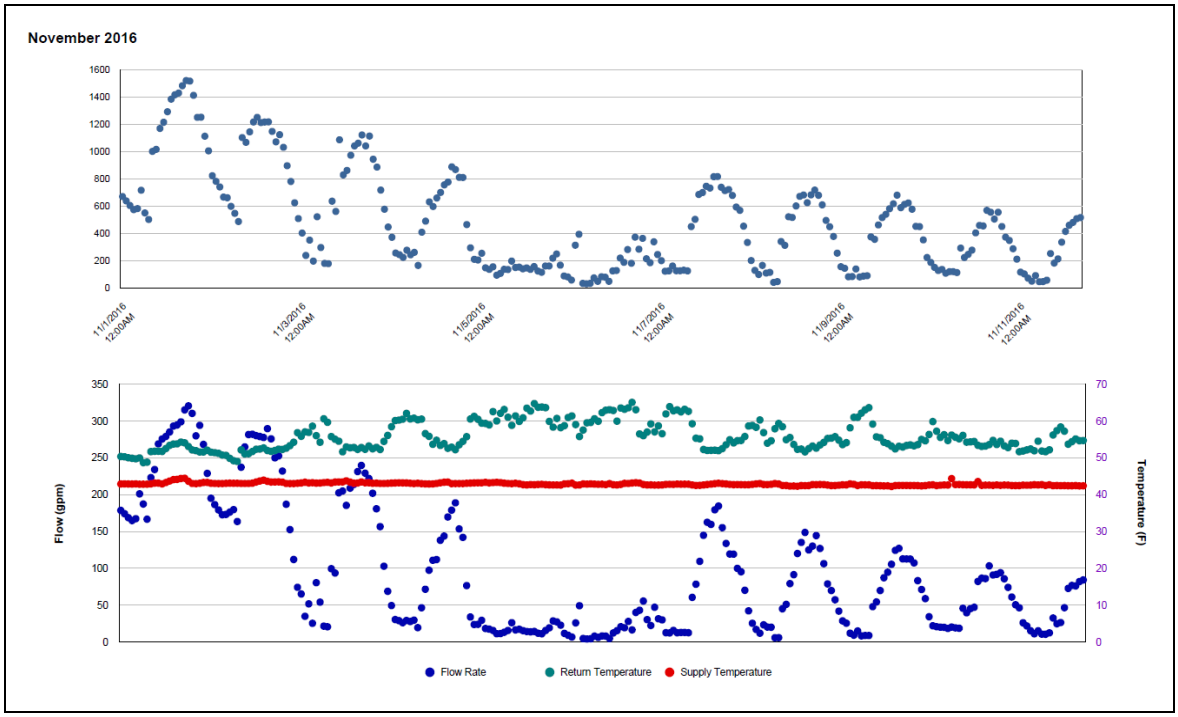
Quantitative descriptions and comments

The CHW flow rate readings were approximately -0.0008 gpm from 7/26/2016 to 10/27/2016. There was increased flow rate and reduced return water temperature for CHW for 10/30/2016 – 11/3/2016 and HHW for 10/30/2016 – 11/2/2016. But the consumption for these days is extremely high and the data is questionable. The consumption is estimated by a model.

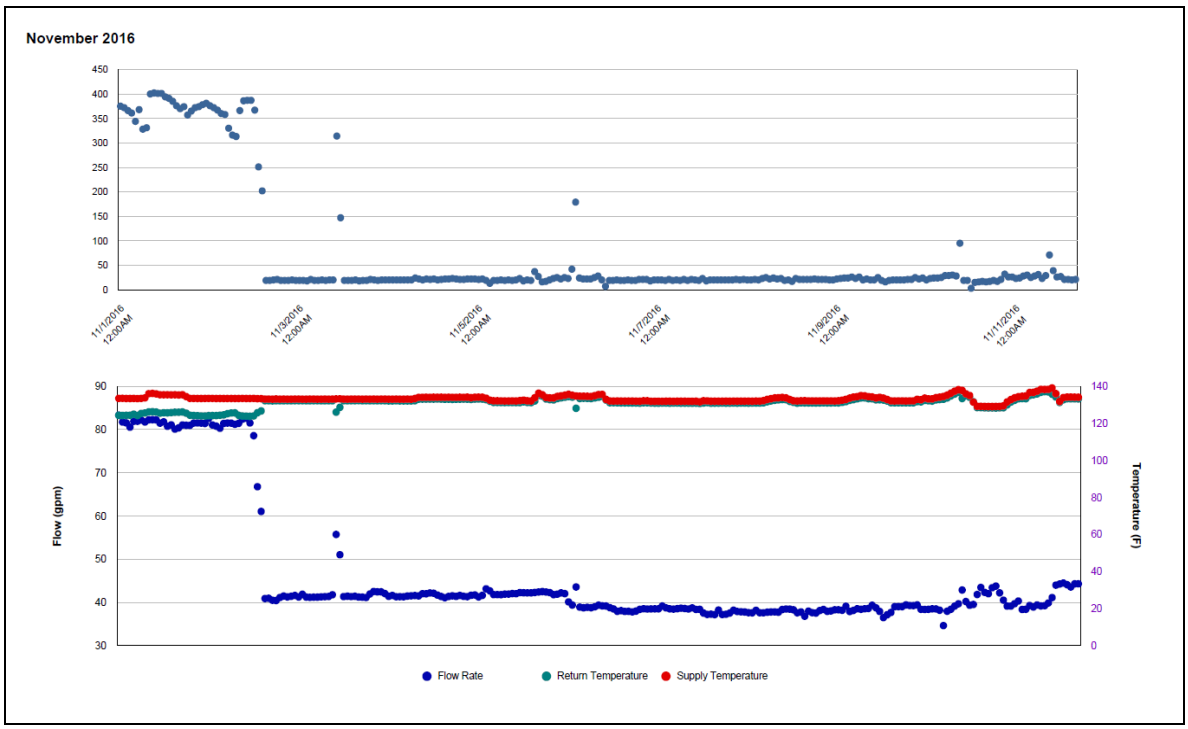
Explanatory Figure: 13 months energy balance plot with original data.



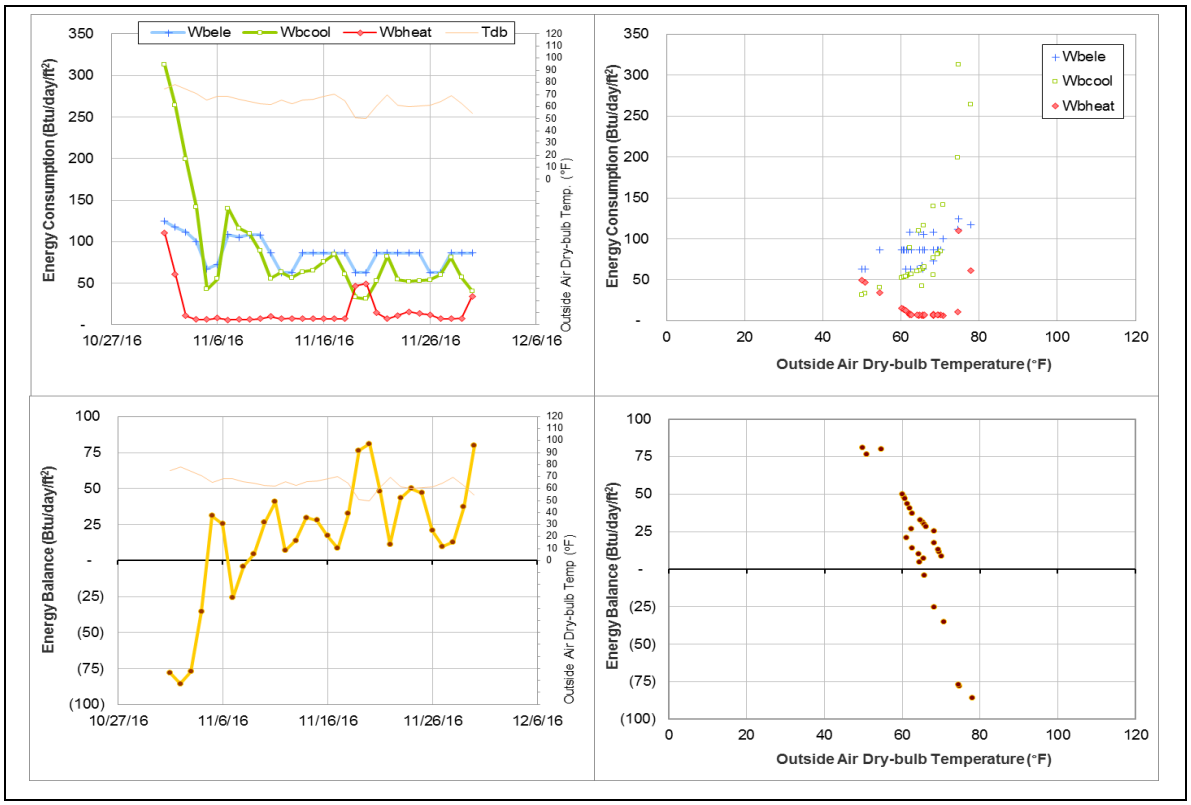
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (CHW during November 2016)



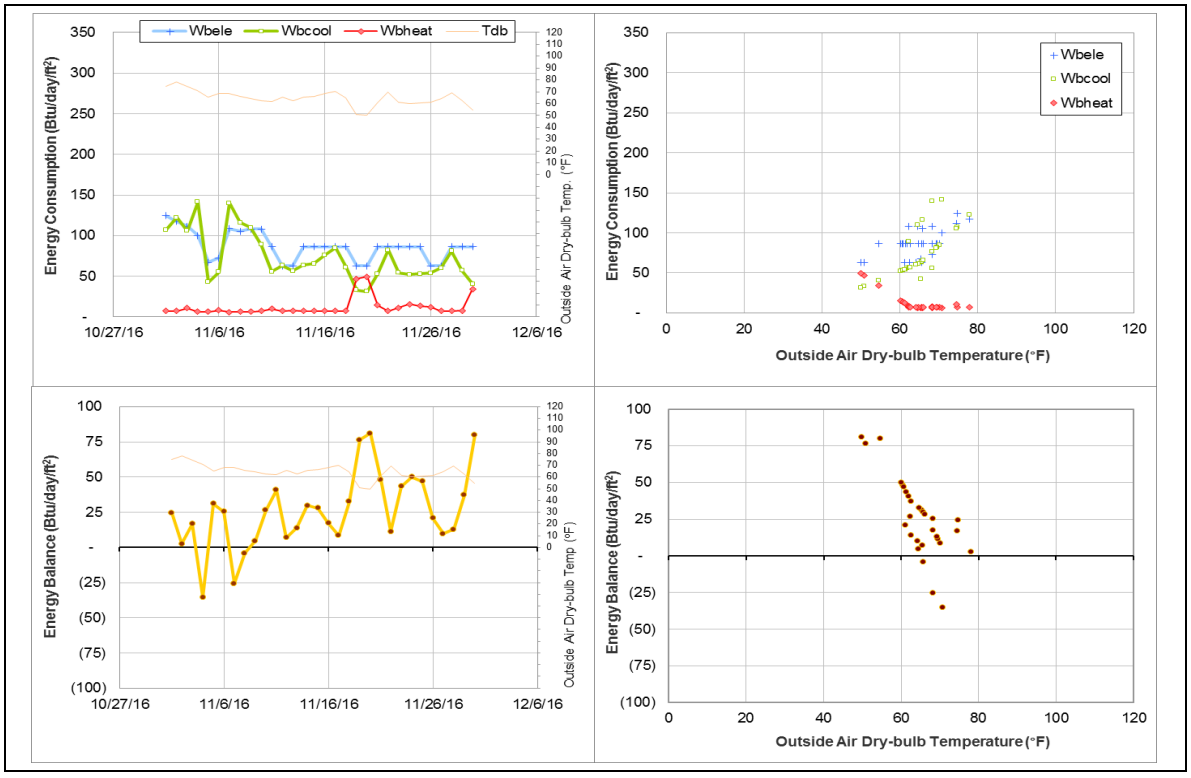
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during November 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis



Chemistry Building (TAMU Bldg #484)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
ELE	007557	30	11/1/2016 – 11/30/2016	Model

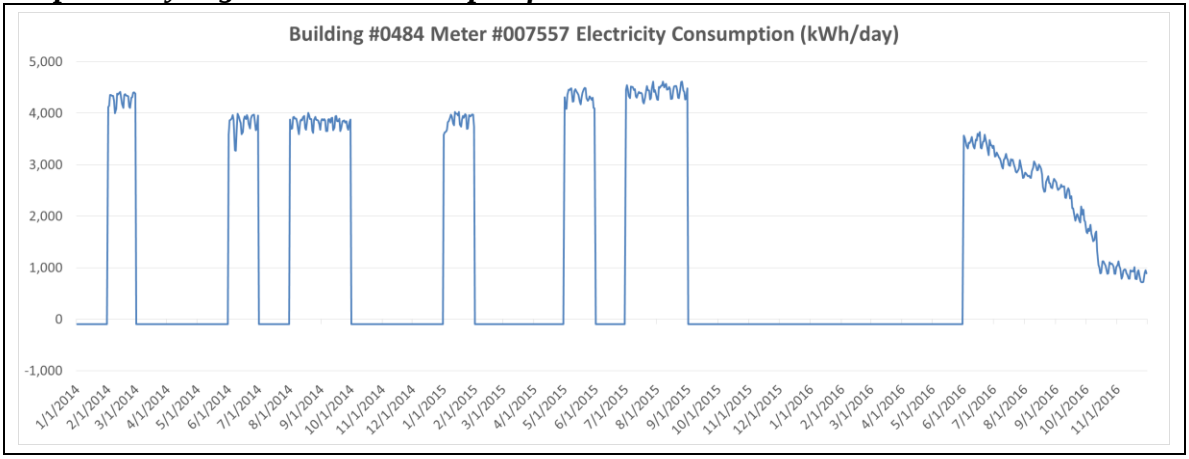
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE	The ELE consumption level has decreased significantly.	6/1/2016 – 11/30/2016

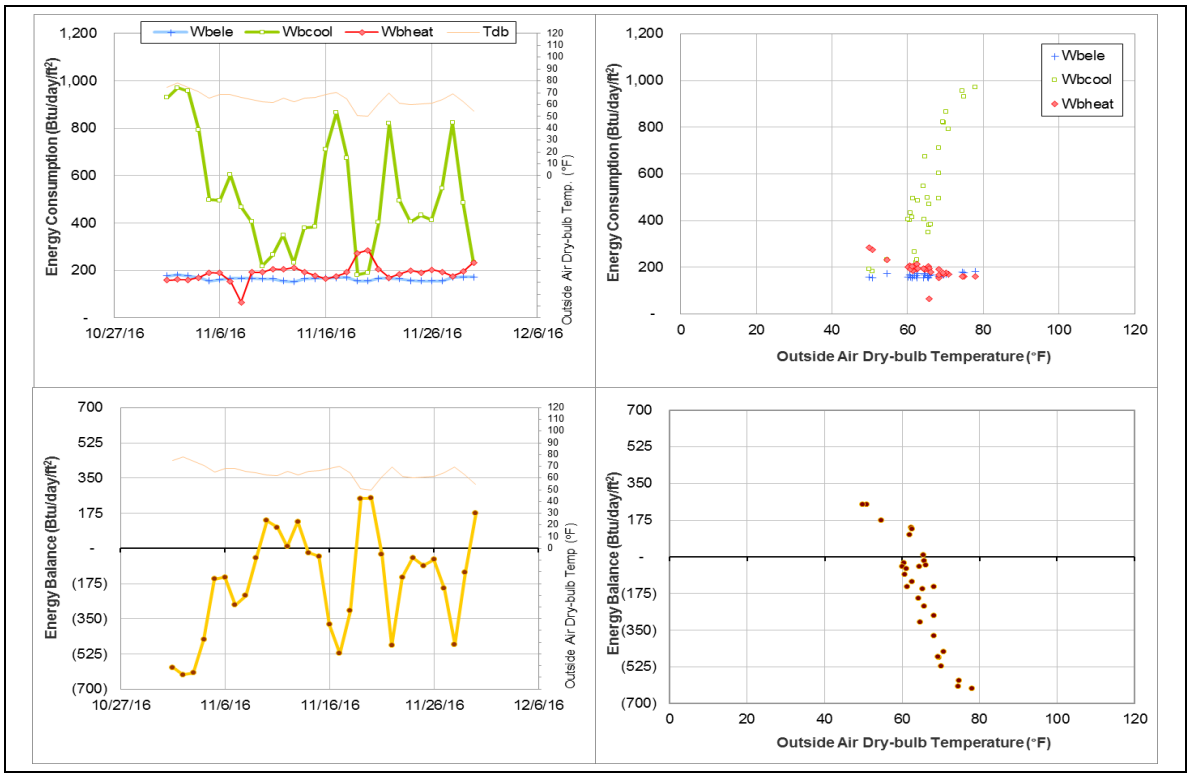
Quantitative descriptions and comments

There are four ELE meters for this building. The consumption for one of them (MID #007557) decreased gradually from 6/1/2016 to 8/31/2016 then more significantly in September and October 2016. The electricity for November 2016 was estimated by a model.

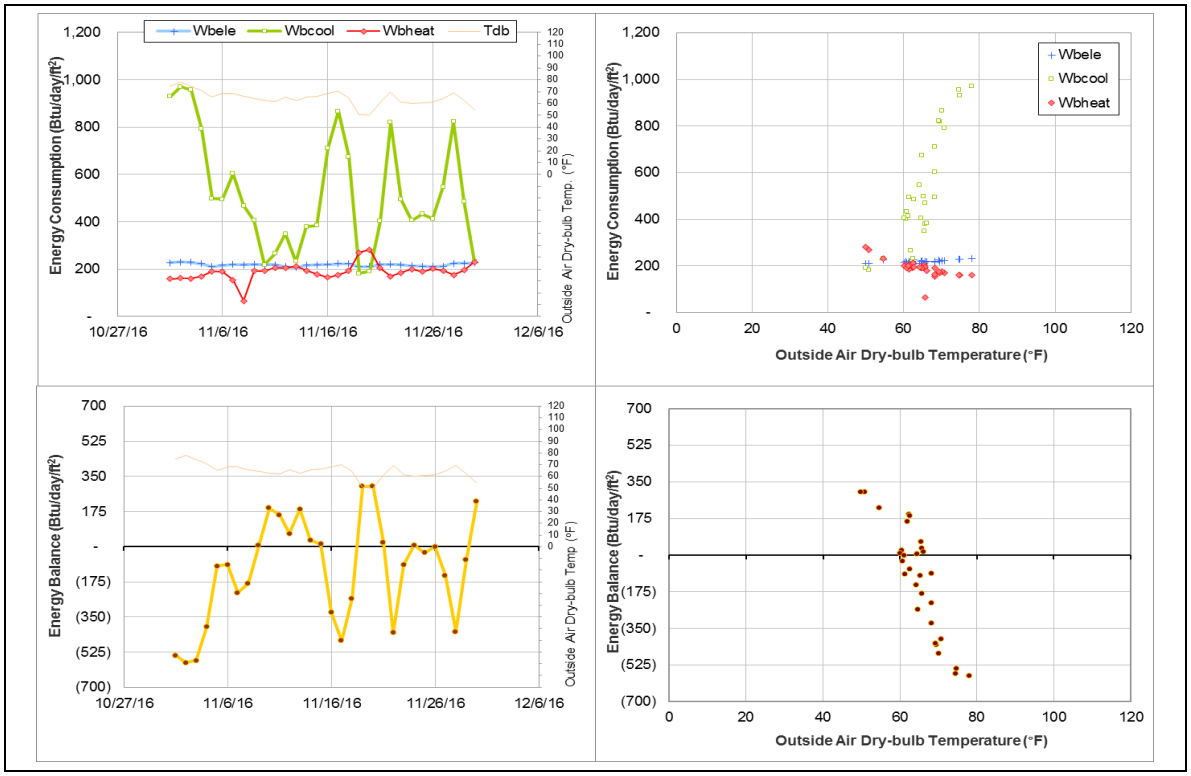
Explanatory Figure: Times series plot for meter #007557



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis



Civil Engineering Building (TAMU Bldg #492)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	005950	30	11/1/2016 – 11/30/2016	Model
HHW	005954	30	11/1/2016 – 11/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The CHW consumption level decreased.	10/29/2016 – 11/30/2016
HHW	The HHW consumption decreased to zero.	10/29/2016 – 11/30/2016

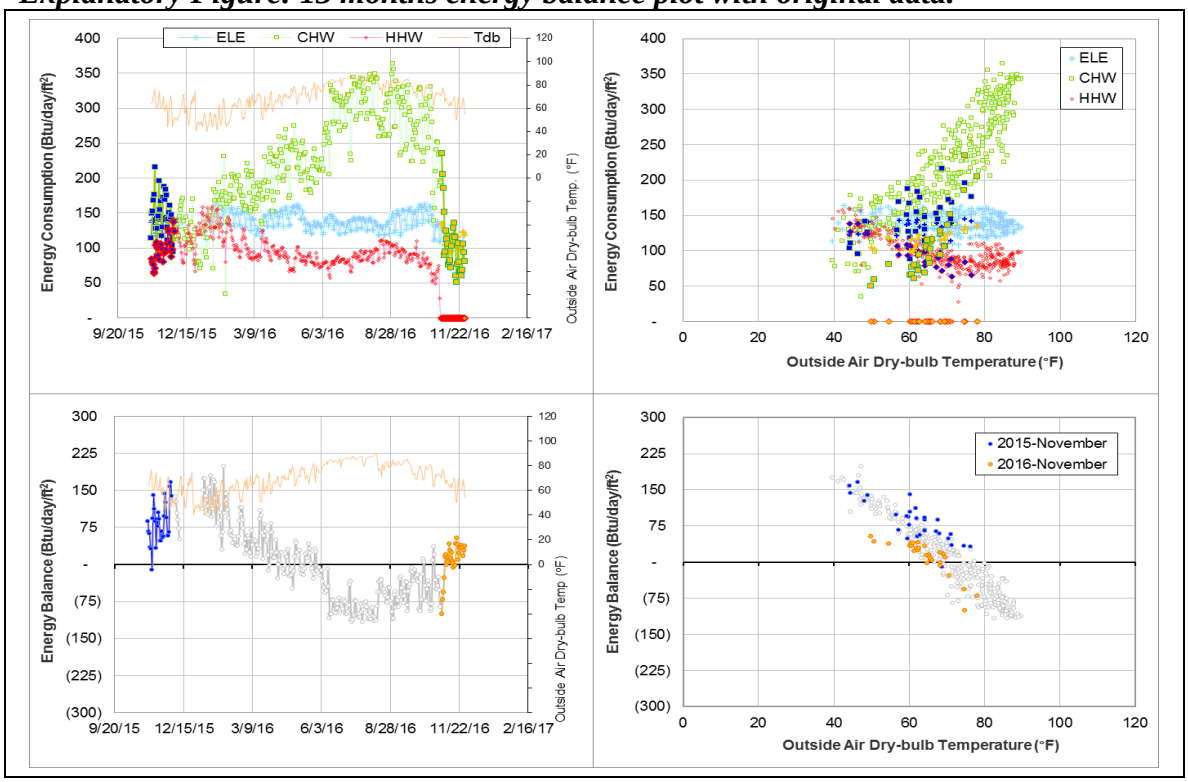
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	005950	10/29/2016 – 11/30/2016	Flow rate	Decreased
			Return Temperature	Increased
HHW	005954	10/29/2016 – 11/30/2016	Flow rate	Sudden decrease to zero
			Delta-T	Sudden decrease, nearly zero

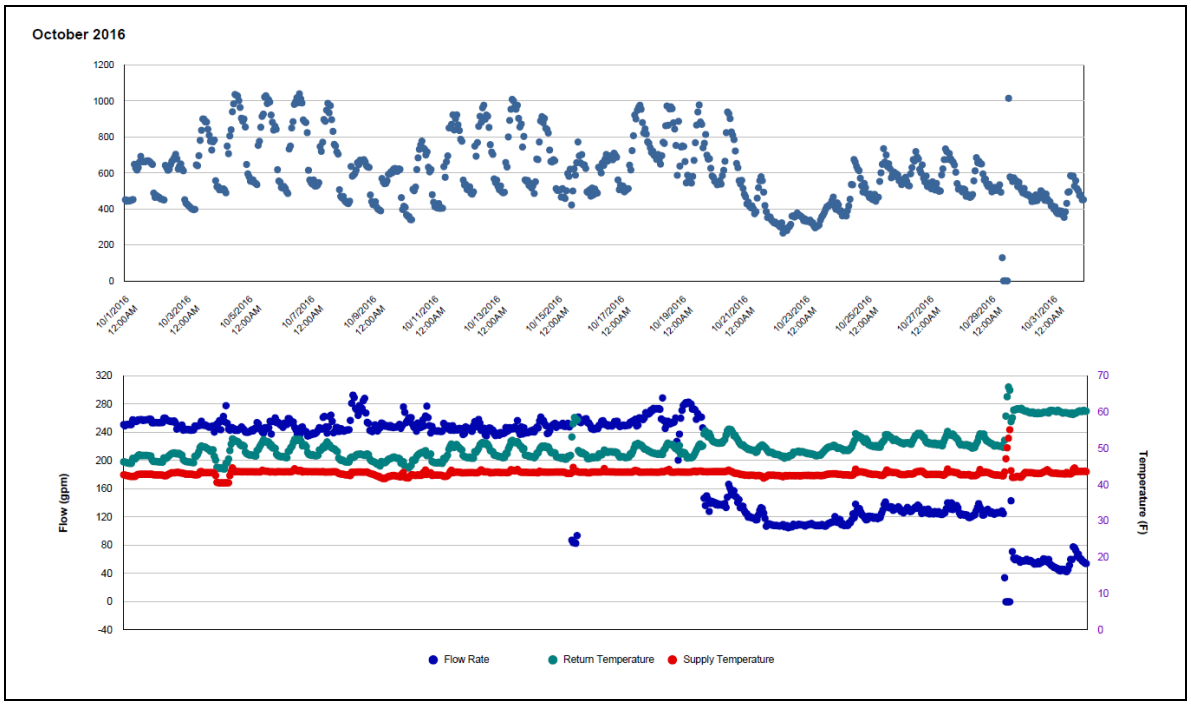
Quantitative descriptions and comments

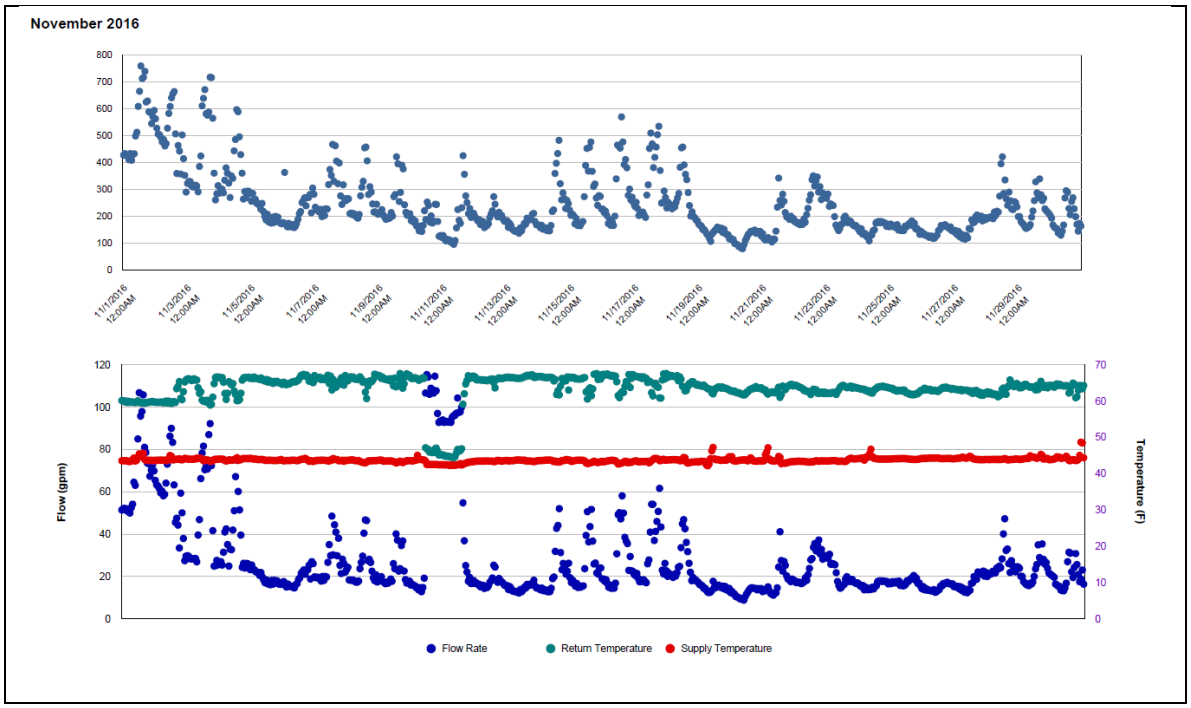
Starting 10/29/2016, the CHW flow rate decreased and the return temperature increased. The CHW was estimated by model for this period. Starting 10/29/2016, the HHW flow rate decreased to zero and both supply and return temperatures dropped to around 85°F. The HHW was estimated by model for this period.

Explanatory Figure: 13 months energy balance plot with original data.

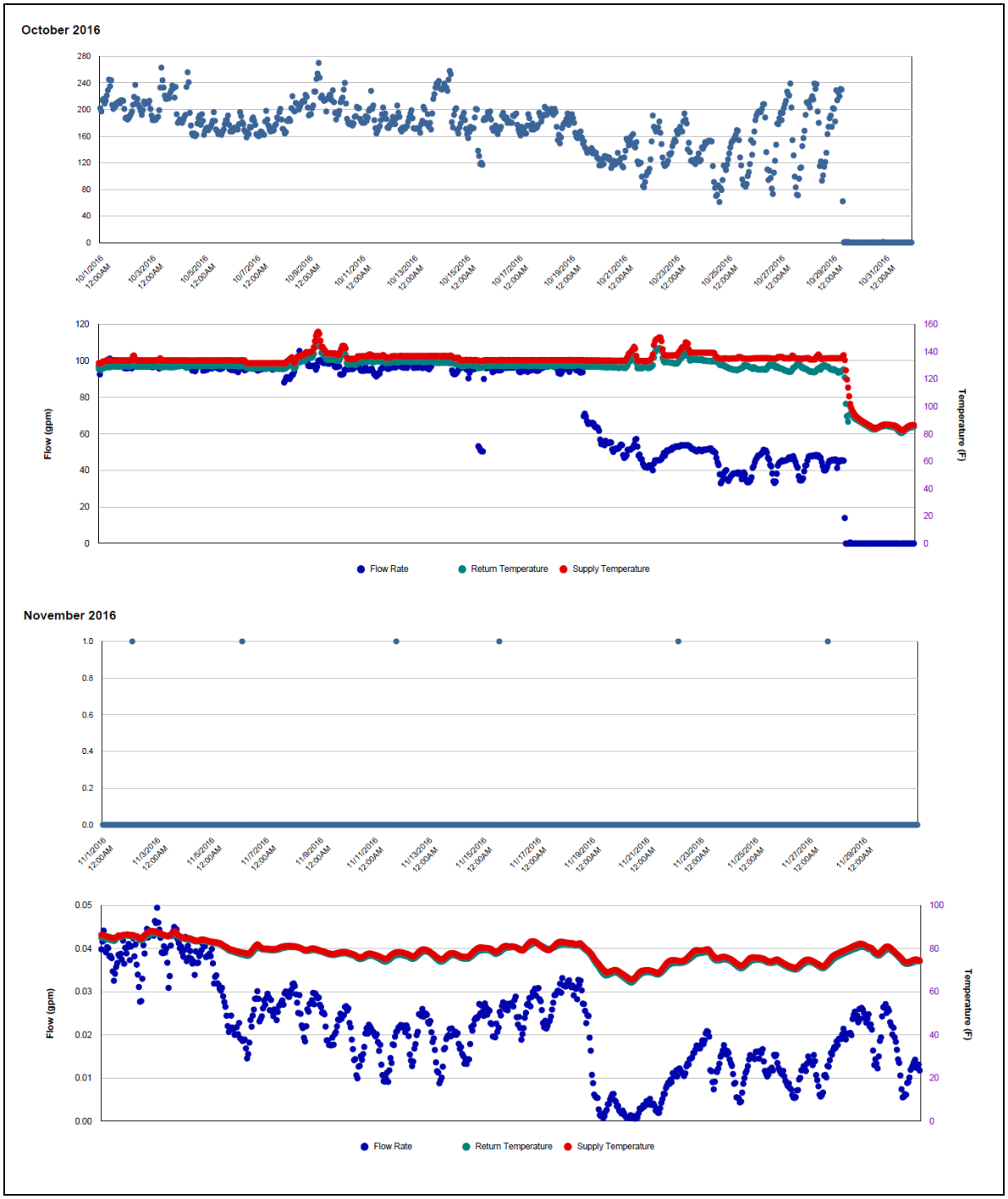


Explanatory Figure: Time series plots of hourly CHW energy consumption, flow, and supply/return temperatures from utilities office. (top: October 2016, bottom: November 2016)

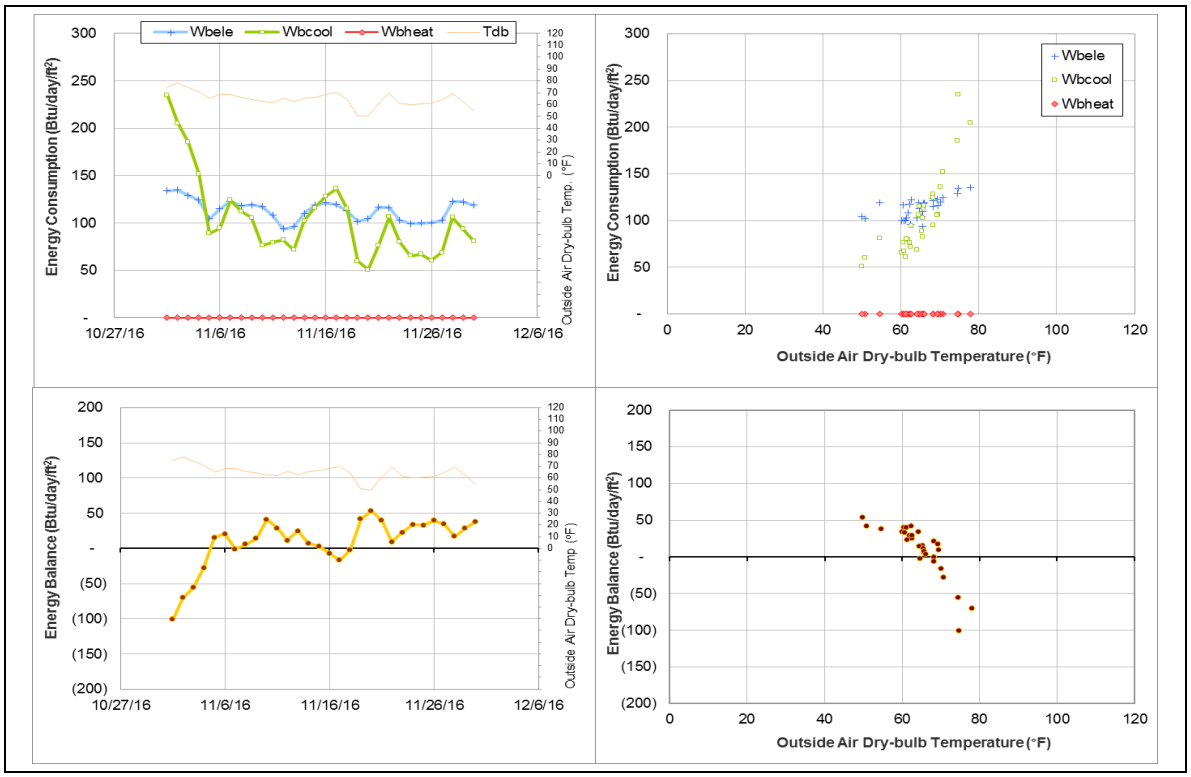



November 2016
800
700
600
500
400
300
200
100
0
11/1/2016 12:00AM
11/3/2016 12:00AM
11/5/2016 12:00AM
11/7/2016 12:00AM
11/9/2016 12:00AM
11/11/2016 12:00AM
11/13/2016 12:00AM
11/15/2016 12:00AM
11/17/2016 12:00AM
11/19/2016 12:00AM
11/21/2016 12:00AM
11/23/2016 12:00AM
11/25/2016 12:00AM
11/27/2016 12:00AM
11/29/2016 12:00AM
120
100
80
60
40
20
0
Flow (gpm)
70
60
50
40
30
20
10
0
Temperature (F)
Flow Rate
Return Temperature
Supply Temperature

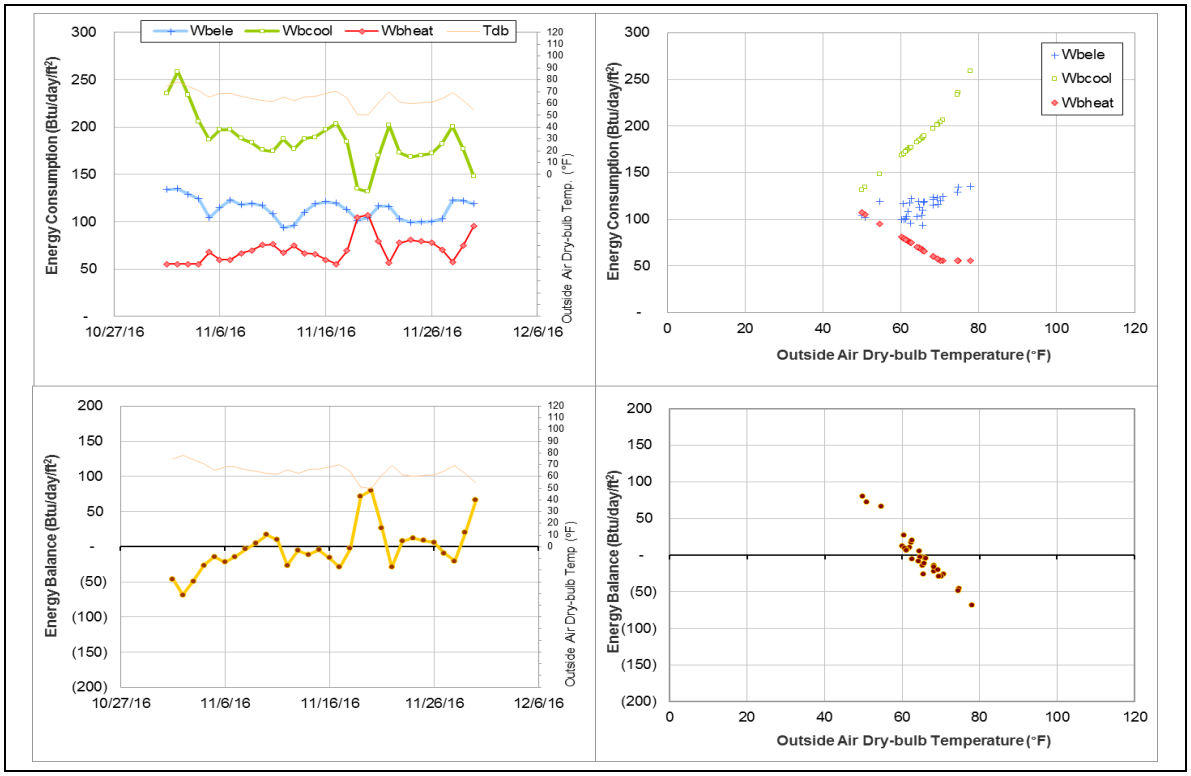
Explanatory Figure: Time series plots of hourly HHW energy consumption, flow, and supply/return temperatures from utilities office. (top: October 2016, bottom: November 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis



Heep Laboratory Building (TAMU Bldg #511)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	005821	30	11/1/2016 – 11/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The consumption level increased.	6/14/2016 – Ongoing
Energy Balance	The energy balance pattern dropped.	6/14/2016 – Ongoing

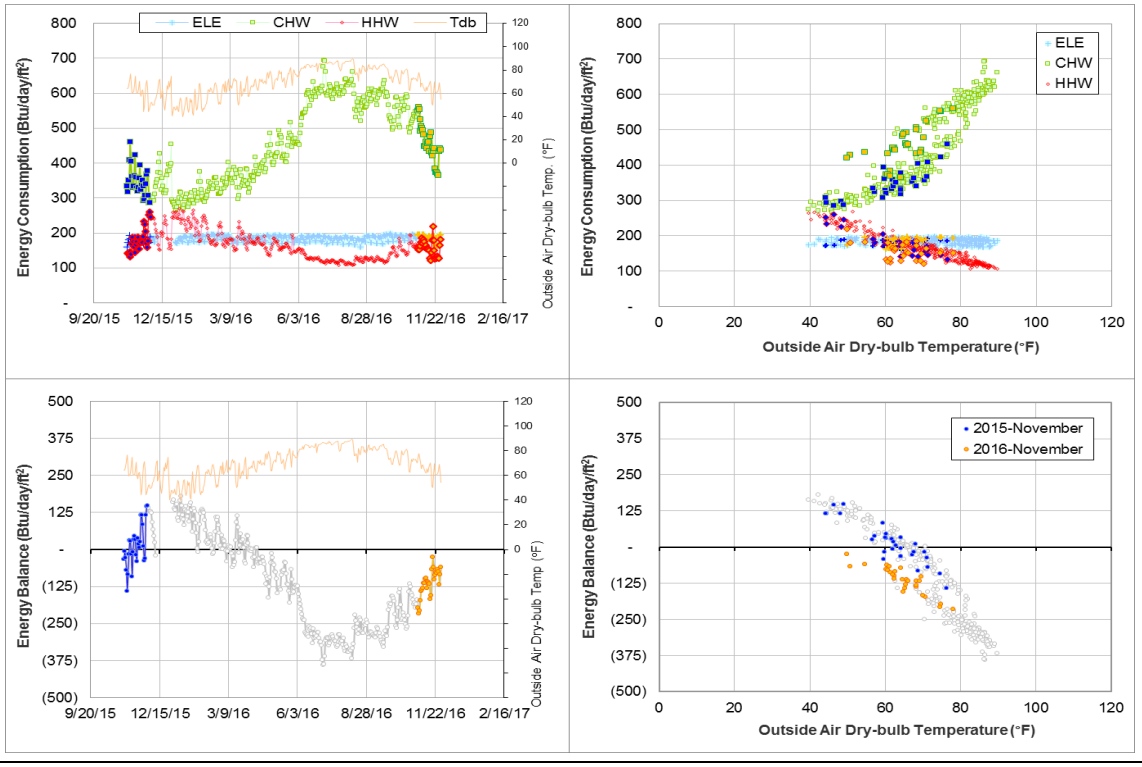
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	005821	6/14/2016 – Ongoing	Delta-T	Increased

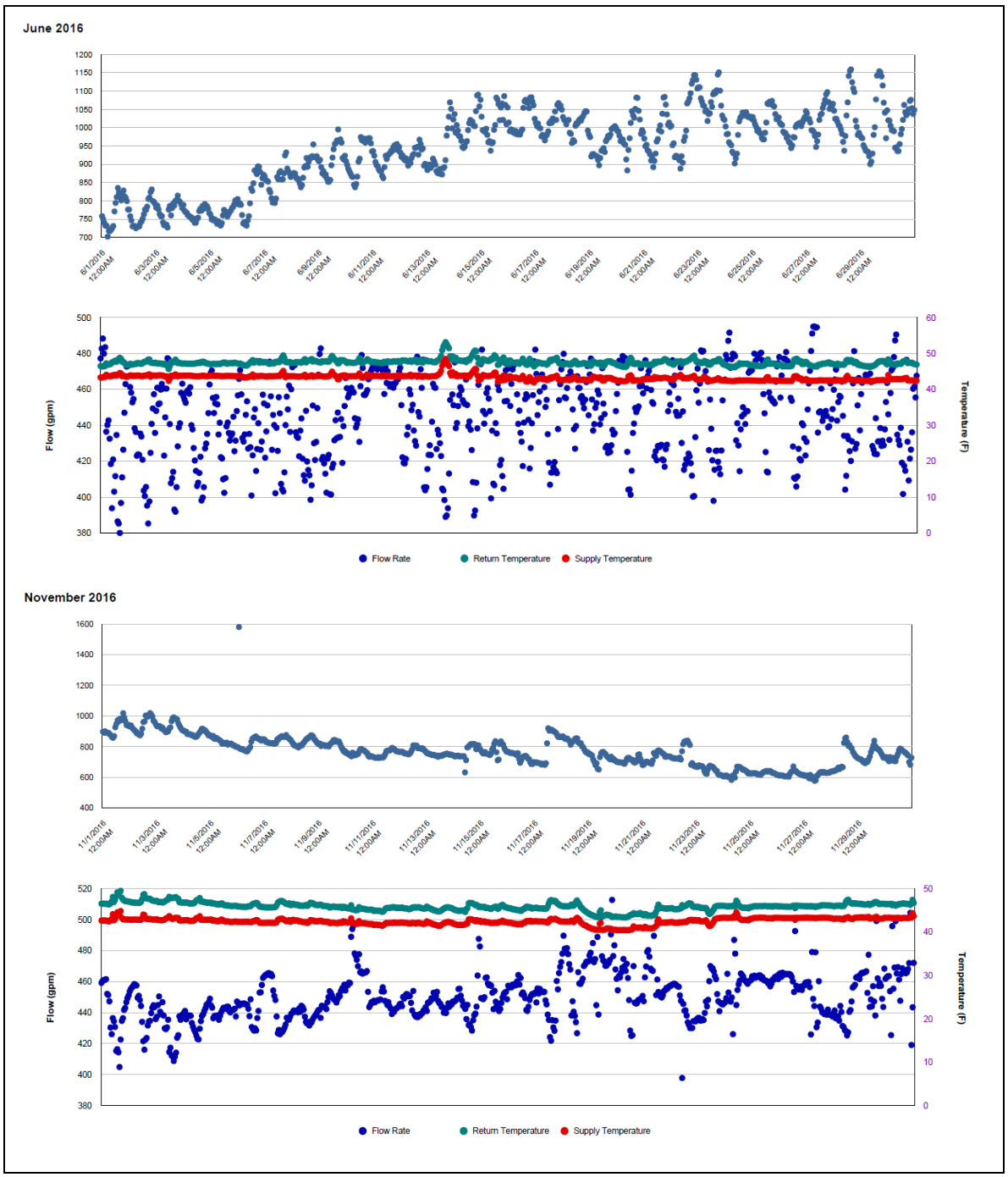
Quantitative descriptions and comments

The CHW consumption increased by 100 Btu/day/ft^2 starting around 6/14/2016 and the pattern continues through November. This increased energy consumption pattern can be clearly seen sitting above the 13-month pattern in the energy balance plot below. This appears to be due to an increase in delta T. Also, the pattern for the building's energy balance appears to have shifted downward, putting the change-point temperature below 60°F. CHW consumption was estimated by model for November.

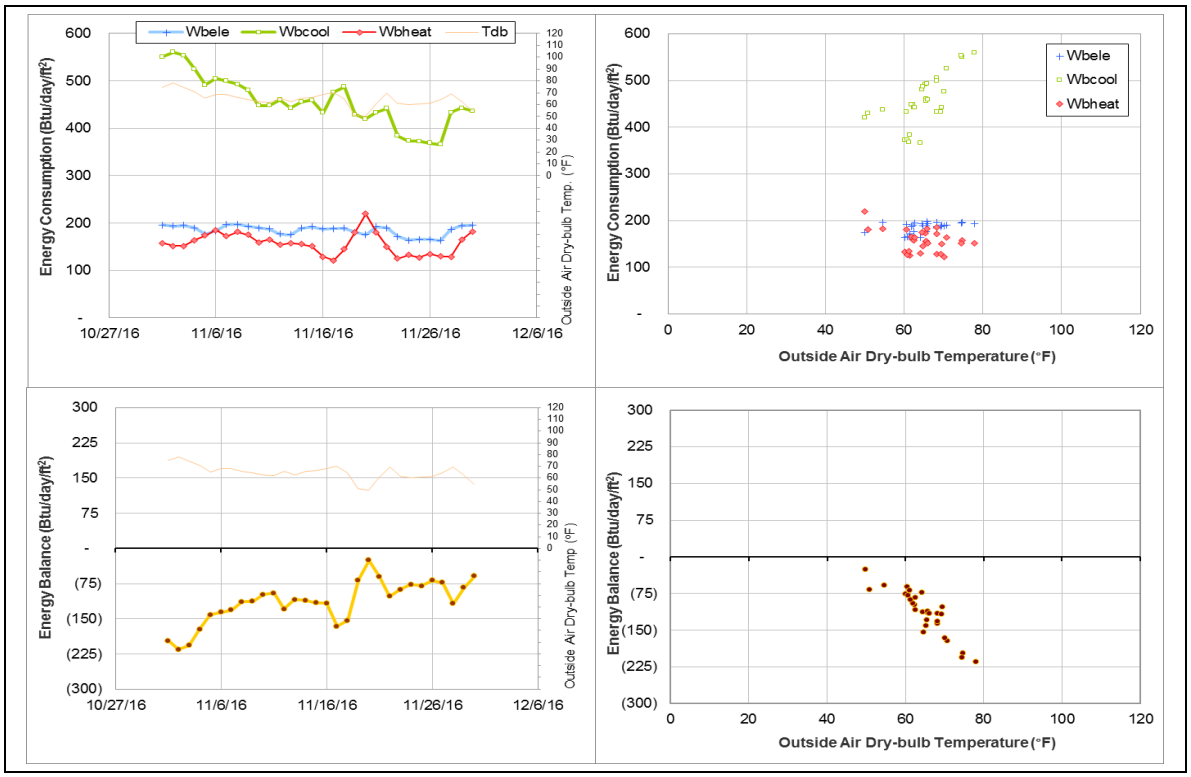
Explanatory Figure: 13 months energy balance plot with original data.



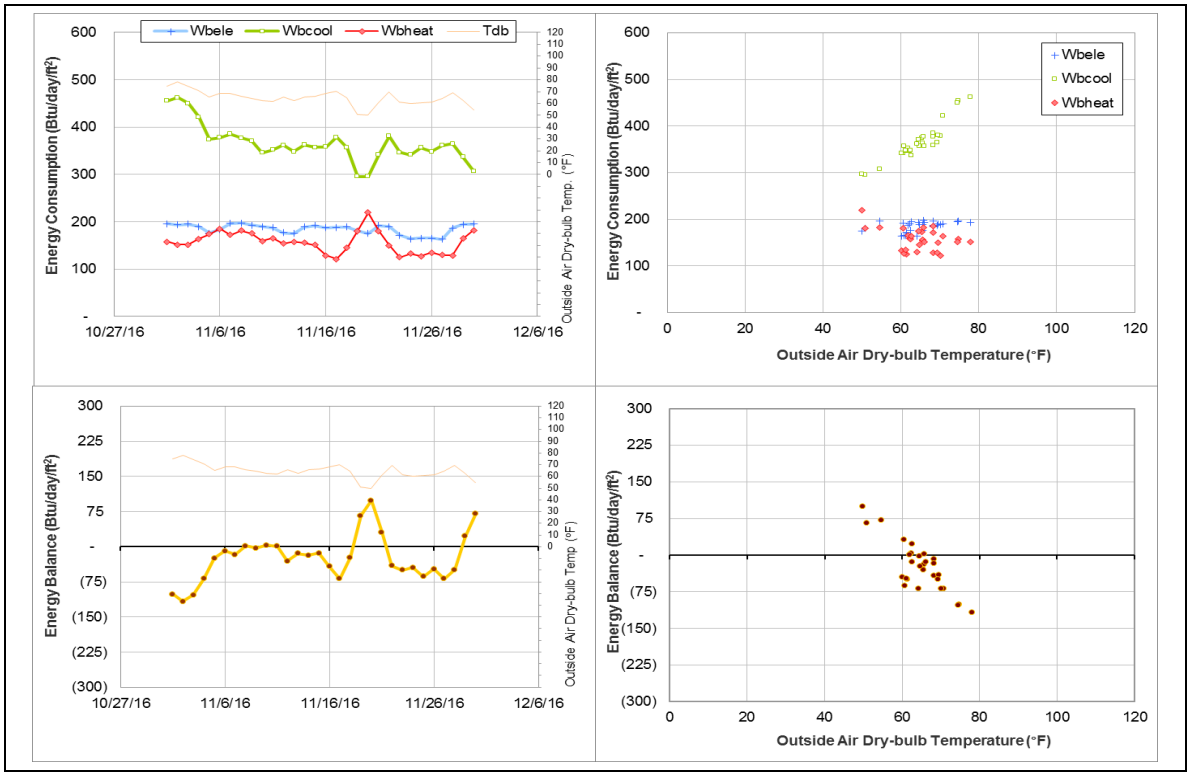
Explanatory Figure: Time series plots of hourly CHW energy consumption, flow, and supply/return temperatures from utilities office. (top: June 2016, bottom: November 2016) Note the gradual increase in delta T started in June 2016.



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis



All Faiths Chapel (TAMU Bldg #512)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	004293	30	11/1/2016 – 11/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The HHW consumption decreased to near zero.	7/6/2016 – Ongoing

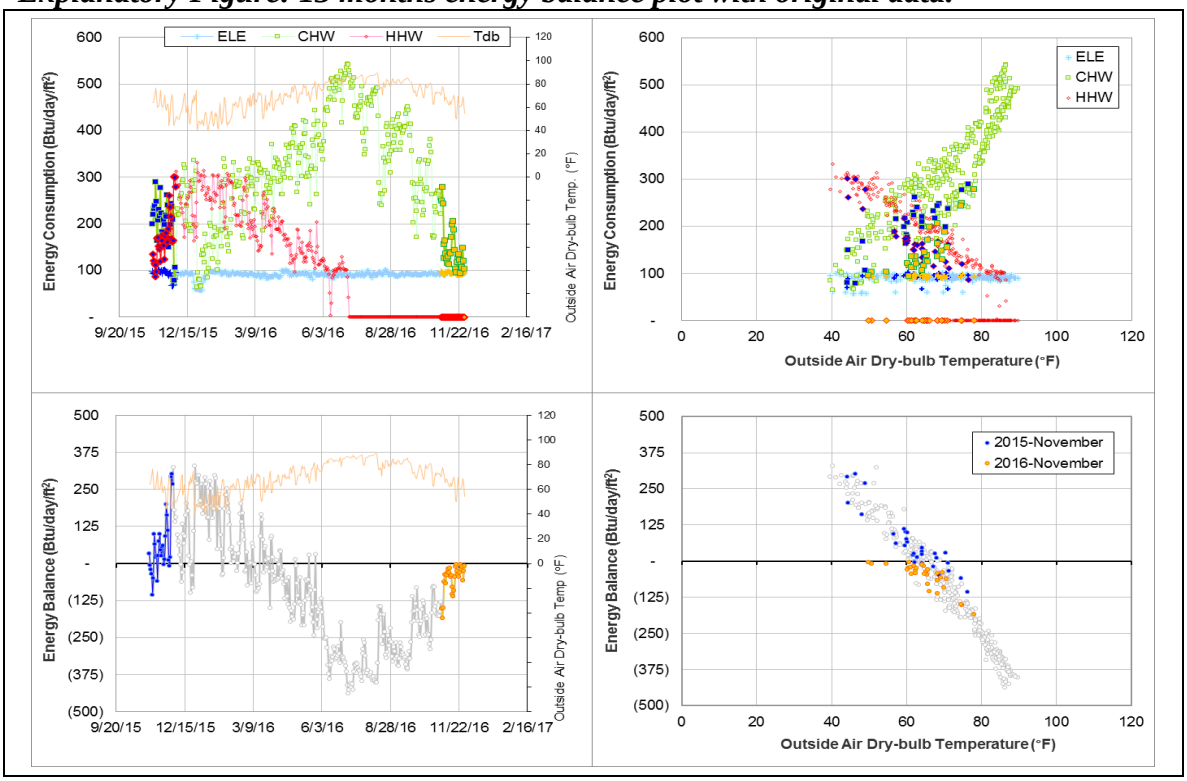
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	004293	7/6/2016 – Ongoing	Flow rate	Sudden decrease, nearly zero
			Delta-T	Sudden decrease, nearly zero

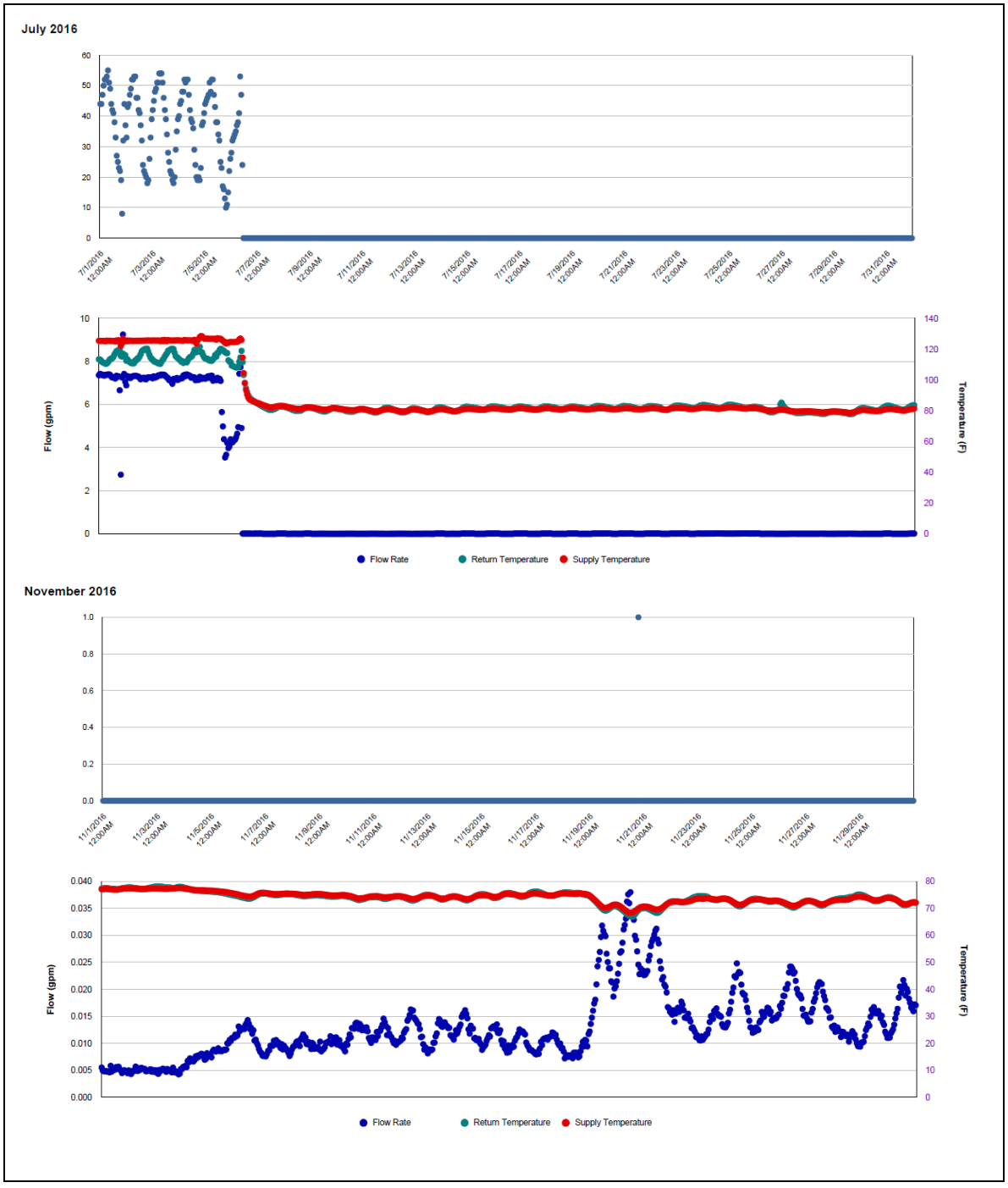
Quantitative descriptions and comments

Starting around 7/6/2016, the HHW flow rate decreased to near zero and both supply and return temperature dropped to around 80°F and has continued like this through November. The HHW was estimated by model for this period.

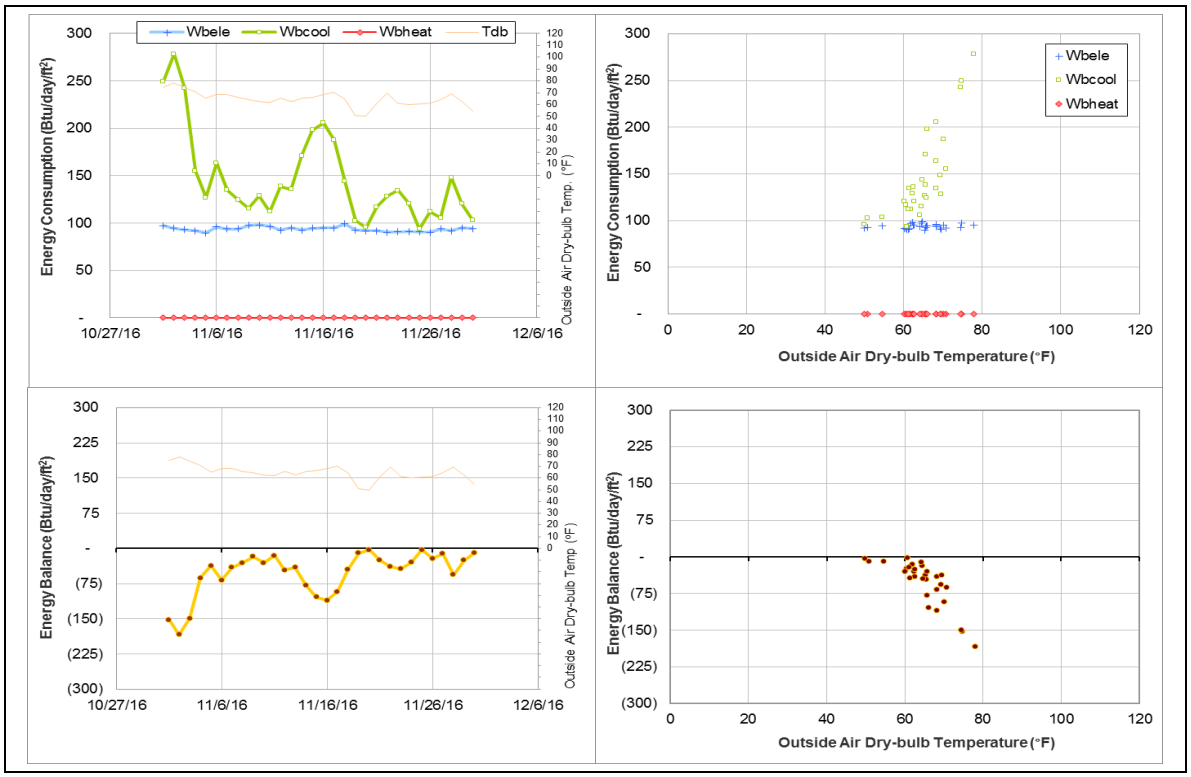
Explanatory Figure: 13 months energy balance plot with original data.



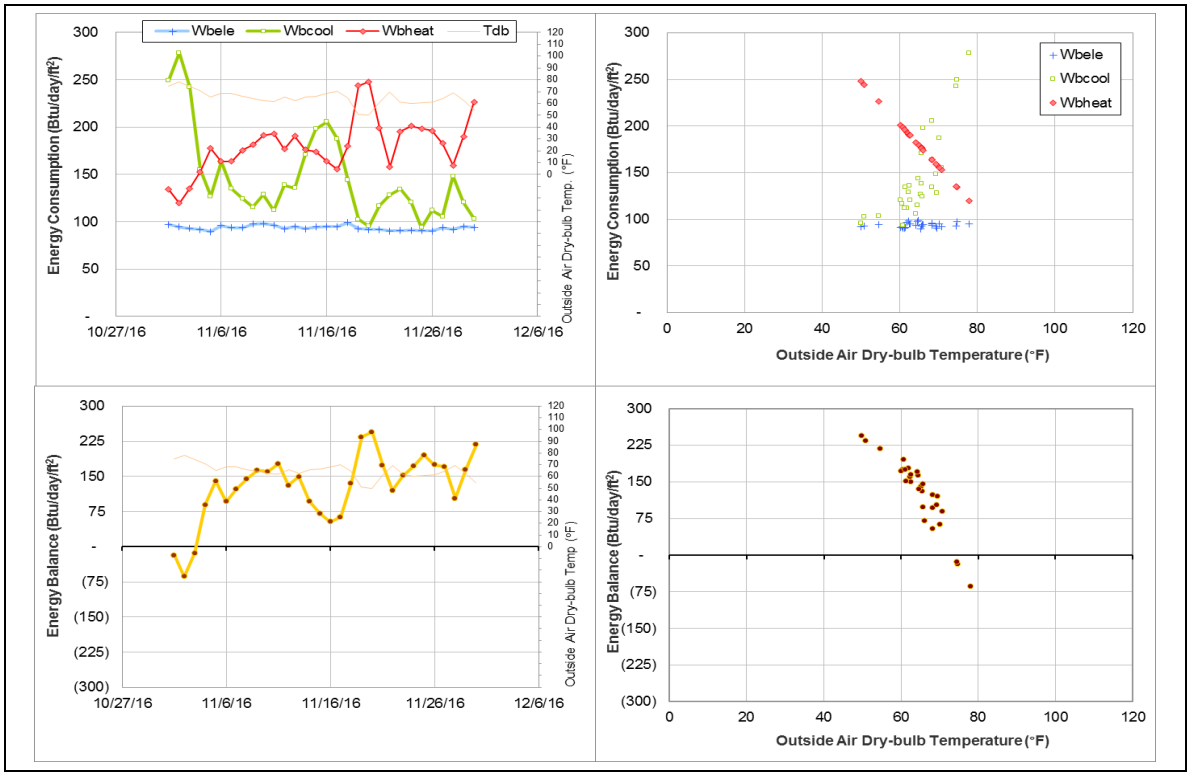
Explanatory Figure: Time series plots of hourly HHW energy consumption, flow, and supply/return temperatures from utilities office. (top: July 2016, bottom: November 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis



McNew Laboratory (TAMU Bldg #740)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	005968	30	11/1/2016 – 11/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	Decrease in HHW consumption.	5/31/2016– Ongoing

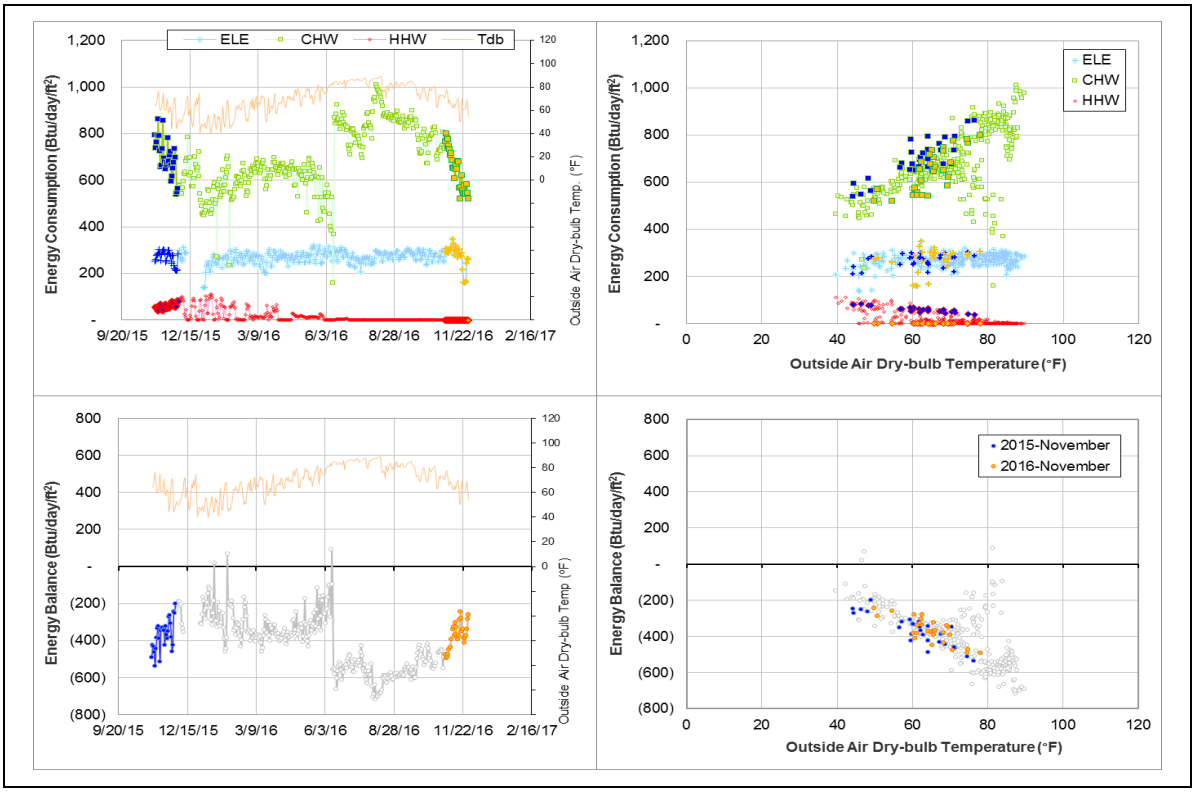
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	005968	5/31/2016 – Ongoing	Flow rate	Decrease to near zero values

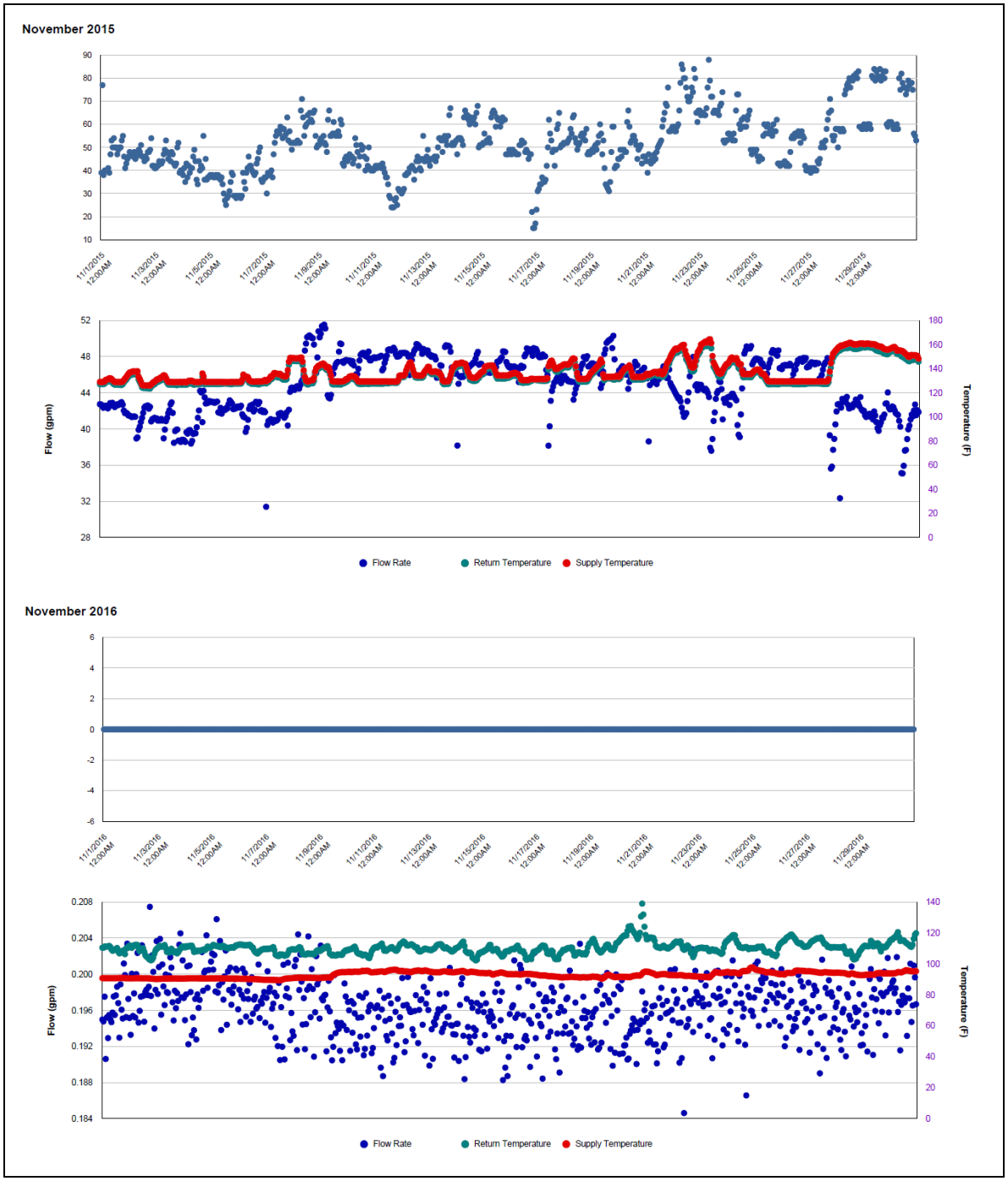
Quantitative descriptions and comments

The HHW flow rate has been zero or near zero since May 2016. The HHW flow rate averaged around 42 to 46 gpm for most of November 2015. The November 2016 consumption is estimated by a model.

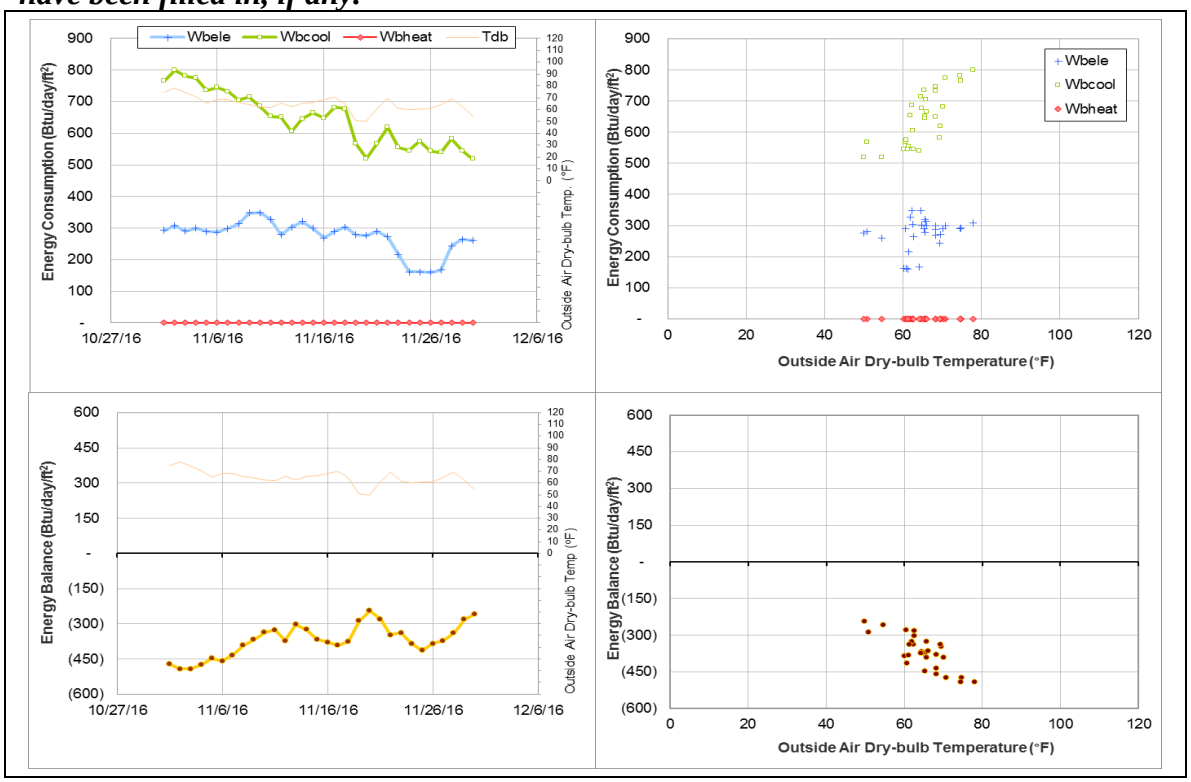
Explanatory Figure: 13 months energy balance plot with original data



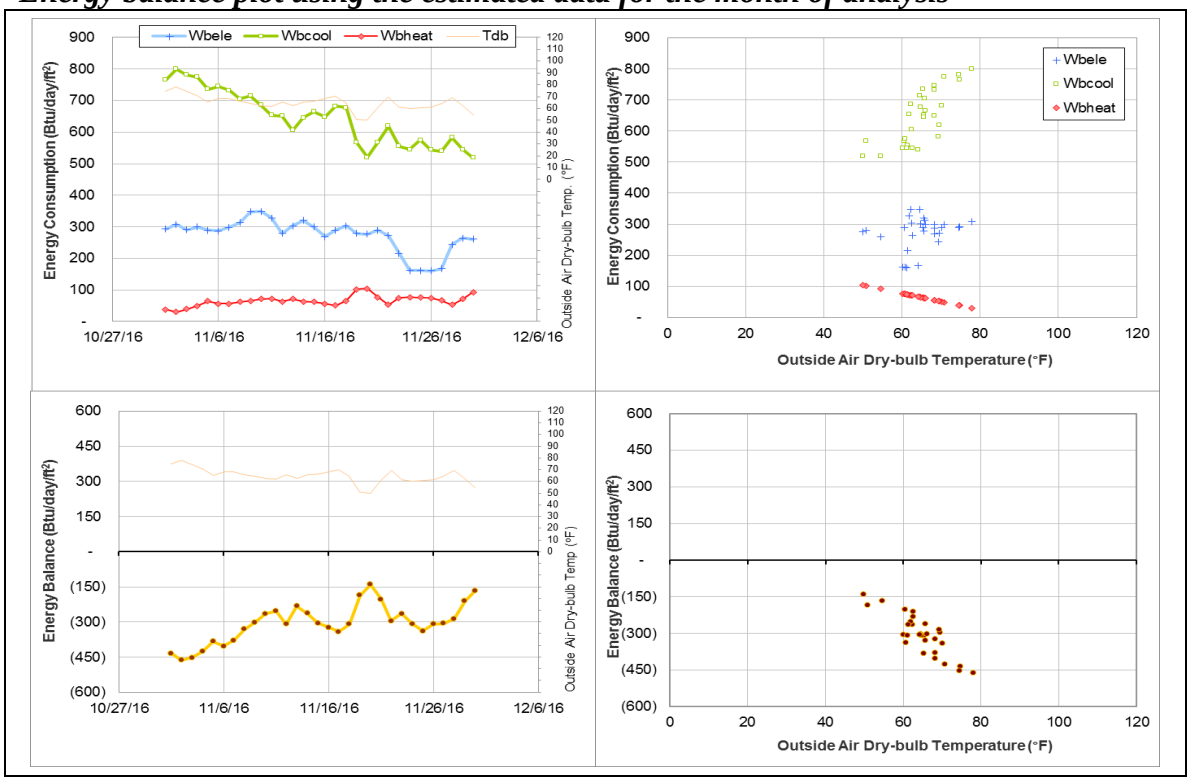
Explanatory Figure: Time series plots of hourly HHW energy consumption, flow rate, and supply and return temperatures from utilities office. (top: November 2015, bottom: November 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis



Vivarium III (TAMU Bldg #1020)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	005997	30	11/1/2016 – 11/30/2016	Model
HHW	006001	30	11/1/2016 – 11/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The CHW consumption pattern is flat.	11/1/2016 – 11/30/2016
HHW	The HHW consumption is too low.	11/1/2016 – 11/30/2016
Energy Balance	The energy balance is too low.	11/1/2016 – 11/30/2016

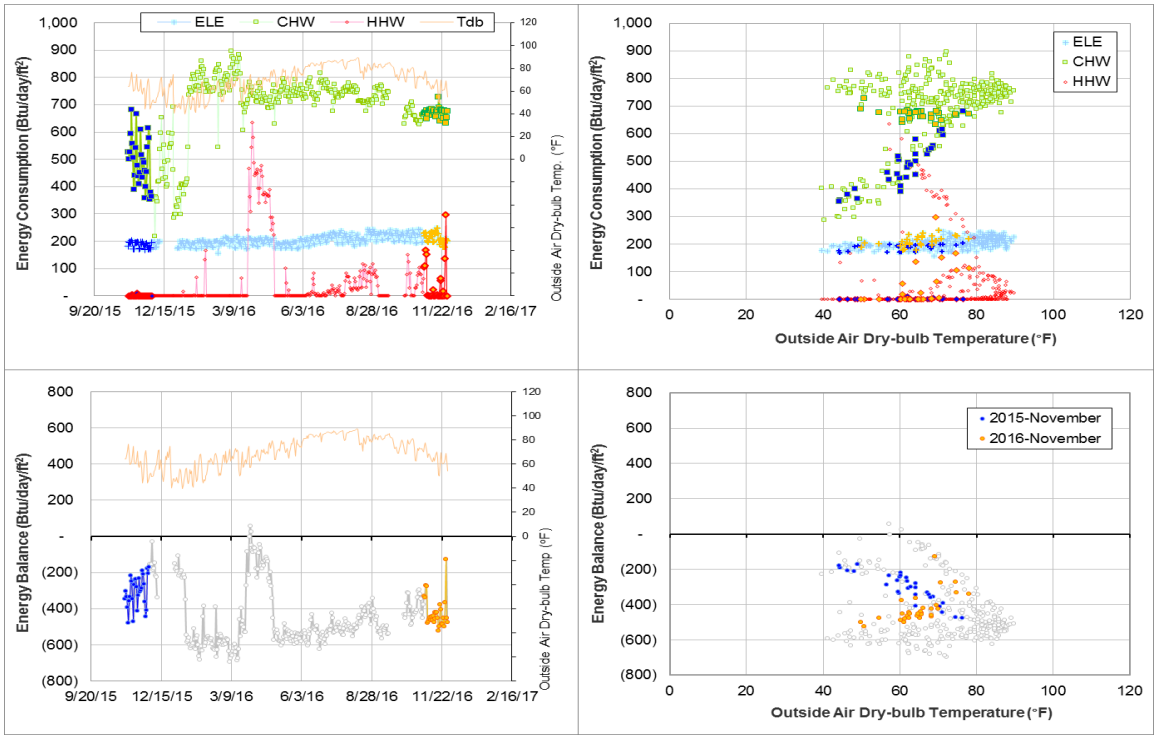
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	006001	11/1/2016 – 11/30/2016	Flow rate	Near zero

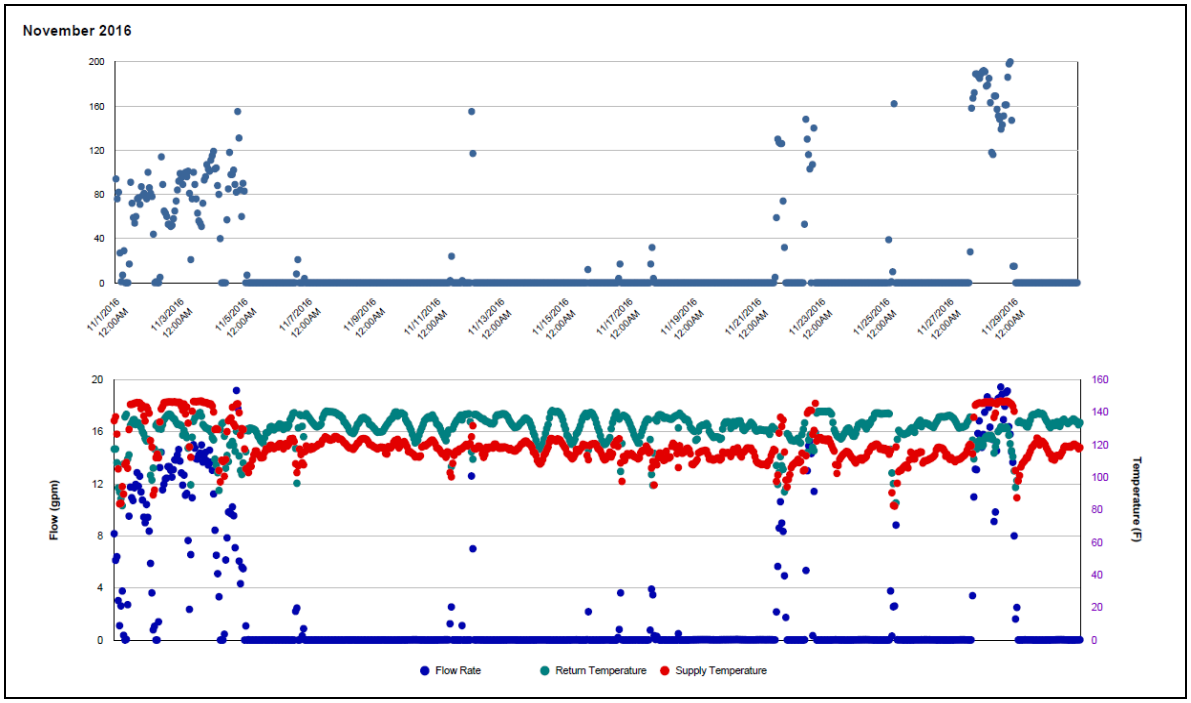
Quantitative descriptions and comments

The CHW consumption pattern for Nov 2016 appears to have flattened at the higher consumption range. The HHW consumption is lower than what is expected for this building. The HHW flow rate is near zero for most of the month. The resulting energy balance is too low and does not reach a zero balance at any outside temperature. CHW and HHW consumption for whole month was estimated using a model.

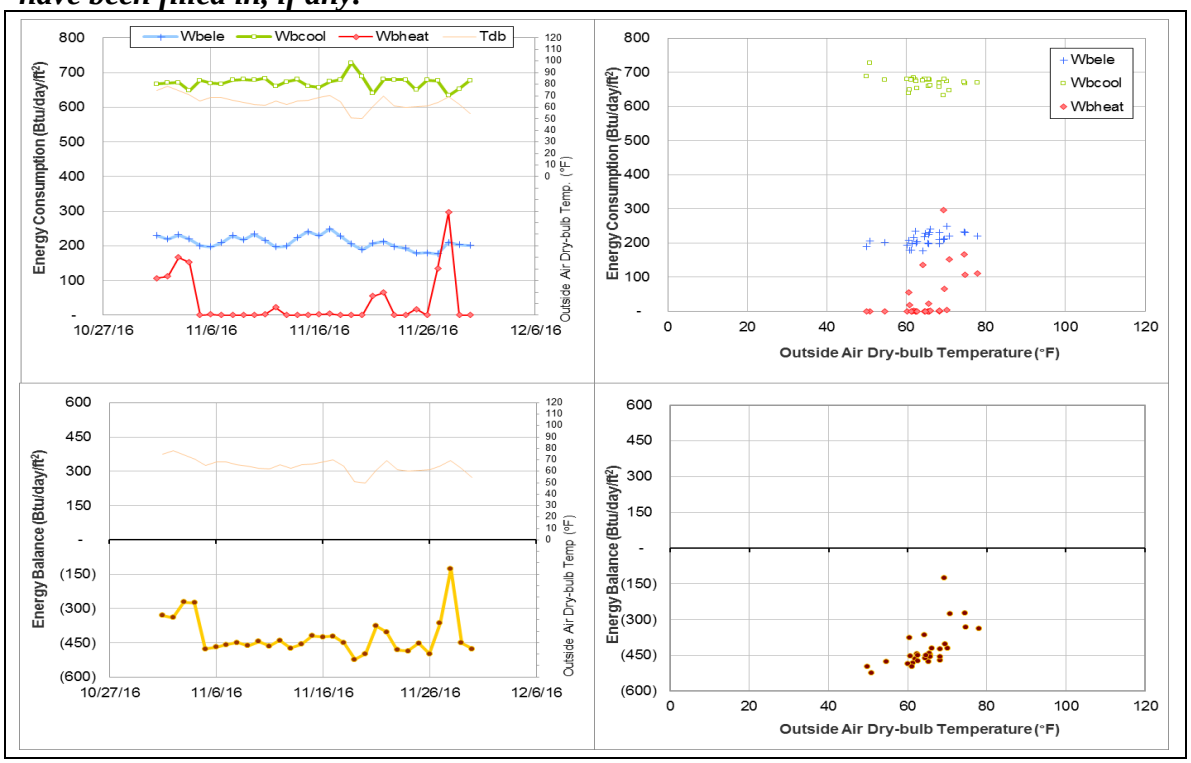
Explanatory Figure: 13 months energy balance plot with original data



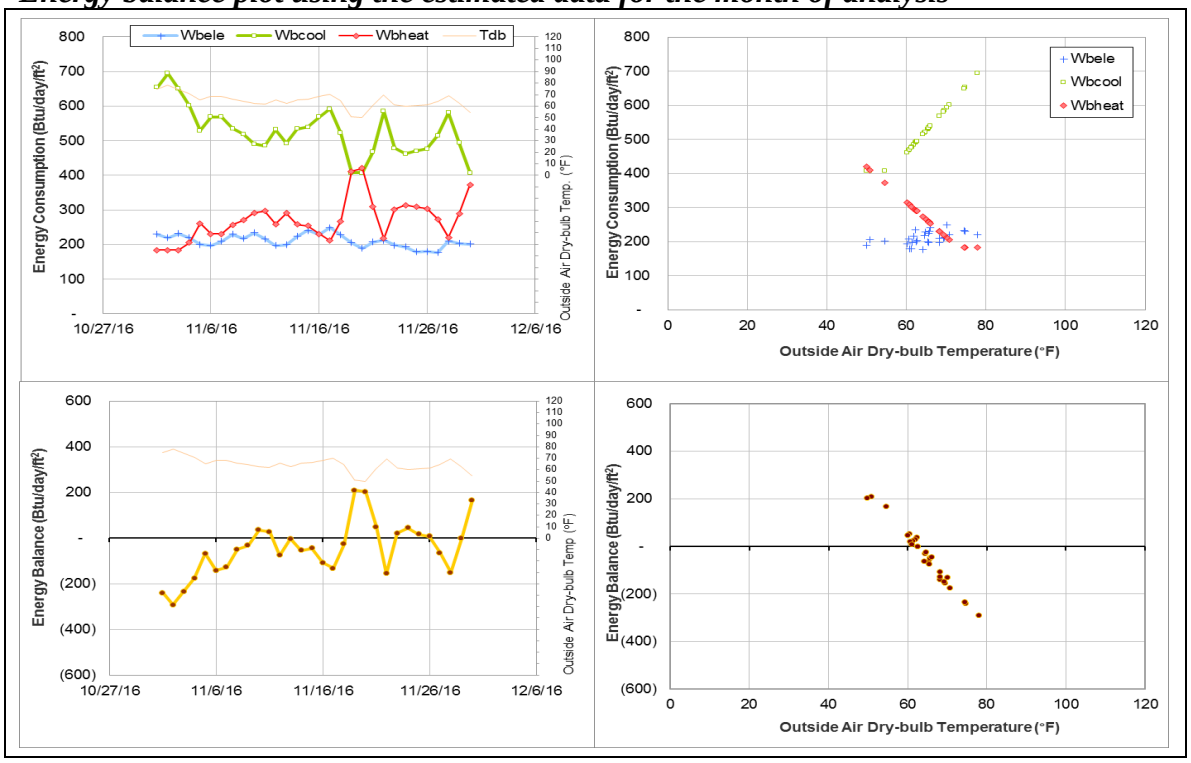
Explanatory Figure: Time series plots of hourly HHW energy consumption, flow rate, and supply and return temperatures from utilities office. (November 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis



Utilities Energy Office Annex (TAMU Bldg #1089)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
ELE	006964	19	11/12/2016 – 11/30/206	Model

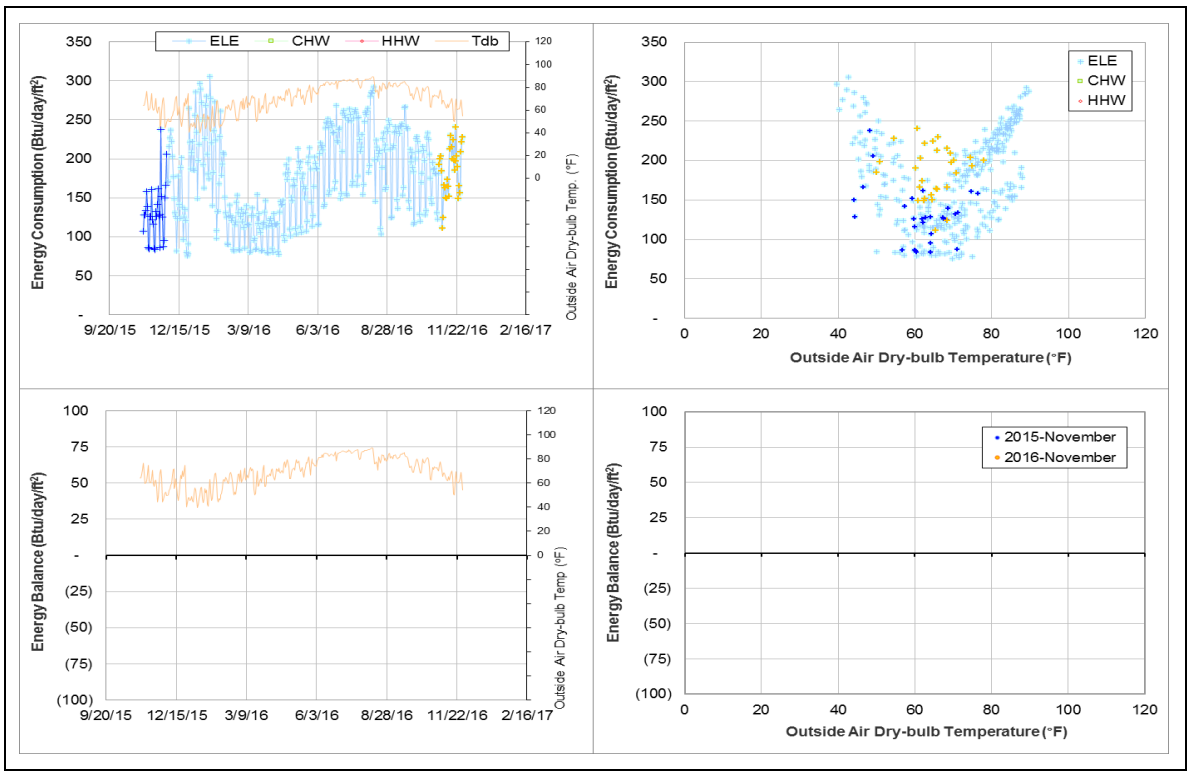
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE	The ELE consumption level increased.	11/12/2016 – ongoing

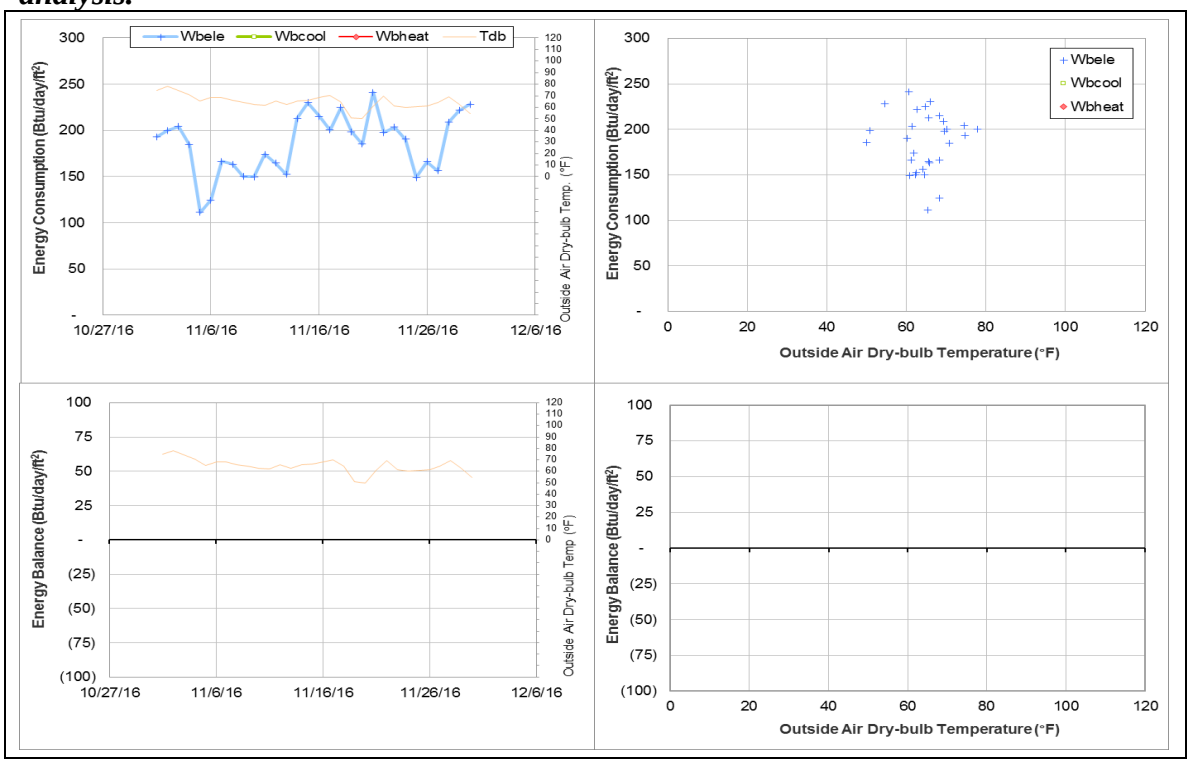
Quantitative descriptions and comments

The ELE consumption increased above the consumption pattern for this building starting Nov 12, 2016. The ELE consumption was estimated using a model for this period.

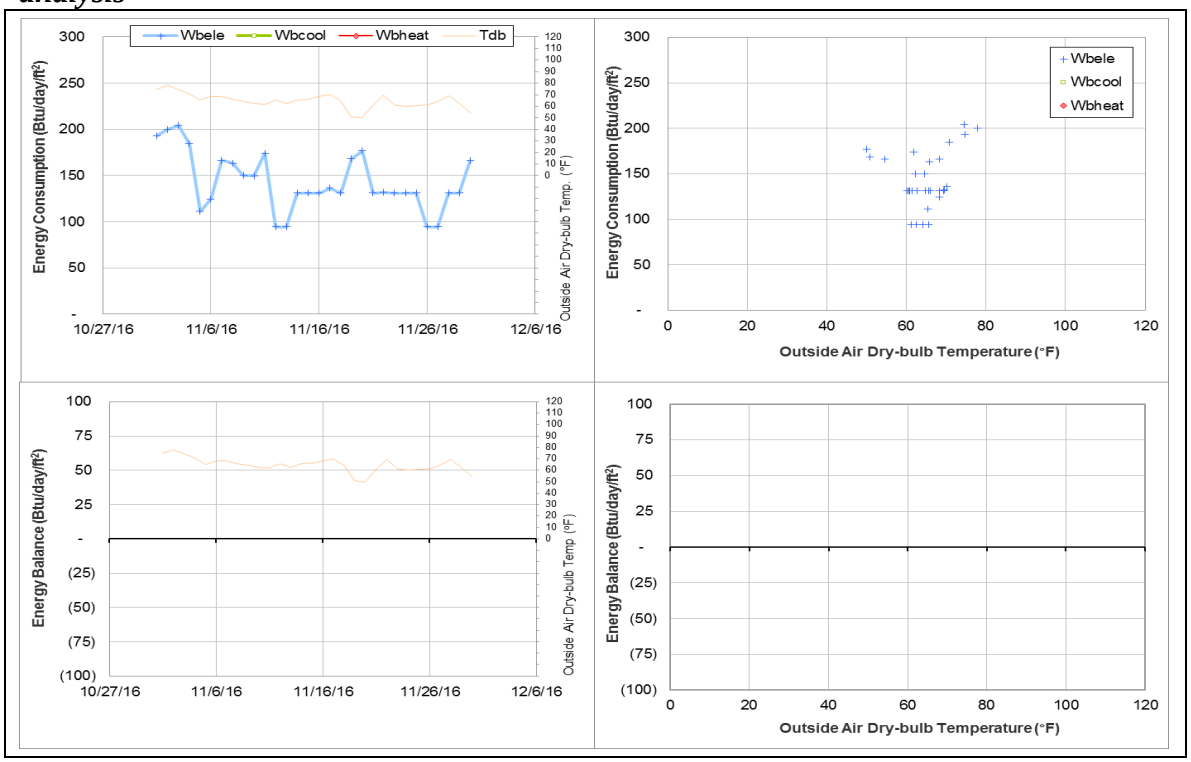
Explanatory Figure: 13 months energy balance plot with original data



Energy balance plot using the original ELE, CHW and HHW data for the month of analysis.



Energy balance plot using the estimated ELE, CHW and HHW data for the month of analysis



Biological Control Facility (TAMU Bldg #1146)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	005887	12	11/17/2016 – 11/28/2016	Model
HHW	005891	12	11/17/2016 – 11/28/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The CHW consumption decreased for a short period.	11/17/2016 – 11/28/2016
HHW	The HHW consumption decreased for a short period.	11/17/2016 – 11/28/2016

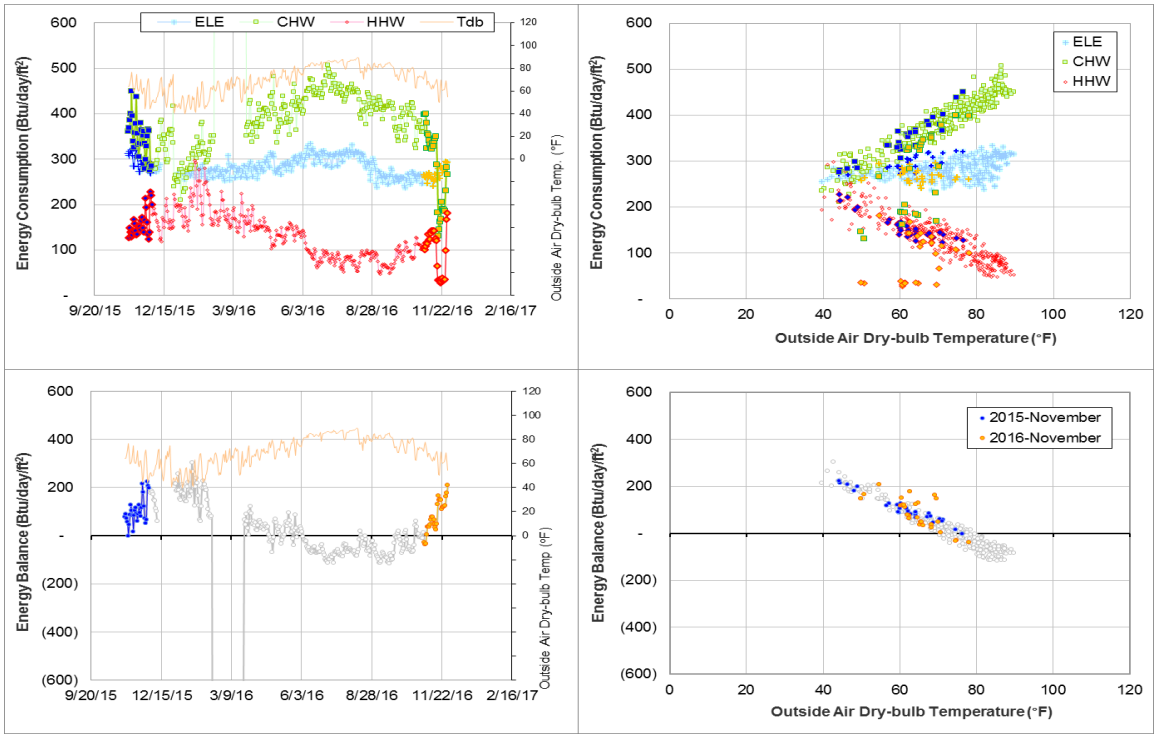
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	005887	11/17/2016 – 11/28/2016	Flow rate	Decreased
HHW	005891	11/17/2016 – 11/28/2016	Flow rate	Decreased

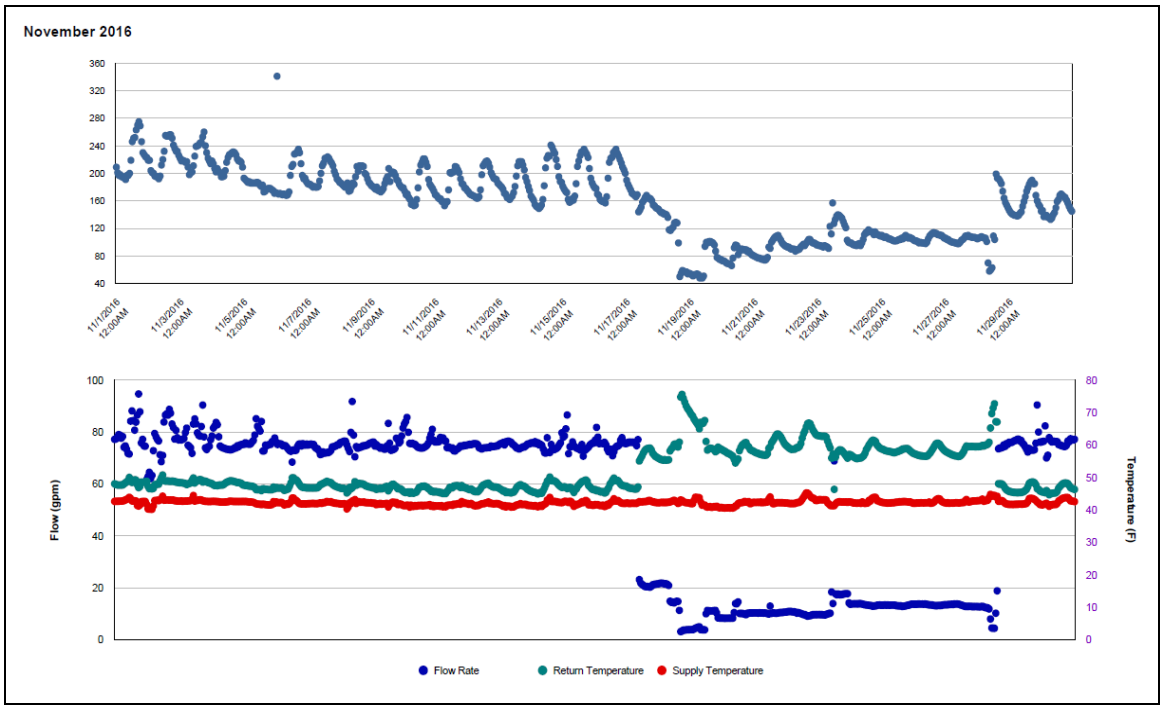
Quantitative descriptions and comments

The CHW and HHW consumption decreased by approximately 50% during the period 11/17/2016 – 11/28/2016 due to a decrease in flow rate. Both CHW and HHW consumption was estimated using a model for this period.

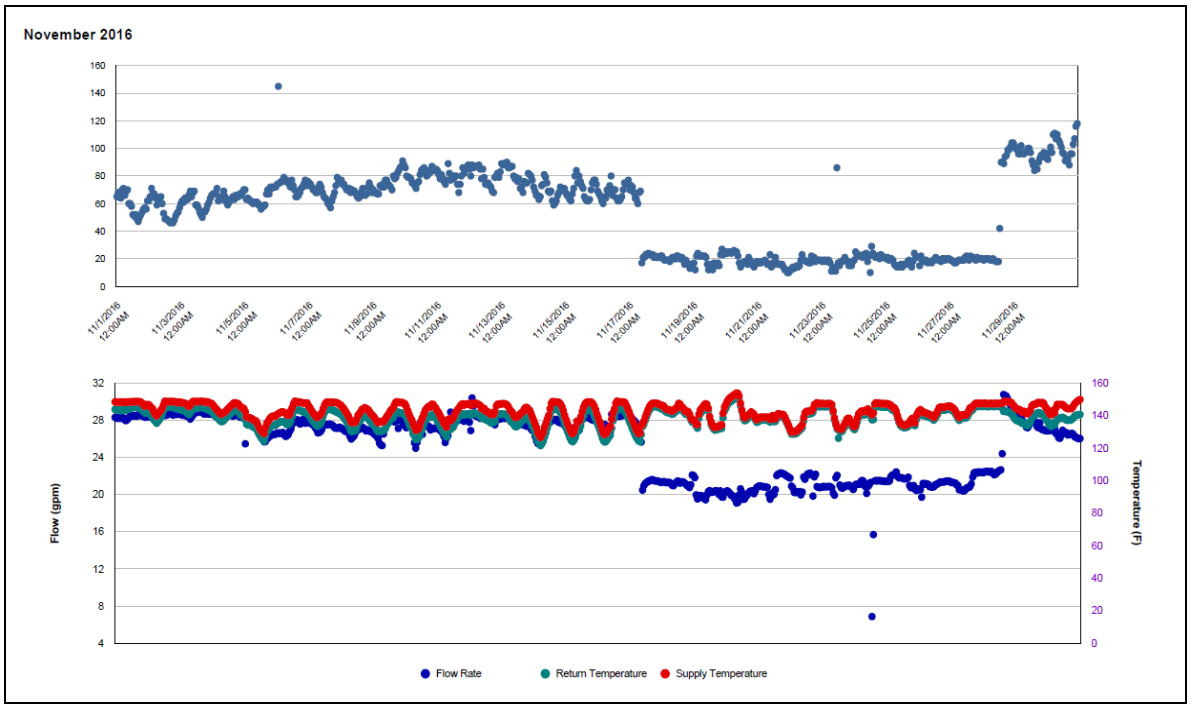
Explanatory Figure: 13 months energy balance plot with original data



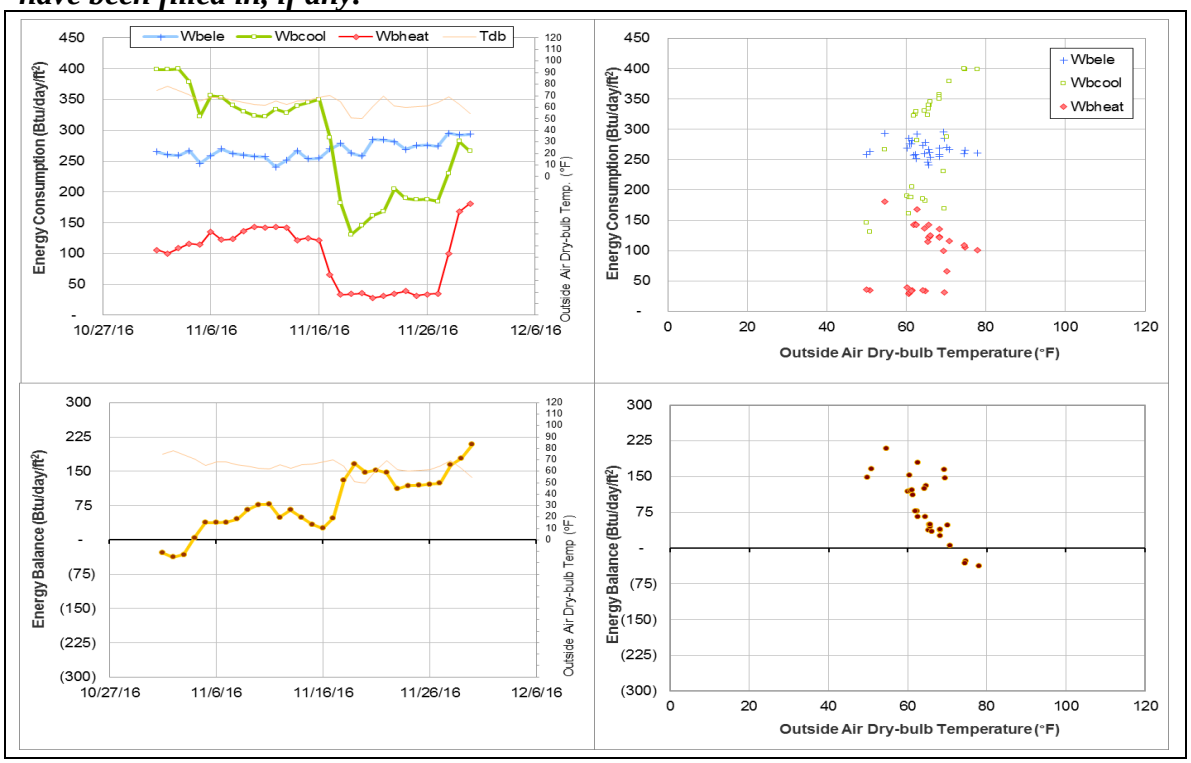
Explanatory Figure: Time series plots of hourly CHW energy consumption, flow rate, and supply and return temperatures from utilities office. (November 2016)



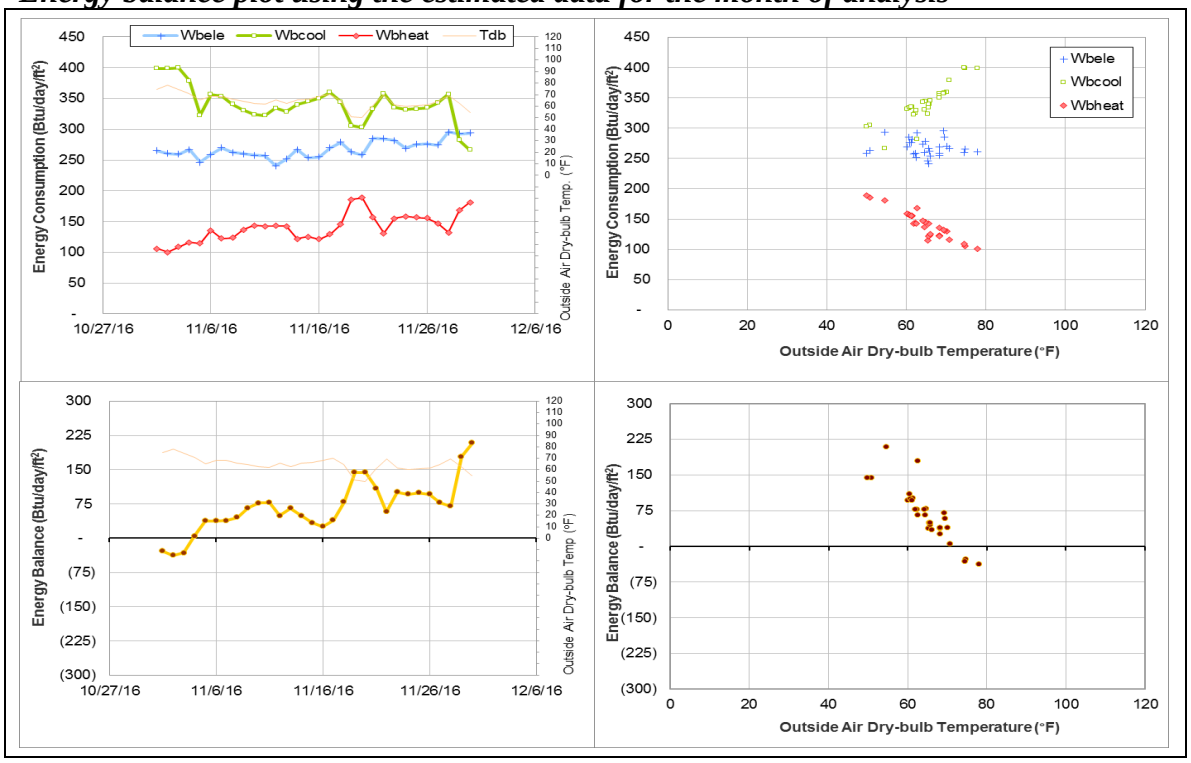
Explanatory Figure: Time series plots of hourly HHW energy consumption, flow rate, and supply and return temperatures from utilities office. (November 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis



Veterinary Large Animal Hospital (TAMU Bldg #1194)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	003652	6	11/5/2016 – 11/10/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The HHW consumption increased for a short period.	11/5/2016 – 11/10/2016

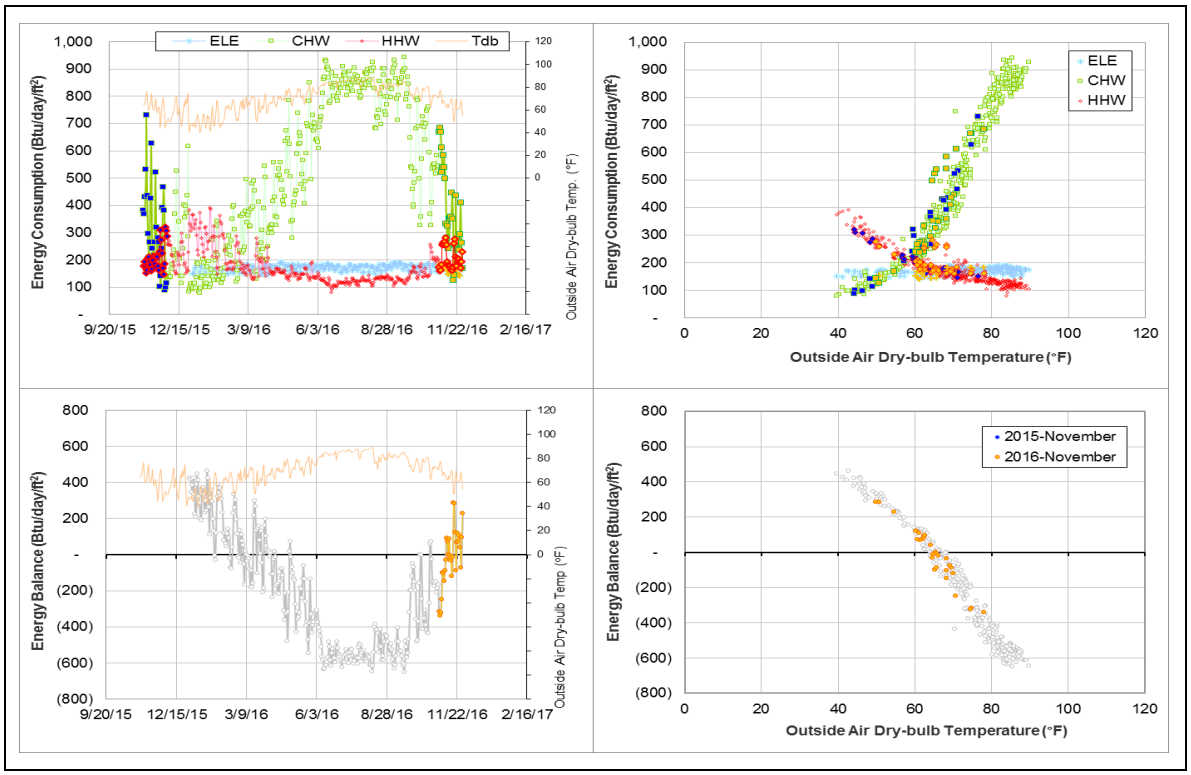
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	003652	11/5/2016 – 11/10/2016	Flow rate	Increased

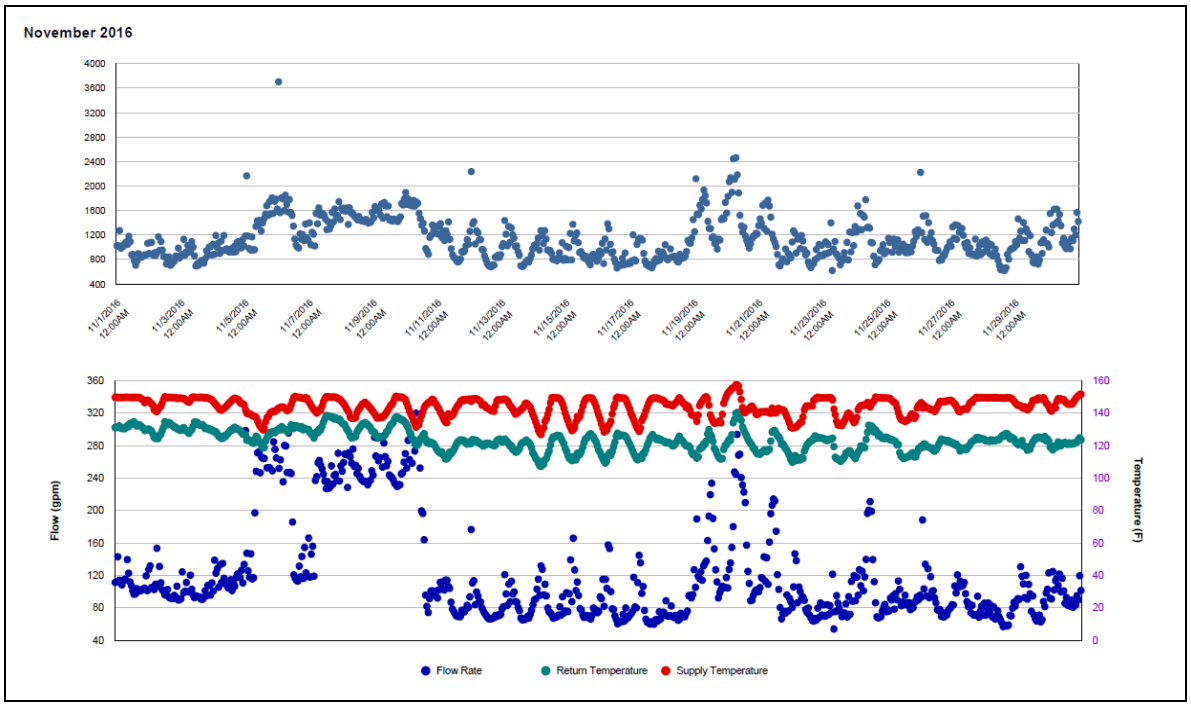
Quantitative descriptions and comments

The HHW flow rate suddenly increased from ~120 gpm to ~250 gpm during the period 11/5/2016 – 11/10/2016. As a result, the HHW consumption increased by around 100 Btu/day/ft^2. The CHW consumption slightly increased accordingly during the same period. Both CHW and HHW consumption was estimated using a model for these periods.

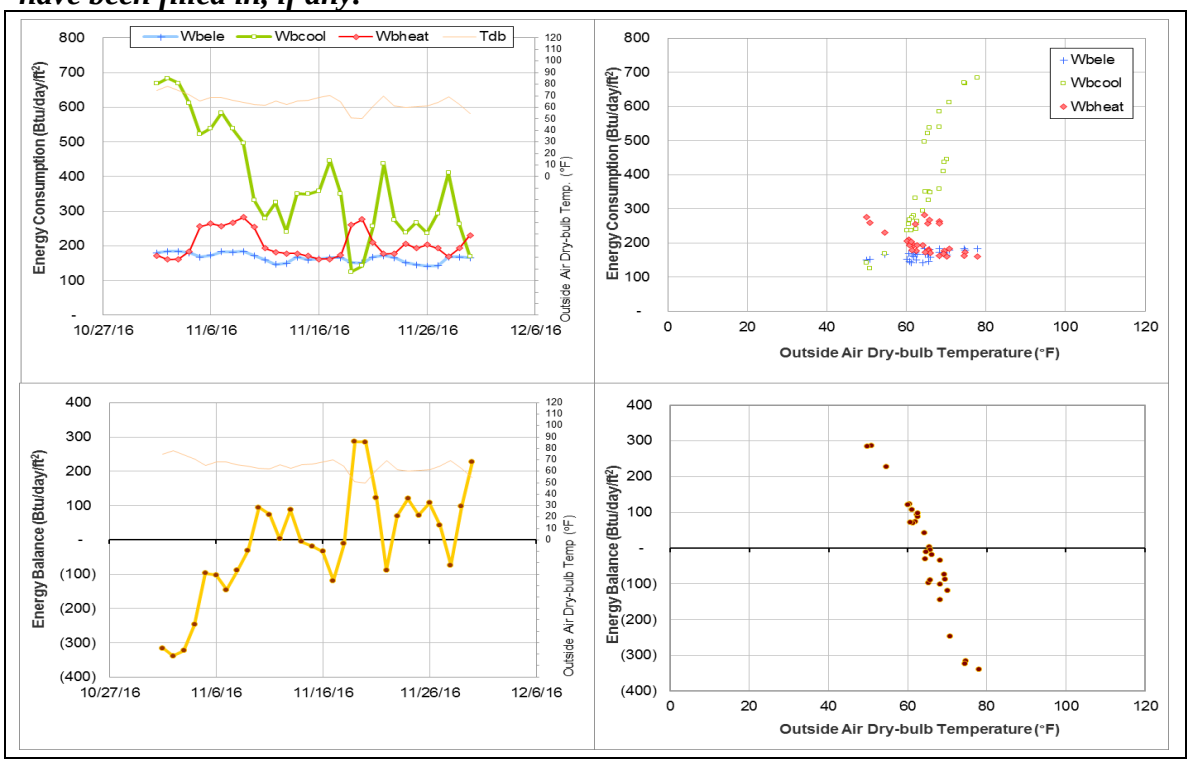
Explanatory Figure: 13 months energy balance plot with original data



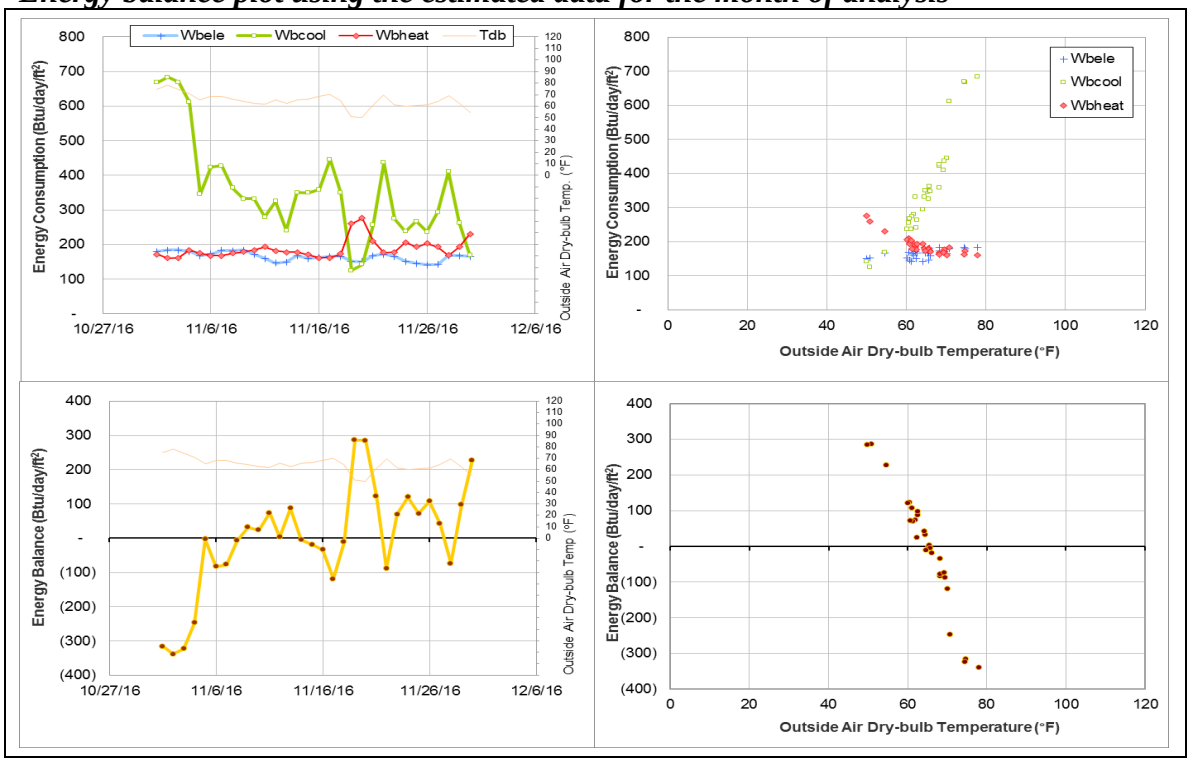
Explanatory Figure: Time series plots of hourly HHW energy consumption, flow rate, and supply and return temperatures from utilities office. (November 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis



Rosenthal Meat Science & Technology (TAMU Bldg #1505)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	002573	9	11/1/2016 – 11/9/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The CHW consumption decreased for a short period.	11/1/2016 – 11/9/2016

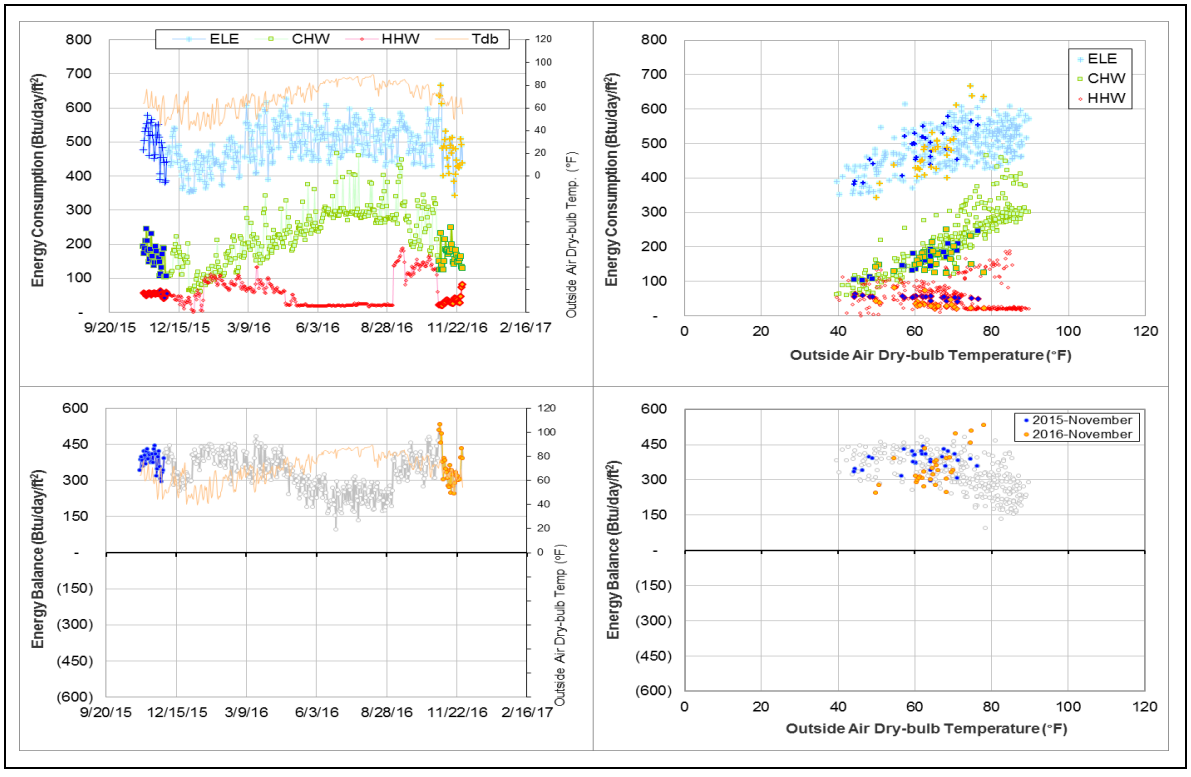
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	002573	11/1/2016 – 11/9/2016	Flow rate	Decreased

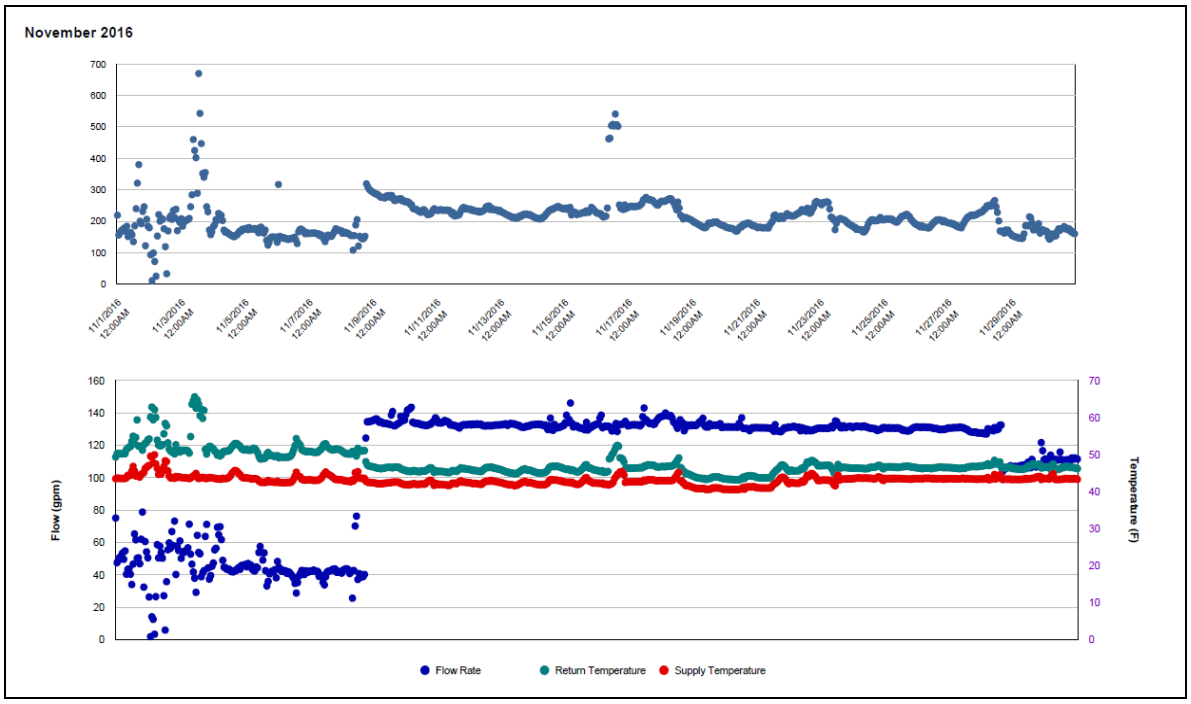
Quantitative descriptions and comments

The CHW consumption decreased from 11/1/2016 – 11/9/2016 due to a significant decrease in CHW flow rate. The CHW consumption was estimated using a model for this period.

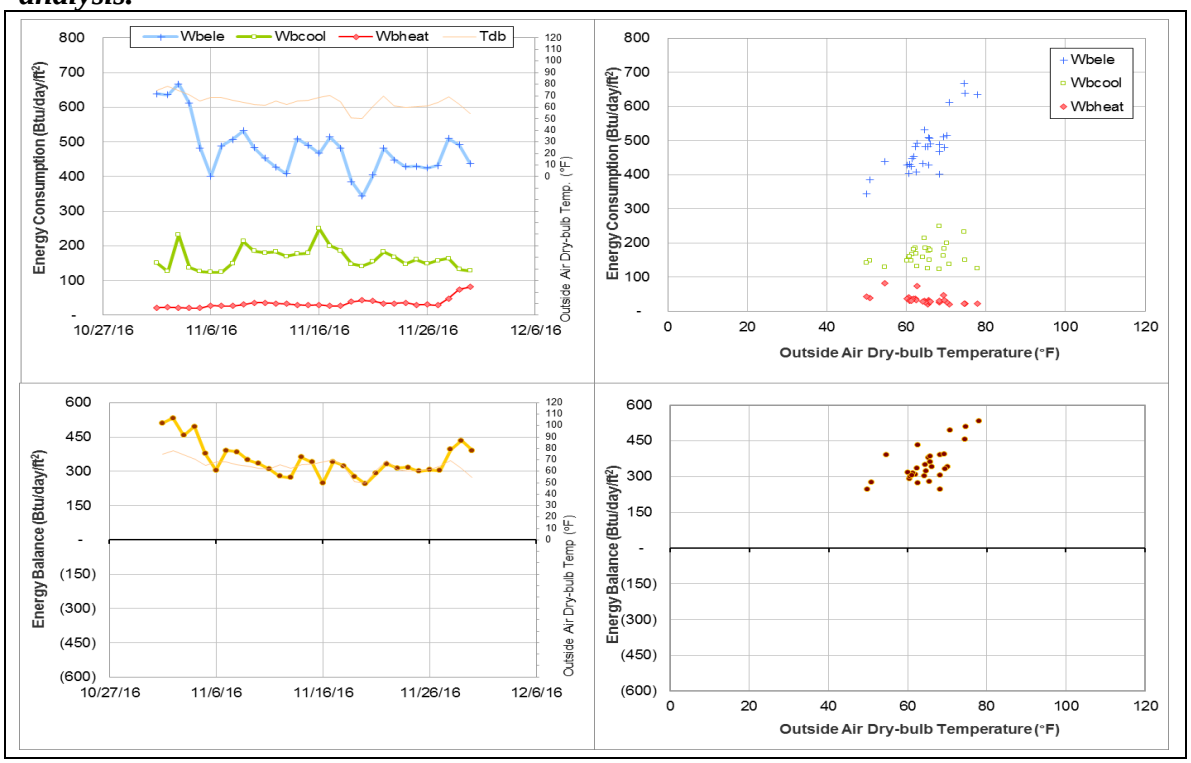
Explanatory Figure: 13 months energy balance plot with original data



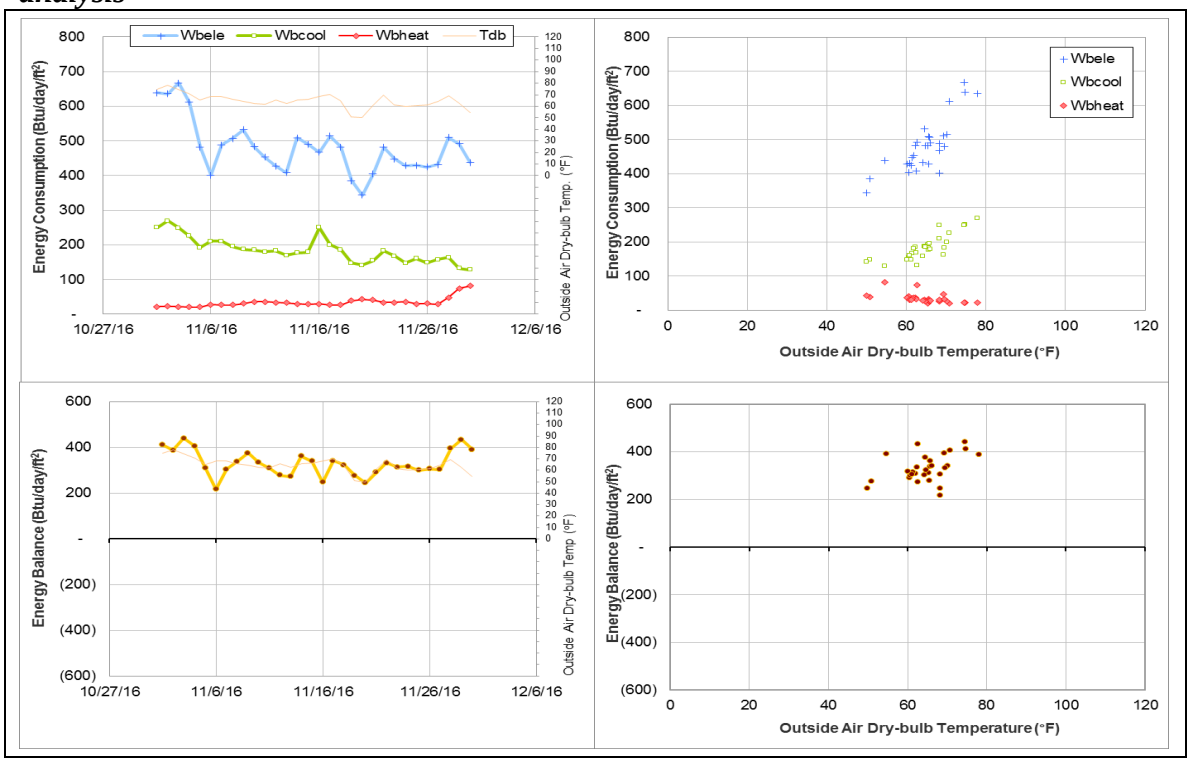
Explanatory Figure: Time series plots of hourly CHW energy consumption, flow rate, and supply and return temperatures from utilities office. (November 2016)



Energy balance plot using the original ELE, CHW and HHW data for the month of analysis.



Energy balance plot using the estimated ELE, CHW and HHW data for the month of analysis



Biochemistry-Biophysics Building (TAMU Bldg #1507)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	003025	14	11/8/2016 – 11/21/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The metered CHW consumption seemed to be faulty.	11/8/2016 – 11/21/2016

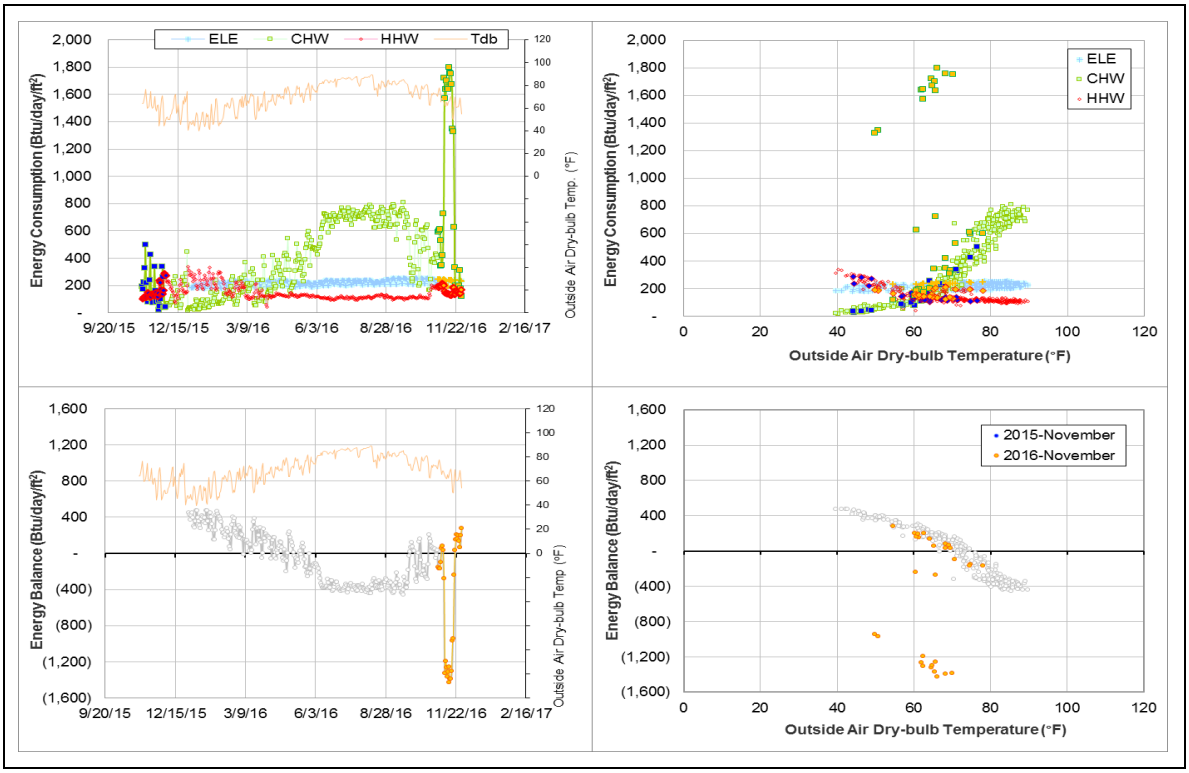
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	003025	11/8/2016 – 11/21/2016	Flow rate	Increased significantly and maintained at a constant value

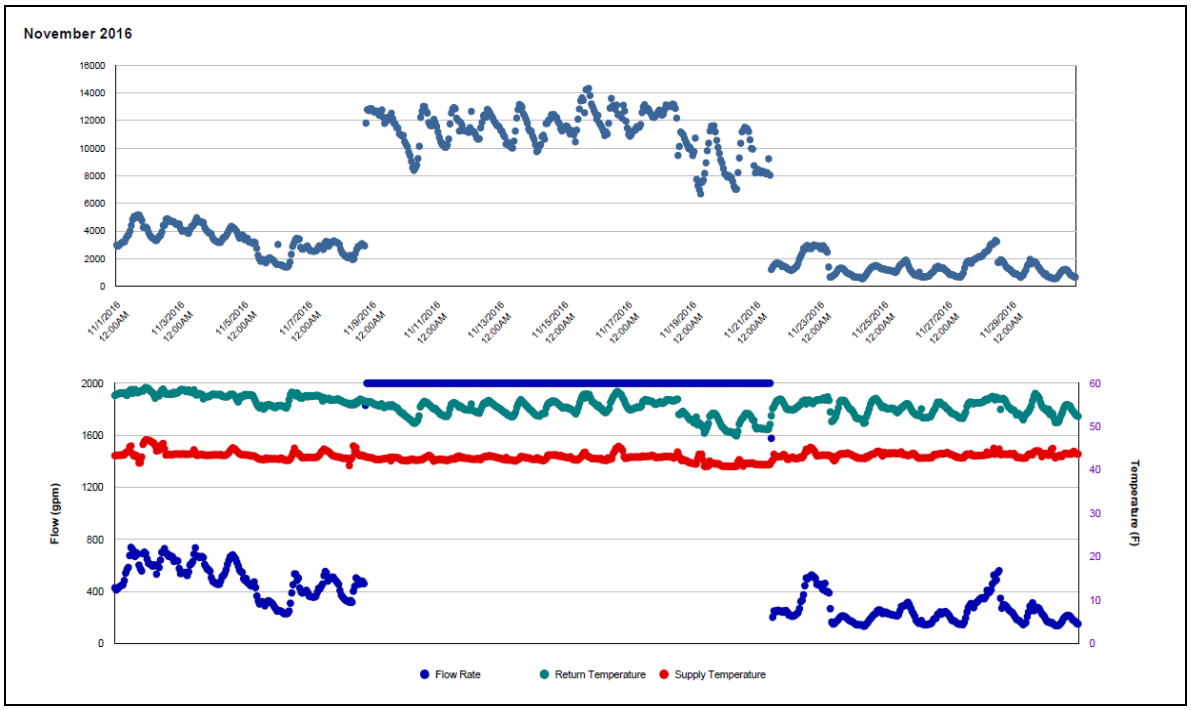
Quantitative descriptions and comments

The CHW consumption increased to extremely high level and seemed to be faulty during 11/8/2016 – 11/21/2016 because the flow rate increased and maintained at a constant value. The CHW consumption was estimated using a model for this period.

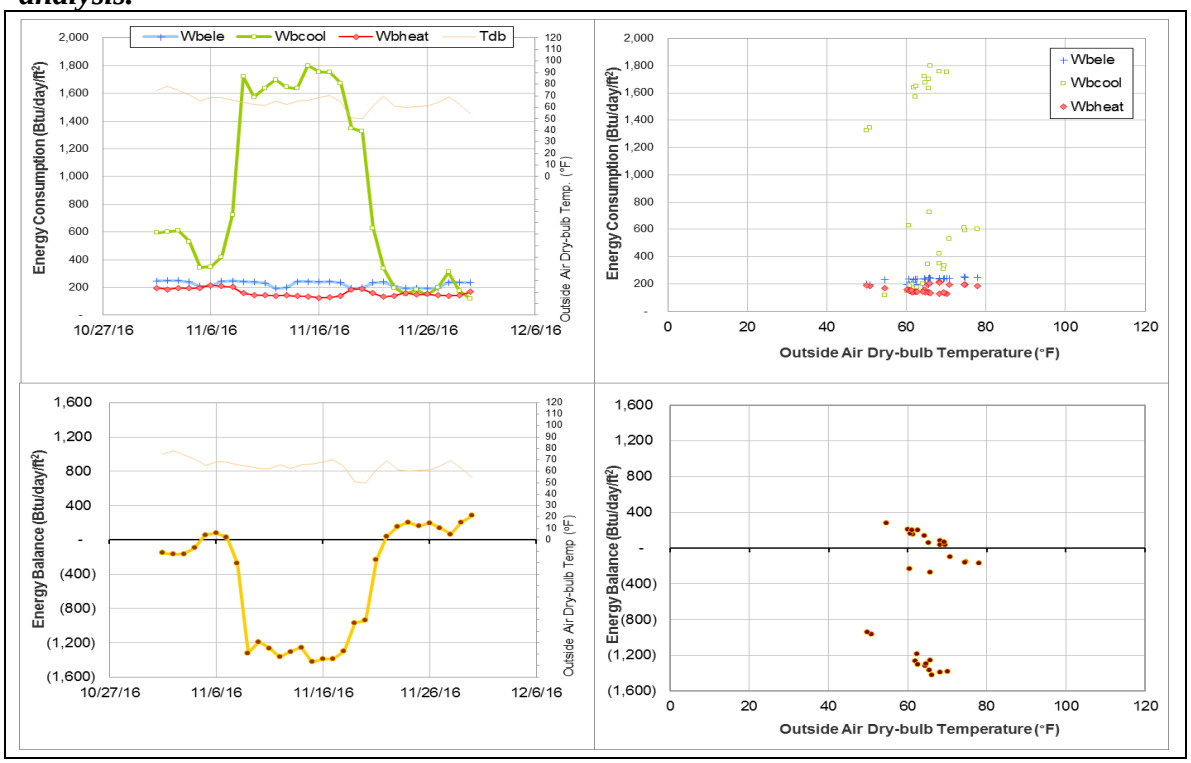
Explanatory Figure: 13 months energy balance plot with original data



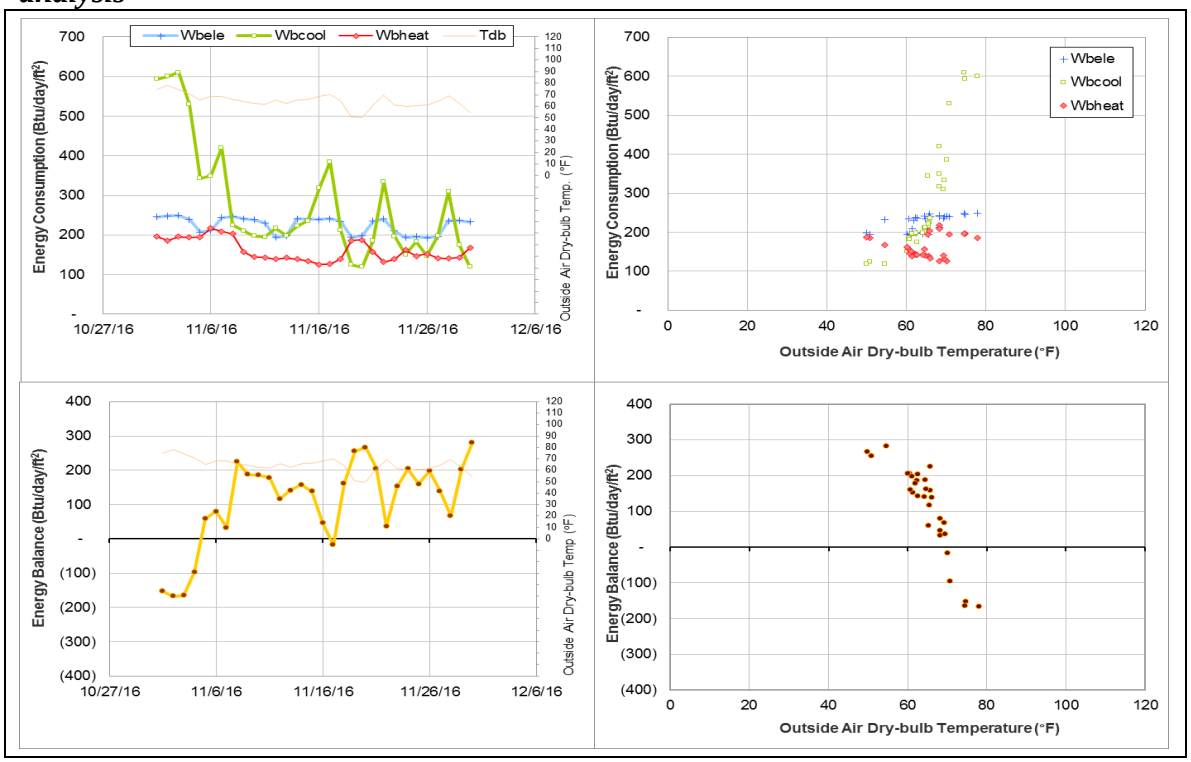
Explanatory Figure: Time series plots of hourly CHW energy consumption, flow rate, and supply and return temperatures from utilities office. (November 2016)



Energy balance plot using the original ELE, CHW and HHW data for the month of analysis.



Energy balance plot using the estimated ELE, CHW and HHW data for the month of analysis



Southern Crop Improvement Greenhouse (TAMU Bldg #1512)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
ELE	005931	28	11/3/2016 – 11/30/2016	Model

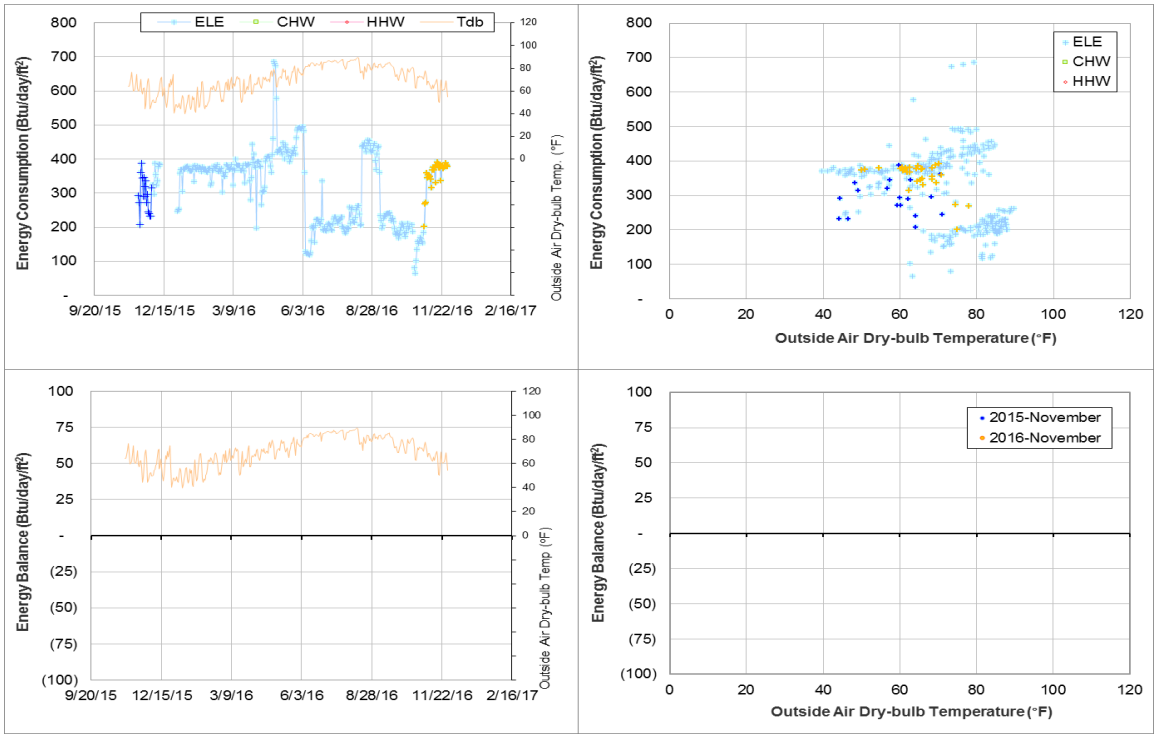
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE	The ELE consumption increased.	11/3/2016 – 11/30/2016

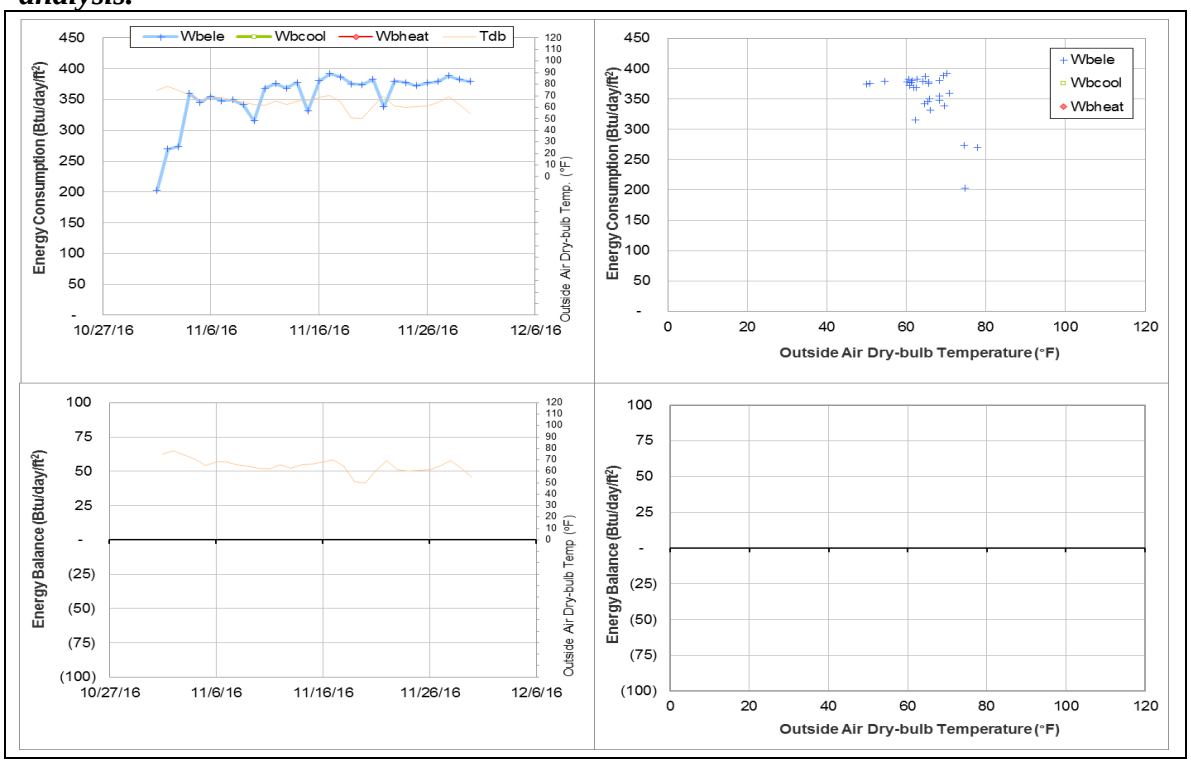
Quantitative descriptions and comments

The ELE consumption level has changed frequently since July 2015. During the period of 11/3/2016 – 11/30/2016 it increased to the higher consumption pattern. The ELE consumption was estimated for this period using a model based on data during 7/1/2014 – 6/30/2015 when the consumption was stable.

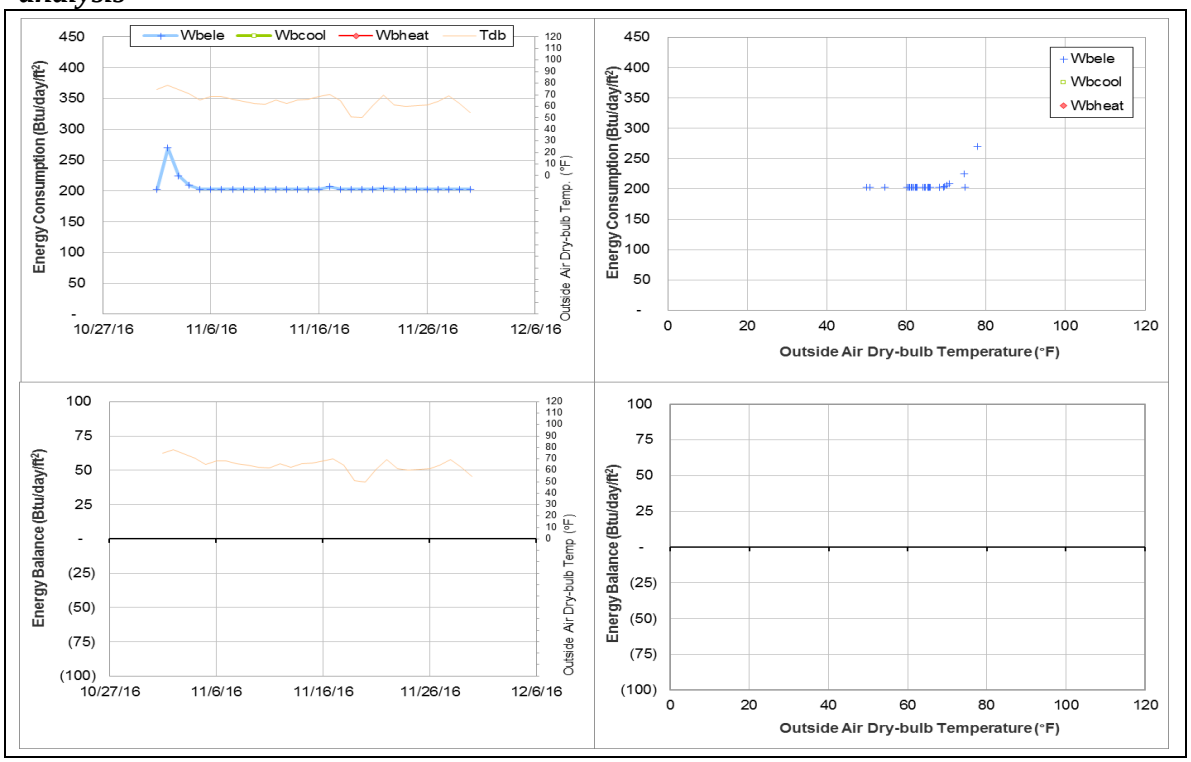
Explanatory Figure: 13 months energy balance plot with original data



Energy balance plot using the original ELE, CHW and HHW data for the month of analysis.



Energy balance plot using the estimated ELE, CHW and HHW data for the month of analysis



TX School of Rural Public Health (TAMU Bldg # 1518, 1519, 1520)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
ELE	005274	31	11/1/2016 – 11/30/2016	Switch with 005275
ELE	005275	31	11/1/2016 – 11/30/2016	Switch with 005274

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE (005274)	The consumption level increased largely.	8/14/2015 - ongoing
ELE (005275)	The consumption level decreased largely.	8/14/2015 - ongoing

Comments

ELE meter ID# 005274 serves TX School of Rural Public Health B and ELE meter ID# 005275 is for TX School of Rural Public Health C.

The ELE consumption levels for these two meters had a sudden change on 8/14/2015. The consumption level for meter ID# 005274 increased by approximate 80 kWh/h (~ 100%) and the consumption level for meter ID# 005275 decreased by around 80 kWh/h (~50%). The change observed on 8/14/2016 12:00 AM (see below explanatory figure) suggests that the two meters were switched and may need to be investigated.

Explanatory Figure: The time series plot of hourly electricity consumption for two ELE meters #005274 and# 005275

Time	Cumulative reading	Hourly Consumption	MeterID		Time	Cumulative reading	Hourly Consumption	MeterID
08/13/2015 12:00:00 PM	2930884.013	84.262	005274		08/13/2015 12:00:00 PM	4741958.002	170.658	005275
08/13/2015 01:00:00 PM	2930968.589	84.576	005274		08/13/2015 01:00:00 PM	4742132.336	174.334	005275
08/13/2015 02:00:00 PM	2931051.959	83.37	005274		08/13/2015 02:00:00 PM	4742303.554	171.218	005275
08/13/2015 03:00:00 PM	2931146.799	94.84	005274		08/13/2015 03:00:00 PM	4742483.683	180.129	005275
08/13/2015 04:00:00 PM	2931240.505	93.706	005274		08/13/2015 04:00:00 PM	4742662.753	179.07	005275
08/13/2015 05:00:00 PM	2931324.169	83.664	005274		08/13/2015 05:00:00 PM	4742832.009	169.256	005275
08/13/2015 06:00:00 PM	2931399.91	75.741	005274		08/13/2015 06:00:00 PM	4742993.53	161.521	005275
08/13/2015 07:00:00 PM	2931472.181	72.271	005274		08/13/2015 07:00:00 PM	4743149.675	156.145	005275
08/13/2015 08:00:00 PM	2931543.838	71.657	005274		08/13/2015 08:00:00 PM	4743305.9	156.225	005275
08/13/2015 09:00:00 PM	2931613.306	69.468	005274		08/13/2015 09:00:00 PM	4743462.097	156.197	005275
08/13/2015 10:00:00 PM	2931672.706	59.4	005274		08/13/2015 10:00:00 PM	4743610.221	148.124	005275
08/13/2015 11:00:00 PM	2931733.072	60.366	005274		08/13/2015 11:00:00 PM	4743745.645	135.424	005275
08/14/2015 12:00:00 AM	4743876.03	130.385	005274		08/14/2015 12:00:00 AM	2931791.19	58.118	005275
08/14/2015 01:00:00 AM	4744008.406	132.376	005274		08/14/2015 01:00:00 AM	2931849.35	58.16	005275
08/14/2015 02:00:00 AM	4744141.74	133.334	005274		08/14/2015 02:00:00 AM	2931908.534	59.184	005275
08/14/2015 03:00:00 AM	4744272.553	130.813	005274		08/14/2015 03:00:00 AM	2931966.686	58.152	005275
08/14/2015 04:00:00 AM	4744404.045	131.492	005274		08/14/2015 04:00:00 AM	2932023.589	56.903	005275
08/14/2015 05:00:00 AM	4744534.38	130.335	005274		08/14/2015 05:00:00 AM	2932080.05	56.461	005275
08/14/2015 06:00:00 AM	4744667.111	132.731	005274		08/14/2015 06:00:00 AM	2932137.05	57	005275
08/14/2015 07:00:00 AM	4744820.038	152.927	005274		08/14/2015 07:00:00 AM	2932232.983	95.933	005275
08/14/2015 08:00:00 AM	4744972.221	152.183	005274		08/14/2015 08:00:00 AM	2932319.162	86.179	005275
08/14/2015 09:00:00 AM	4745134.467	162.246	005274		08/14/2015 09:00:00 AM	2932404.691	85.529	005275
08/14/2015 10:00:00 AM	4745308.905	174.438	005274		08/14/2015 10:00:00 AM	2932489.976	85.285	005275
08/14/2015 11:00:00 AM	4745476.832	167.927	005274		08/14/2015 11:00:00 AM	2932564.419	74.443	005275
08/14/2015 12:00:00 PM	4745634.44	157.608	005274		08/14/2015 12:00:00 PM	2932634.064	69.645	005275
08/14/2015 01:00:00 PM	4745789.345	154.905	005274		08/14/2015 01:00:00 PM	2932704.723	70.659	005275
08/14/2015 02:00:00 PM	4745949.369	160.024	005274		08/14/2015 02:00:00 PM	2932777.373	72.65	005275
08/14/2015 03:00:00 PM	4746110.346	160.977	005274		08/14/2015 03:00:00 PM	2932845.908	68.535	005275
08/14/2015 04:00:00 PM	4746270.903	160.557	005274		08/14/2015 04:00:00 PM	2932920.525	74.617	005275
08/14/2015 05:00:00 PM	4746431.347	160.444	005274		08/14/2015 05:00:00 PM	2932996.835	76.31	005275
08/14/2015 06:00:00 PM	4746586.415	155.068	005274		08/14/2015 06:00:00 PM	2933065.518	68.683	005275
08/14/2015 07:00:00 PM	4746727.476	141.061	005274		08/14/2015 07:00:00 PM	2933127.559	62.041	005275
08/14/2015 08:00:00 PM	4746864.372	136.896	005274		08/14/2015 08:00:00 PM	2933195.384	67.825	005275
08/14/2015 09:00:00 PM	4747004.372	140	005274		08/14/2015 09:00:00 PM	2933263.632	68.248	005275
08/14/2015 10:00:00 PM	4747137.886	133.514	005274		08/14/2015 10:00:00 PM	2933323.26	59.628	005275
08/14/2015 11:00:00 PM	4747269.569	131.683	005274		08/14/2015 11:00:00 PM	2933382.3	59.04	005275

Gilchrist TTI Building (TAMU Bldg #1600)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	002653	7	11/1/2016 – 11/7/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The HHW consumption dropped for a short period.	11/1/2016 – 11/7/2016

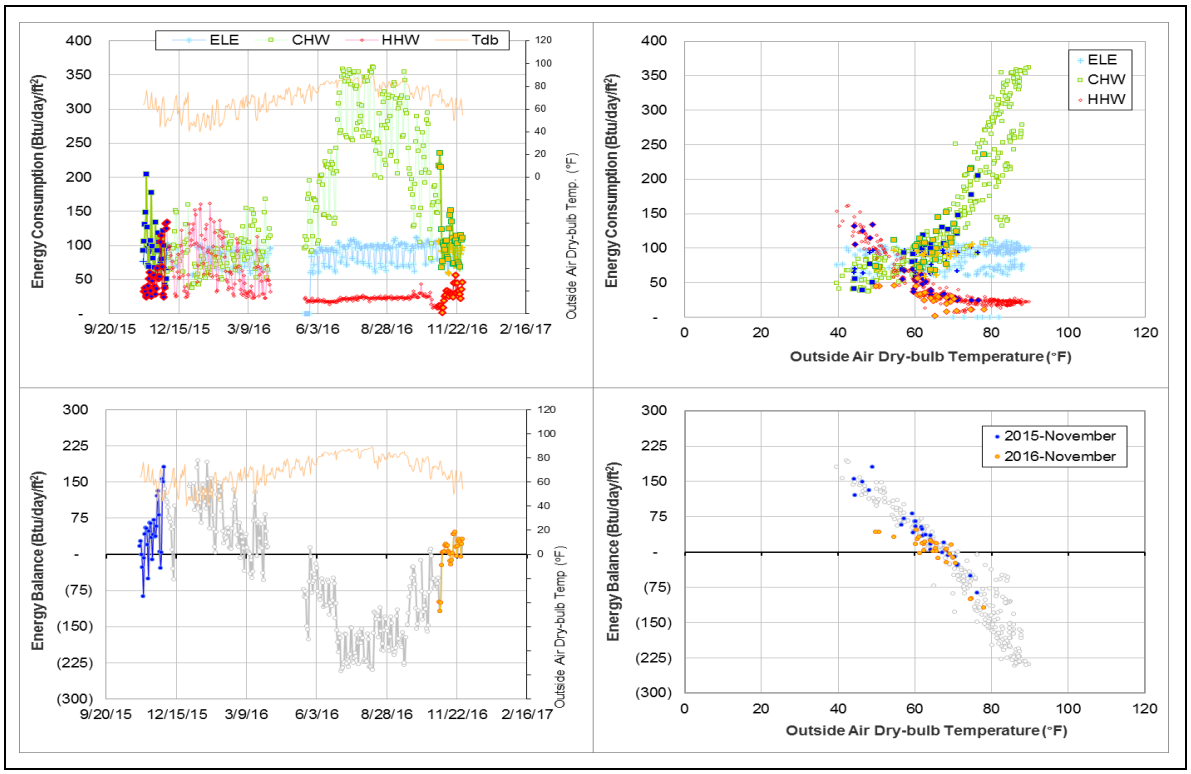
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	002653	11/1/2016 – 11/7/2016	Flow rate	Decreased

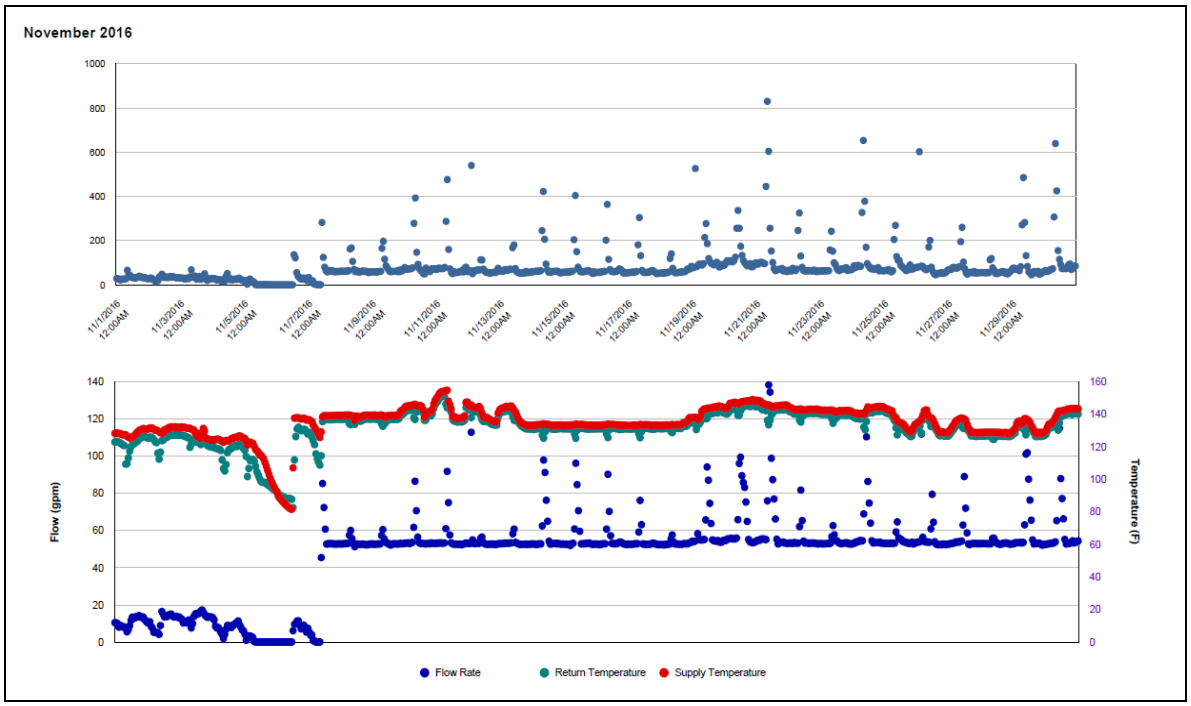
Quantitative descriptions and comments

The HHW consumption decreased during 11/1/2016 – 11/7/2016 due to a drop in HHW flow rate. The minimum flow rate for the month is fairly stable around 55 gpm expect for the first seven days in which it dropped below 20 gpm. The HHW consumption was estimated using a model for this period.

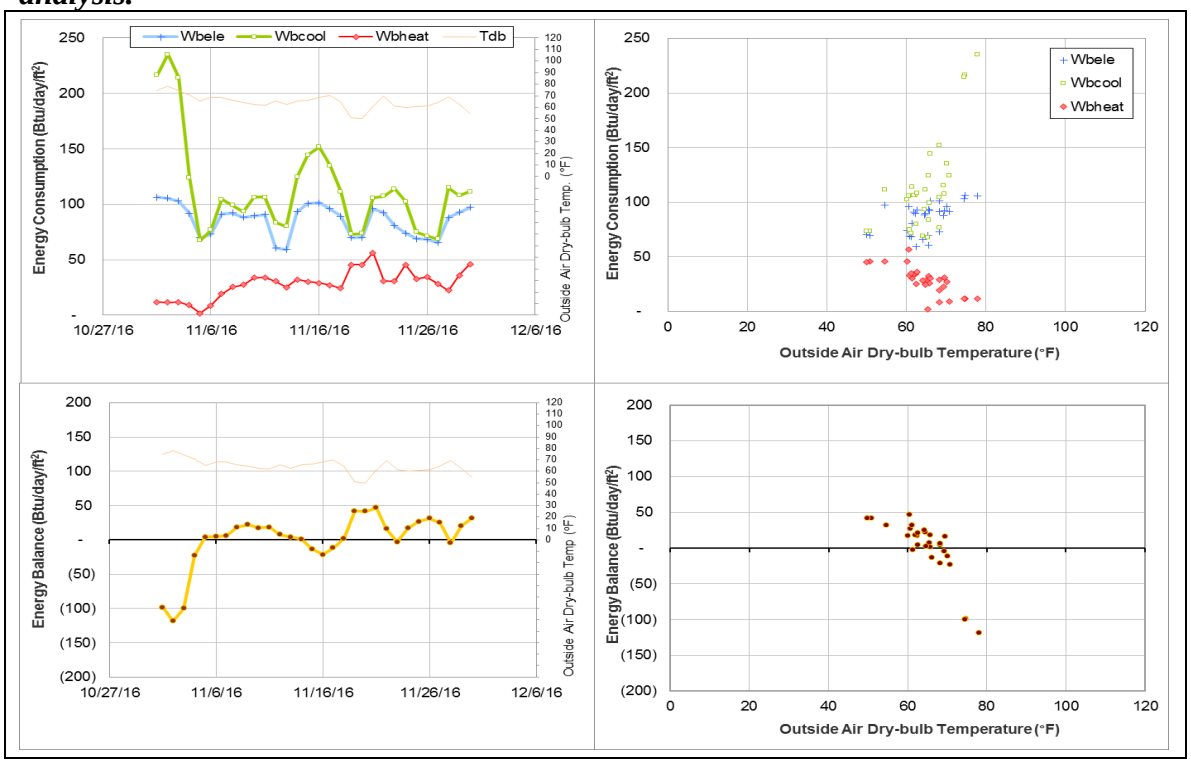
Explanatory Figure: 13 months energy balance plot with original data



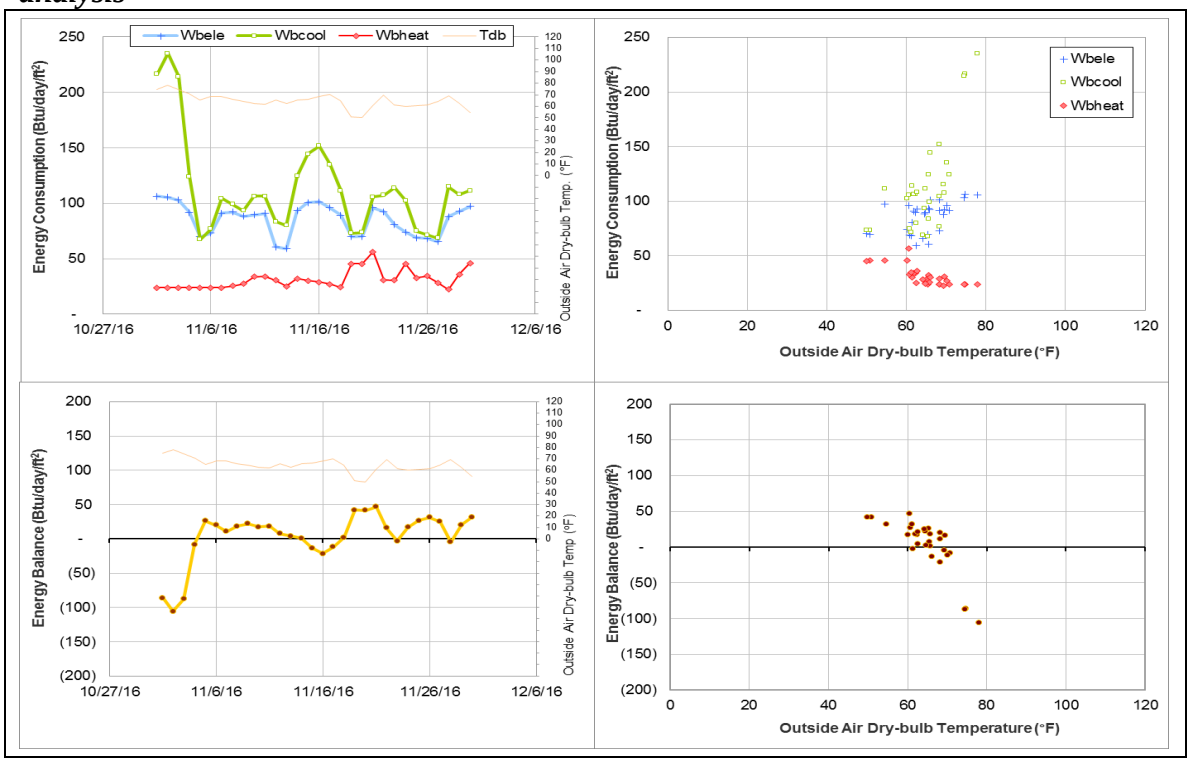
Explanatory Figure: Time series plots of hourly HHW energy consumption, flow rate, and supply and return temperatures from utilities office. (November 2016)



Energy balance plot using the original ELE, CHW and HHW data for the month of analysis.



Energy balance plot using the estimated ELE, CHW and HHW data for the month of analysis



International Ocean Discovery Building (TAMU Bldg #1601)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	008145	5	11/5/2016, 11/8/2016, 11/19/2016 – 11/20/2016, 11/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The HHW consumption dropped for short periods.	11/5/2016, 11/8/2016, 11/19/2016 – 11/20/2016, 11/30/2016

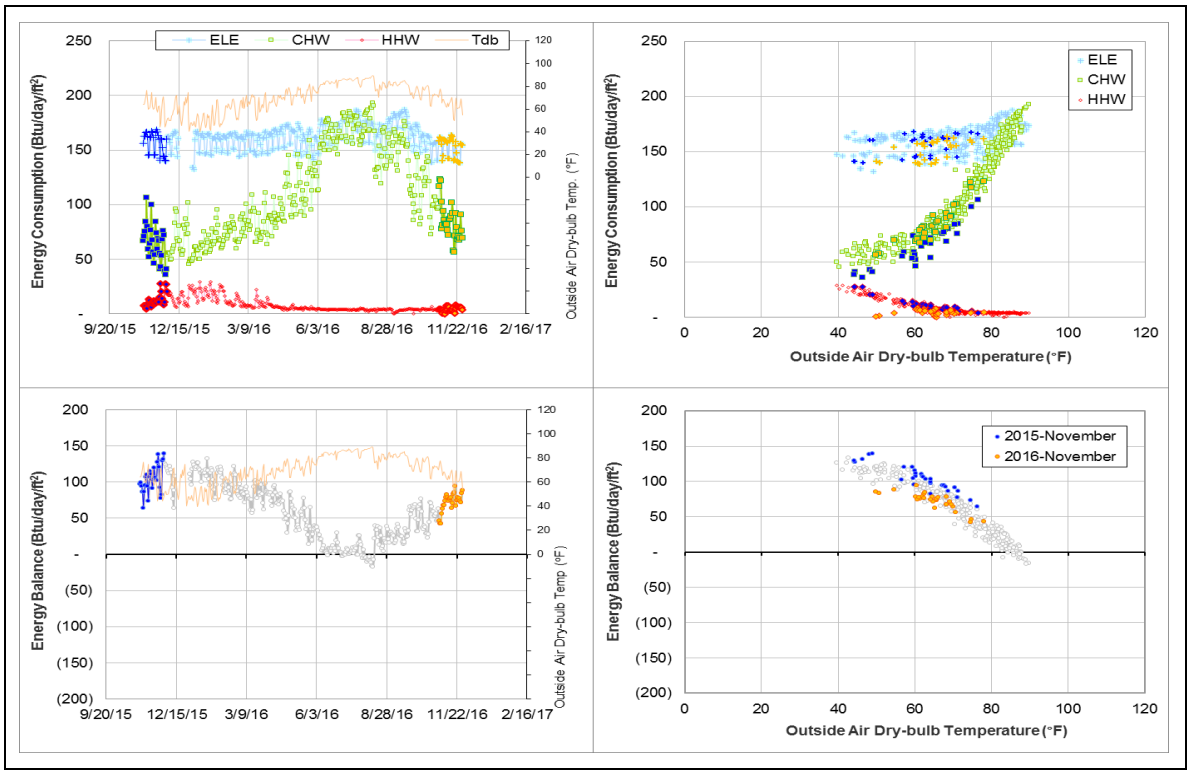
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	008145	11/5/2016, 11/8/2016, 11/19/2016 – 11/20/2016, 11/30/2016	Flow rate	Near zero

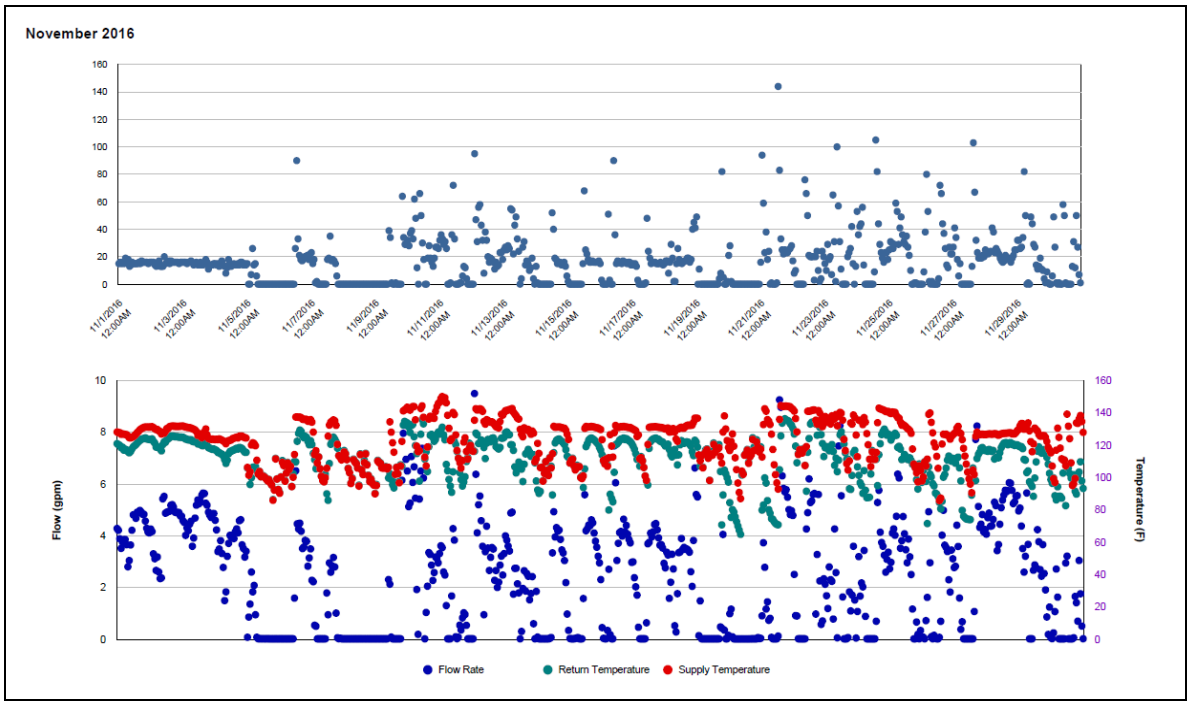
Quantitative descriptions and comments

The HHW consumption decreased to lower than expected values for 11/5/2016, 11/8/2016, 11/19/2016 – 11/20/2016, and 11/30/2016. The flow rate during these periods is at near zero values. The HHW consumption was estimated using a model for these periods.

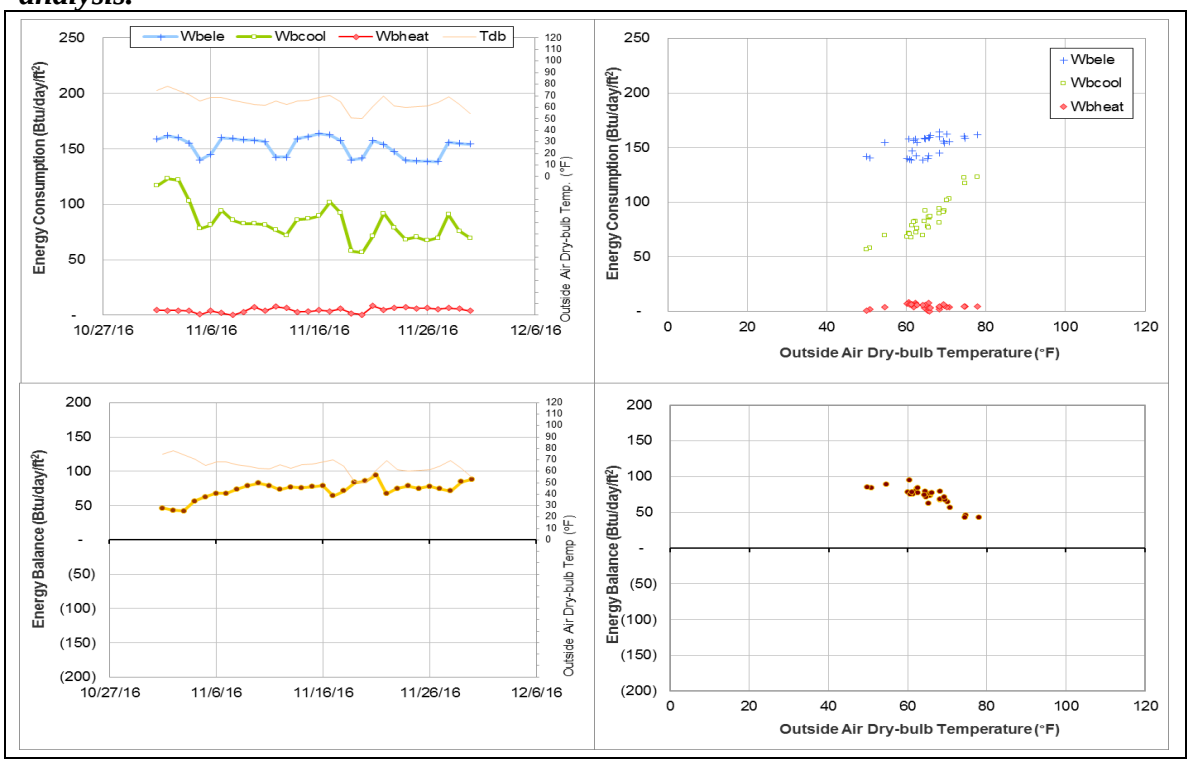
Explanatory Figure: 13 months energy balance plot with original data



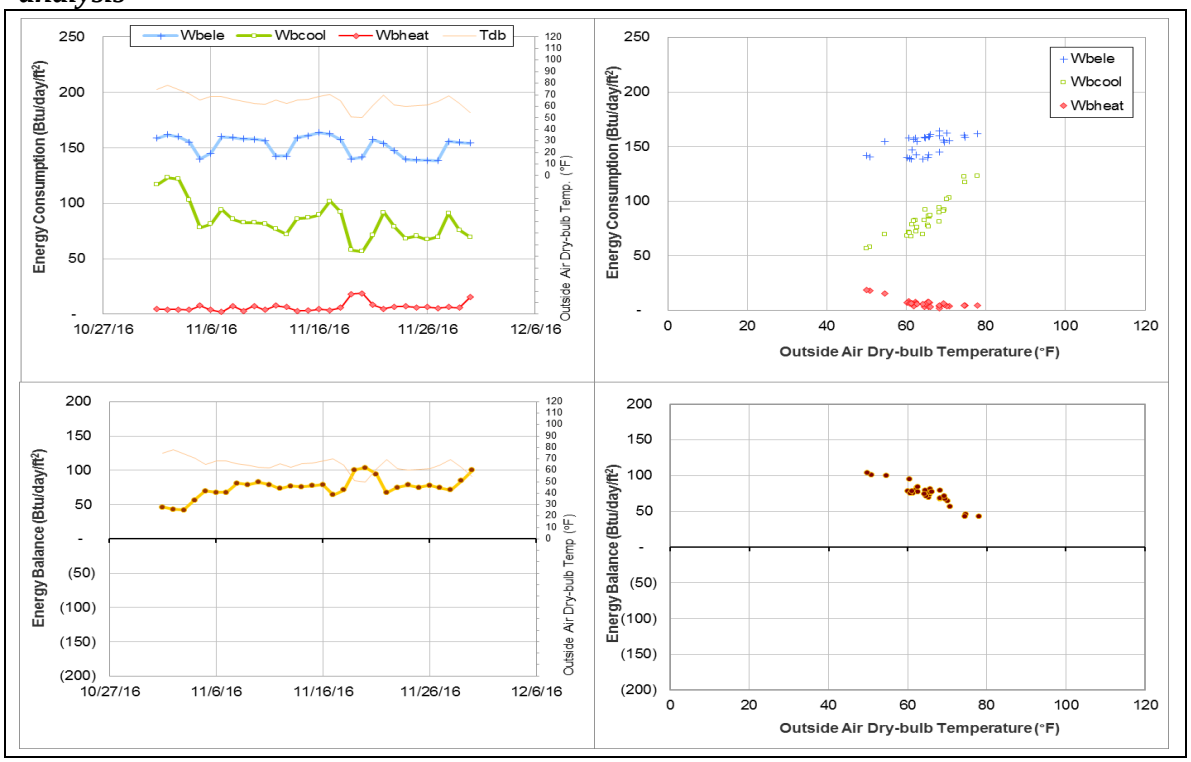
Explanatory Figure: Time series plots of hourly HHW energy consumption, flow rate, and supply and return temperatures from utilities office. (November 2016)



Energy balance plot using the original ELE, CHW and HHW data for the month of analysis.



Energy balance plot using the estimated ELE, CHW and HHW data for the month of analysis



Texas Institute for Genomic Medicine (TAMU Bldg #1900)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	005546	30	11/1/2016 – 11/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The consumption increased to extremely high level and metered value seemed to be faulty.	10/11/2016 – Ongoing

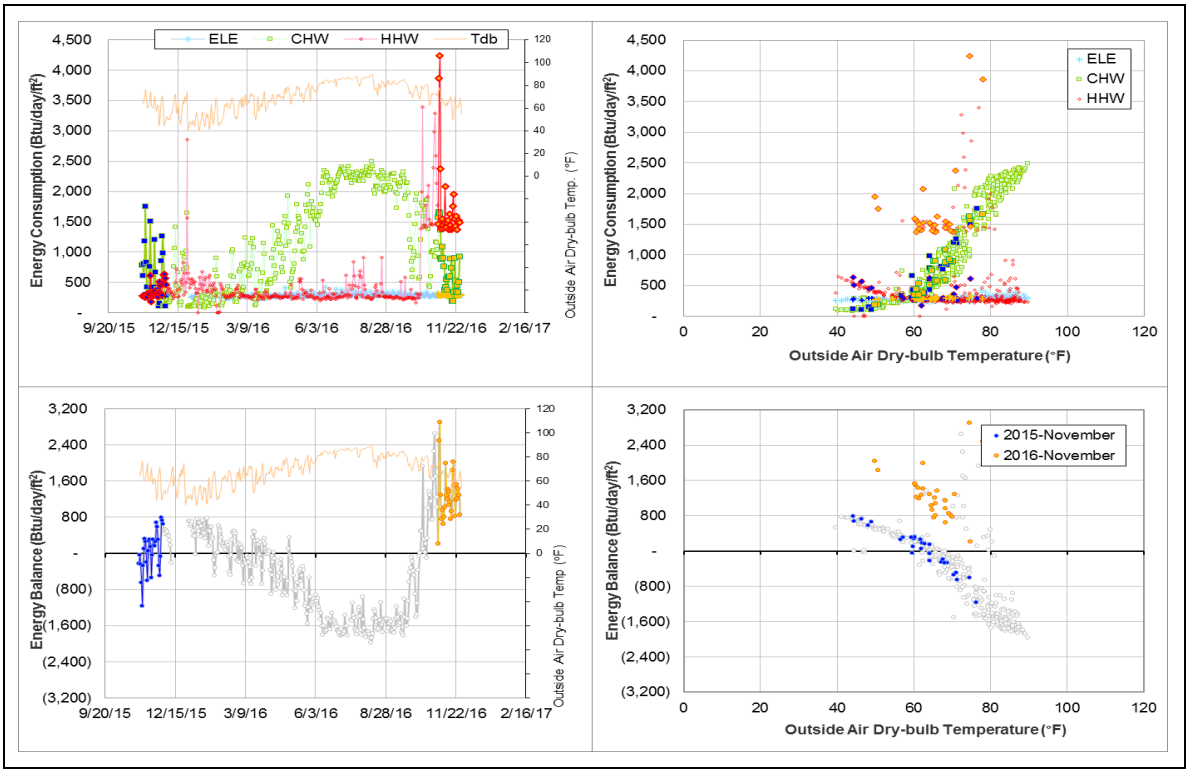
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	005546	10/11/2016 – Ongoing	Flow rate	Increased significantly and maintained at a constant value

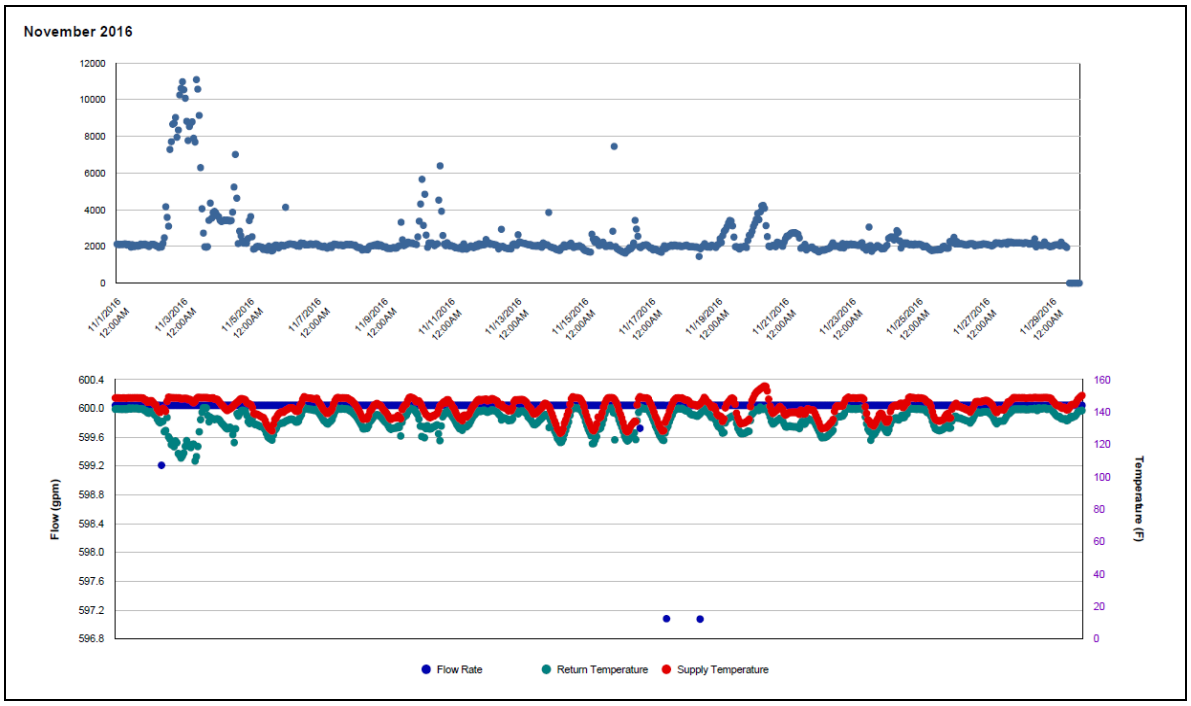
Quantitative descriptions and comments

The HHW consumption for the month is at an extremely high level and metered value seemed to be faulty due to a significant increase in HHW flow rate that started on 10/11/2016. The flow rate has increased to and maintains a constant value around 600 gpm. The flow rate for this building was around 100 gpm before the increase. The HHW consumption was estimated using a model for this period.

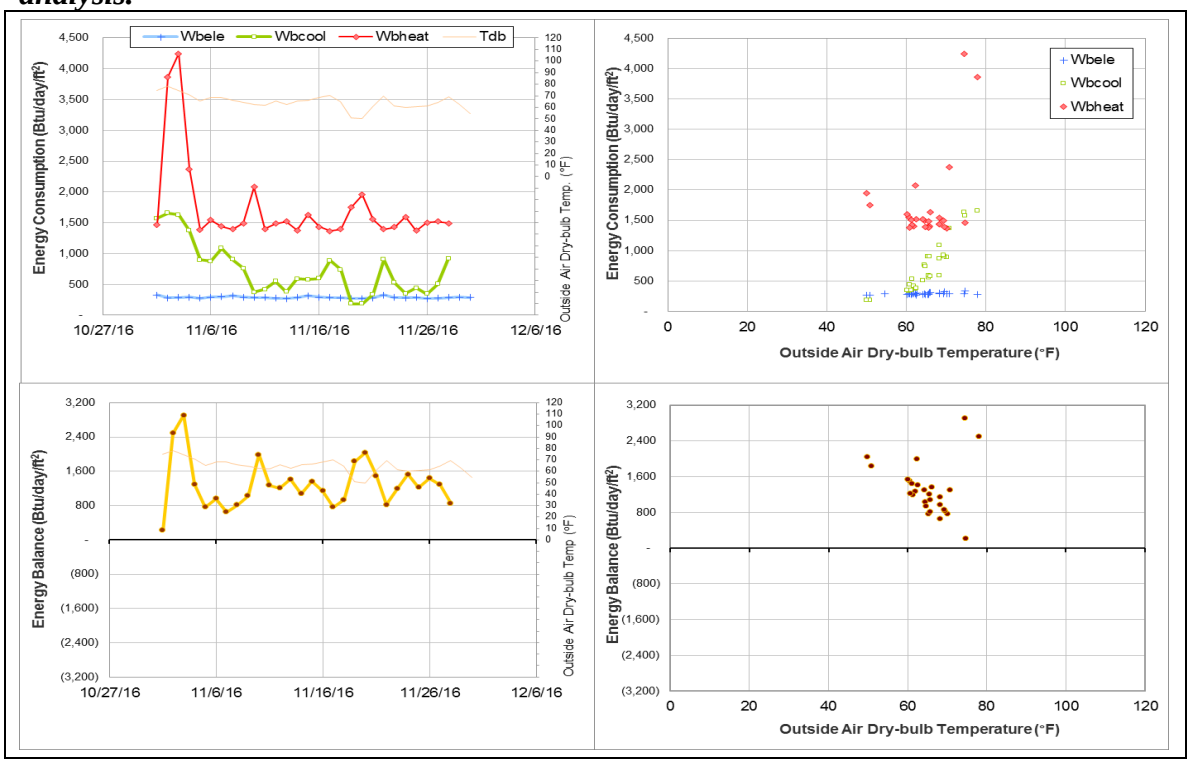
Explanatory Figure: 13 months energy balance plot with original data



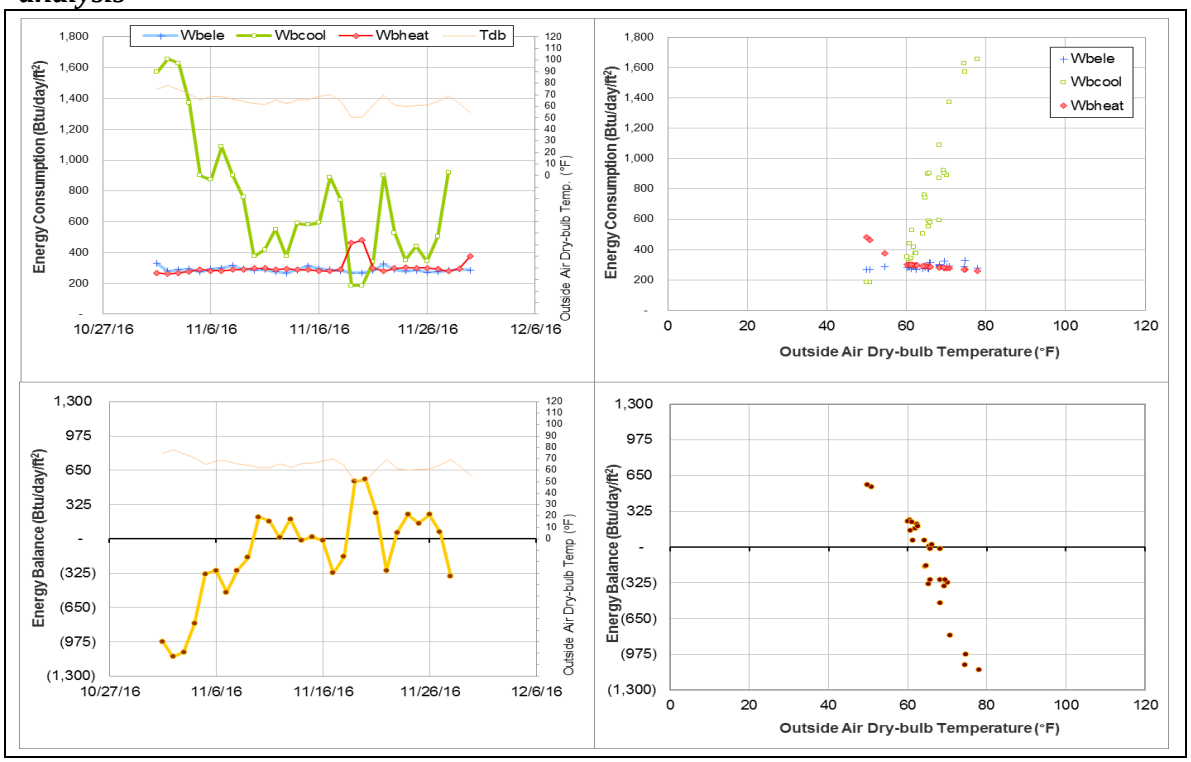
Explanatory Figure: Time series plots of hourly HHW energy consumption, flow rate, and supply and return temperatures from utilities office. (November 2016)



Energy balance plot using the original ELE, CHW and HHW data for the month of analysis.



Energy balance plot using the estimated ELE, CHW and HHW data for the month of analysis



II-3 Meters with Significant Issues in Energy Consumption Data

In this section, significant issues in the data behavior are described. On the contrary to the section II–2, alternative consumption is not estimated for some reasons: presence of continuous problems since the beginning of the data acquisition, unbalanced energy uses in the past data, changes in the consumption patterns without evidence of data problems, etc. Table II–3 gives a list of meters included in this section.

Table II-3 Meters with significant issues in the consumption data during November 2016

Building No.	Building Name	MeterID	Type
0290	Wells Residence Hall		
		001984	CHW
		001988	HHW
0291	Rudder Residence Hall		
		002132	CHW
		002136	HHW
0293	Appelt Residence Hall		
		002062	CHW
		002066	HHW
0353	Bright Aerospace Building		
		002746	CHW
0419	Legett Residence Hall		
		000031	ELE
		002218	CHW
		002222	HHW
0433	Mosher Residence Hall		
		009083	ELE
		002485	CHW
		002489	HHW
0441	Krueger Residence Hall		
		002504	CHW
		002500	HHW
0447	Aston Residence Hall		
		002474	CHW
0443	Oceanography & Meteorology Building		
		006388	CHW
		006392	HHW
0517	DPC Annex		
		006567	HHW
0467	Biological Sciences Building - East		
		003851	CHW
		003862	HHW
0478	Scoates Hall		
		007961	ELE
		007968	CHW
		007969	HHW
0482	Fermier Hall		
		005878	CHW
		005881	HHW
0496	Utilities & Energy Services Central Office		
		007706	ELE
		006929	CHW
		006933	HHW
0499	Engineering Innovation Center		
		002672	CHW
		002683	HHW

Building No.	Building Name	Mete	Type
0506	Nagle Hall		
		001484	ELE
		003619	CHW
		003623	HHW
0512	All Faiths Chapel		
		004288	CHW
0524	Blocker Building		
		002918	HHW
0652	Neely Residence Hall		
		002147	CHW
		002151	HHW
0740	McNew Laboratory		
		005874	ELE
		005974	CHW
		005968	HHW
815	Entomology Research Lab		
		006043	CHW
880	TVMC-Small Animal Building		
		005962	HHW
1026	Veterinary Medicine Administration		
		006053	HHW
1156	Physical Plant Administration & Shops		
		007679	CHW
1197	Veterinary Research Building		
		006355	ELE
		006359	ELE
1504	Reynolds Medical Sciences Building		
		003989	CHW
		003993	HHW
1558	Cox-McFerrin Center for Aggie Basketball		
		007575	CHW
		007577	HHW
1560	Student Recreation Center		
		000363	ELE
		000366	ELE
		002933	CHW
		002937	HHW
1601	International Ocean Discovery Building		
		006351	ELE
		006382	CHW
		008144	CHW
		008145	HHW
1604	Offshore Technology Research Center		
		006660	ELE

Wells Residence Hall (TAMU Bldg #290)

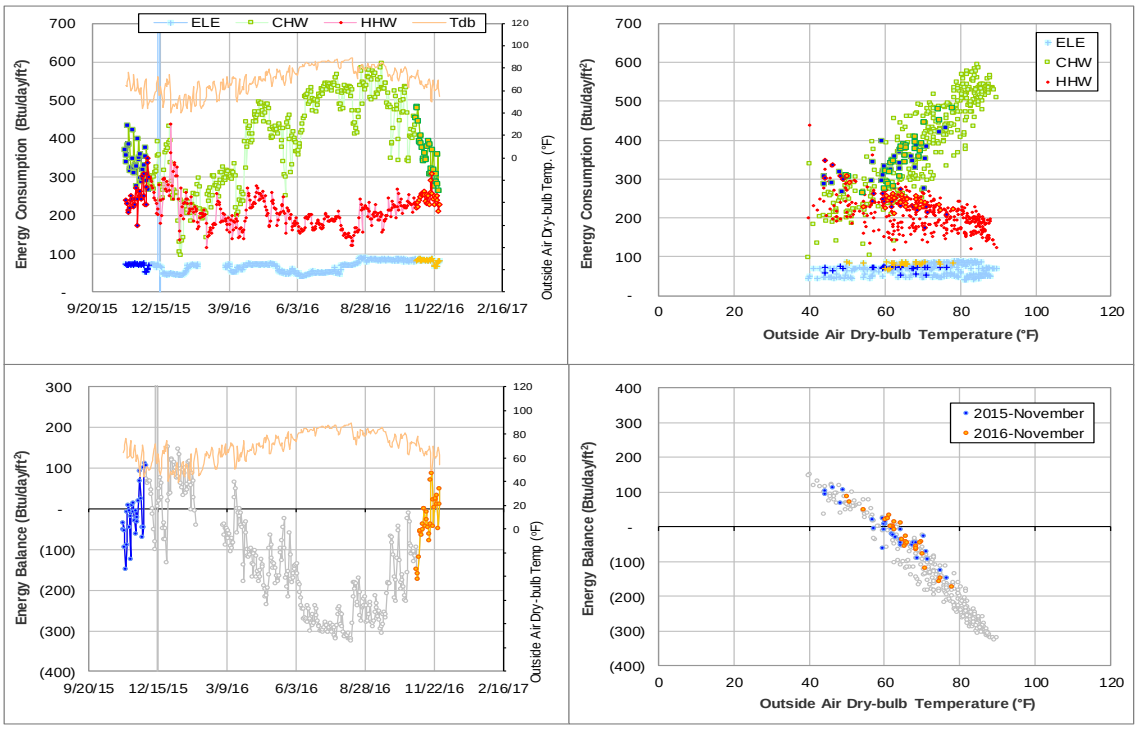
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
Energy Balance	The energy balance level is low. The cross-point temperature is around 60°F.	For several years

Comments

Both the CHW and HHW consumption increased during 4/2016 – 10/2016 by 100 Btu/day/ft^2 but they decreased back to the main pattern in 11/2016. This building has a low level of energy balance load with the cross-point temperature around 60°F. The low E_{BL} level suggests imbalance of metered energy use in the building, but we are not able to determine the cause.

Explanatory Figure: 13 months energy balance plot with original data (The plot is rescaled to remove spikes)



Rudder Residence Hall (TAMU Bldg #291)

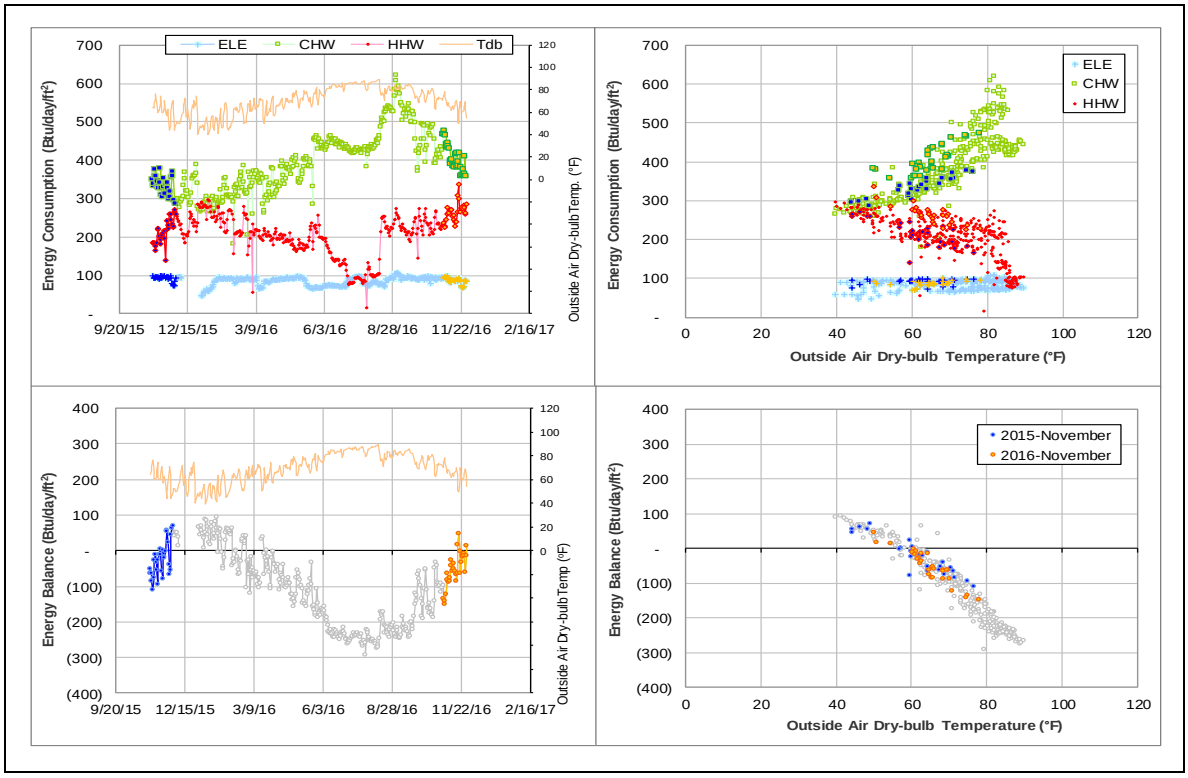
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
Energy Balance	The energy balance level is low. The cross-point temperature is around 60°F.	For several years

Comments

This building has a low level of energy balance load with the cross-point temperature around 60°F for years. The low E_{BL} level suggests imbalance of metered energy use in the building, but we are not able to determine the cause. See also section II-2.

Explanatory Figure: 13 months energy balance plot with original data



Appelt Residence Hall (TAMU Bldg #293)

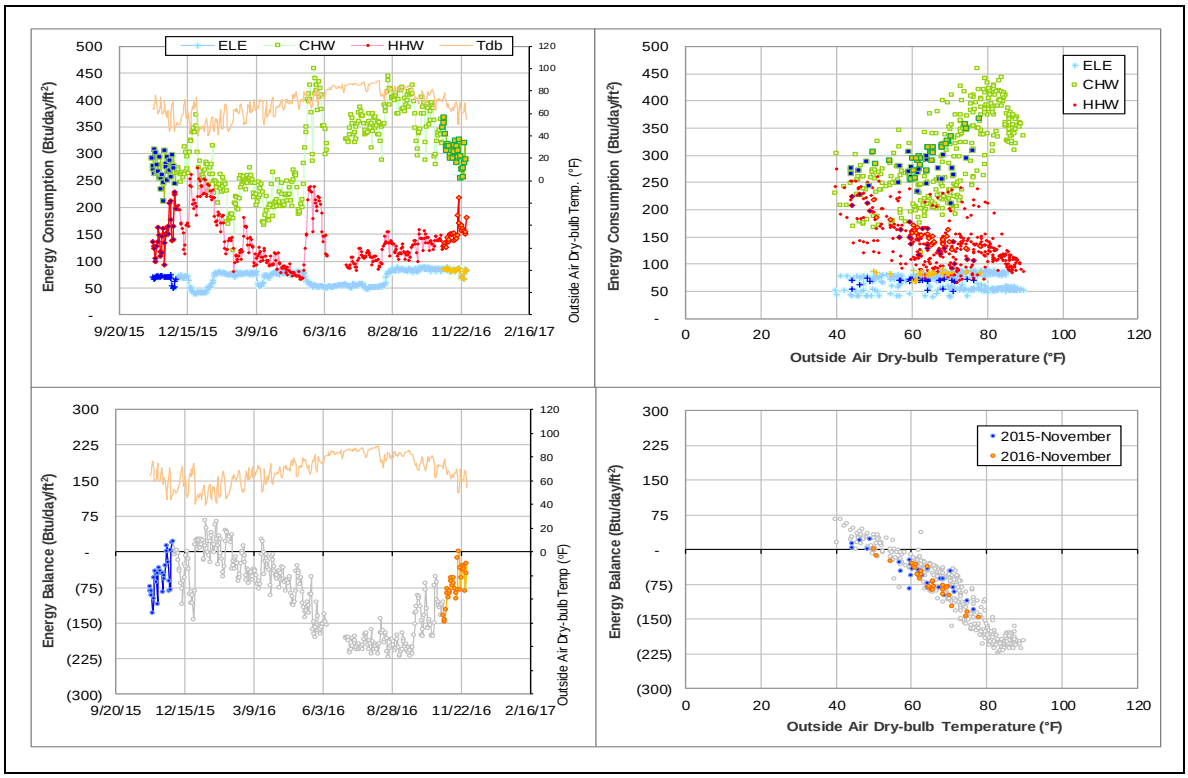
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW and HHW	The consumption level changes frequently	Since December 2014
Energy Balance	The energy balance decreased and the cross-point temperature is around 55°F.	Since January 2015

Comments

Both the CHW and HHW consumption levels have been unstable and changing frequently. The energy balance load was low with the cross-point temperature around 55°F. The low E_{BL} level suggests imbalance of metered energy use in the building, but we are not able to determine the cause.

Explanatory Figure: 13 months energy balance plot with original data



Bright Building (TAMU Bldg #353)

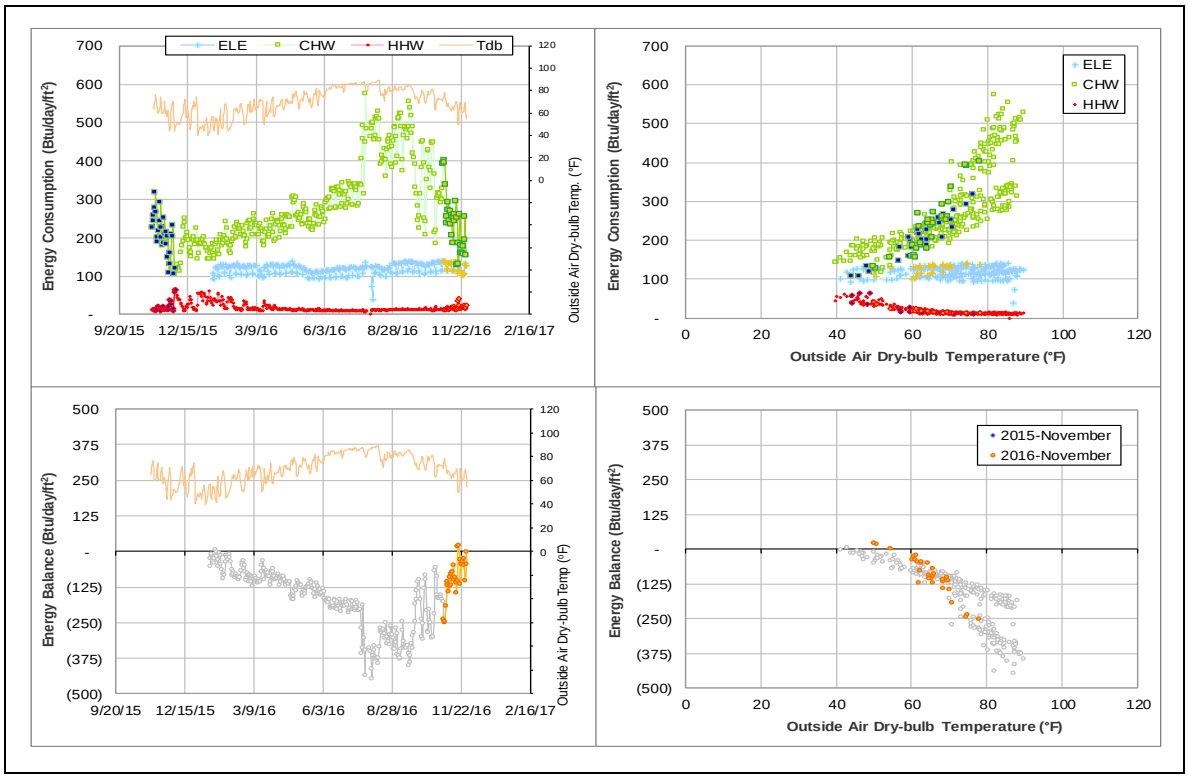
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
Energy Balance	The energy balance level has been low for years. The cross-point temperature was in the range of 40 - 70°F.	For several years
CHW	The consumption pattern changed.	Since July 2016

Comments

The energy balance load (E_{BL}) of this building has varied but always been low (the cross-point temperature was between 40°F and 70°F) for years. CHW consumption increased greatly on 7/21/2016 and switched to a new pattern with a steeper slope. The cross-point temperature of energy balance is now 55°F.

Explanatory Figure: 13 months energy balance plot with original data



Legett Residence Hall (TAMU BLDG # 419)

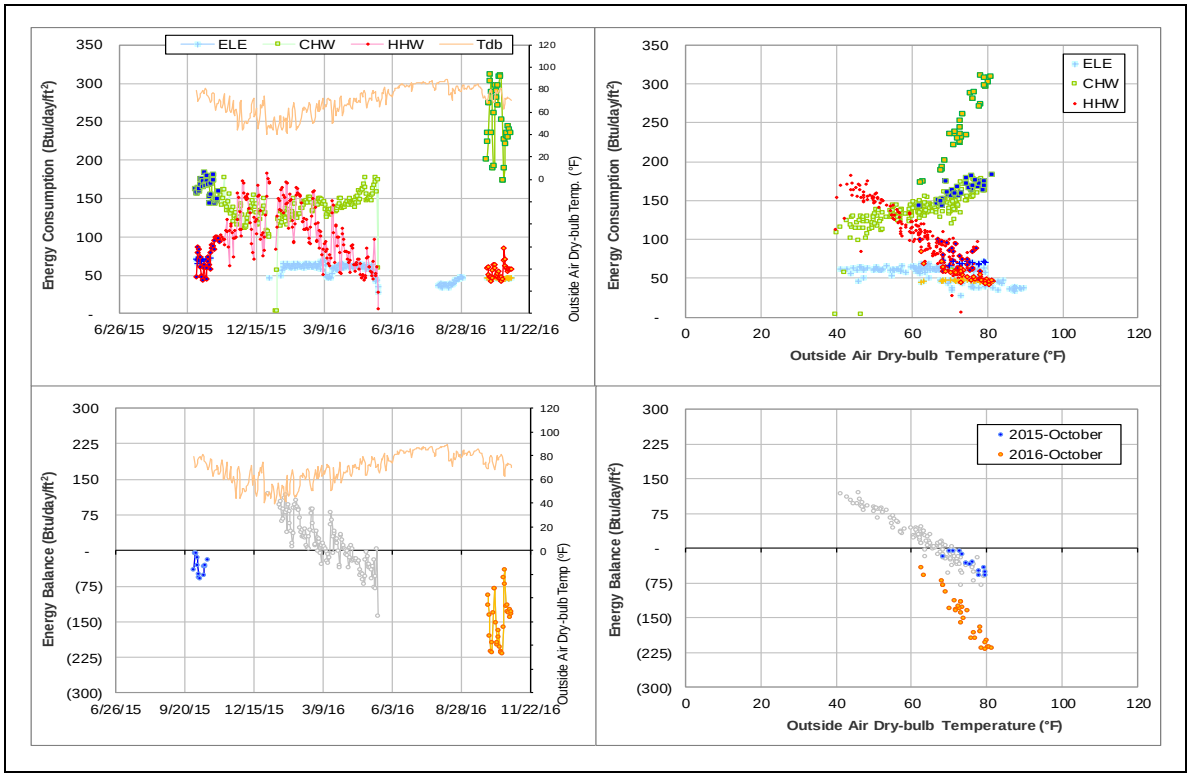
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE	A slight decrease by 15 – 20 Btu/day-ft^2 is seen after the renovation.	Since September 2016
CHW	A drastic increase is seen after the renovation, but the new slop implies a much lower consumption at the lower temperature side.	Since September 2016
HHW	A slight decrease by 30 Btu/day-ft^2 is seen after the renovation.	Since September 2016
EB	The new cross point is 55°F, which used to be 68°F.	Since September 2016

Comments

The renovation of this building was finished in 9/2016 and a decrease was expected. ELE is slightly lower. CHW is currently much higher than before, but based on currently observed trend, much lower consumption can be expected at lower temperature side. HHW is slightly lower at present but more data are needed to see the new level. EB now has the cross point at 55°F, lower than previously 68°F.

Explanatory Figure: 13 months energy balance plot with original data



Mosher Residence Hall (TAMU BLDG # 433)

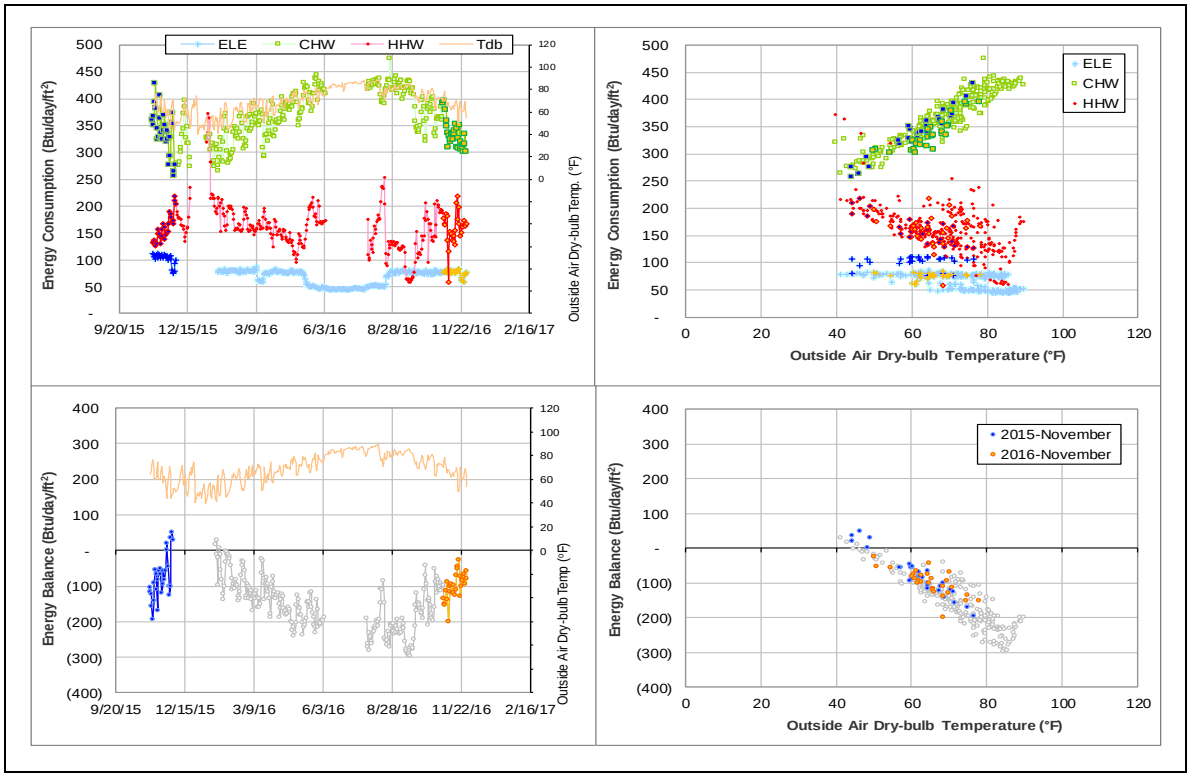
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The consumption level gradually increased.	Since 2015
HHW	The consumption level gradually decreased.	Since 2015
ELE	The consumption level suddenly decreased.	Since January 2016
Energy Balance	The cross-point temperature is lower than 50°F.	Since 2015

Comments

The ELE meter (MID 009083) replaced old meter (MID 000290) since January 2016. After that, the consumption decreased from 105 Btu/day/ft^2 to 80 Btu/day/ft^2 (approximately 25%). At near 40°F compared to 11/2014, CHW increased slightly by about 25Btu/day/ft^2 and HHW decreased slightly by about 25 Btu/day/ft^2. HHW started to scatter since 5/2016 (shortly before the missing period). The cross-point temperature decreased further from near 55°F to lower than 50°F now. It is suggested to investigate these meters.

Explanatory Figure: 13 months energy balance plot with original data



Krueger Residence Hall (TAMU Bldg #441)

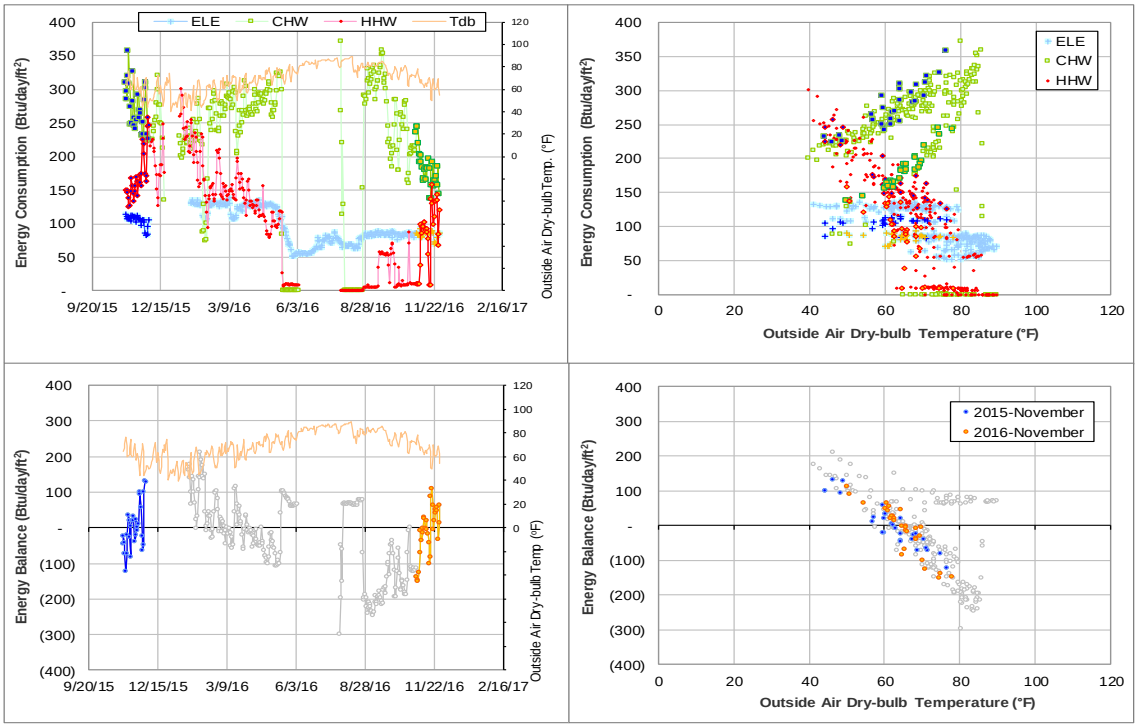
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW/HHW	The consumption significantly decreased after a missing and faulty period.	Since September 2016

Comments

The CHW and HHW consumption decreased significantly after a missing and faulty period. Since 9/2016, CHW has a much steeper slope and much lower consumption at low temperature side. HHW seems to have been turned off occasionally, and there are limited amount of data available hinting a decrease at high temperature side. This change did not impact energy balance. More data are needed to verify the new pattern. See also II-2.

Explanatory Figure: 13 months energy balance plot with original data.



Aston Residence Hall (TAMU Bldg #447)

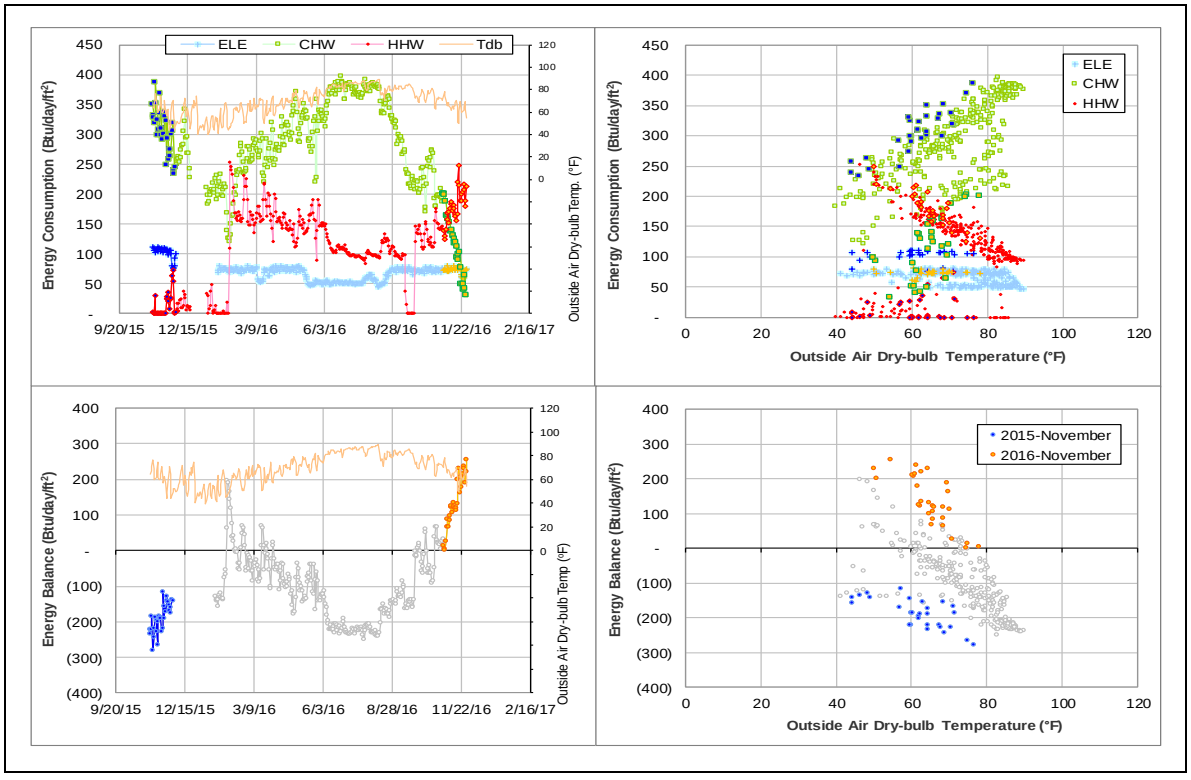
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The consumption significantly decreased.	Since September 2016
EB	New cross point from 60°F to 73°F and scatters.	Since October 2016

Comments

CHW consumption started to decrease greatly since 9/2016 and was suspected to form a new pattern. Scatter is also observed in CHW. HHW and ELE stayed stable. EB is crossing at 73°F currently but is impacted by CHW and show scatter, hence this value may not be reliable. More data are needed to verify the new pattern or identify the problem. See also II-2.

Explanatory Figure: 13 months energy balance plot with original data.



Oceanography & Meteorology Building (TAMU Bldg #443)

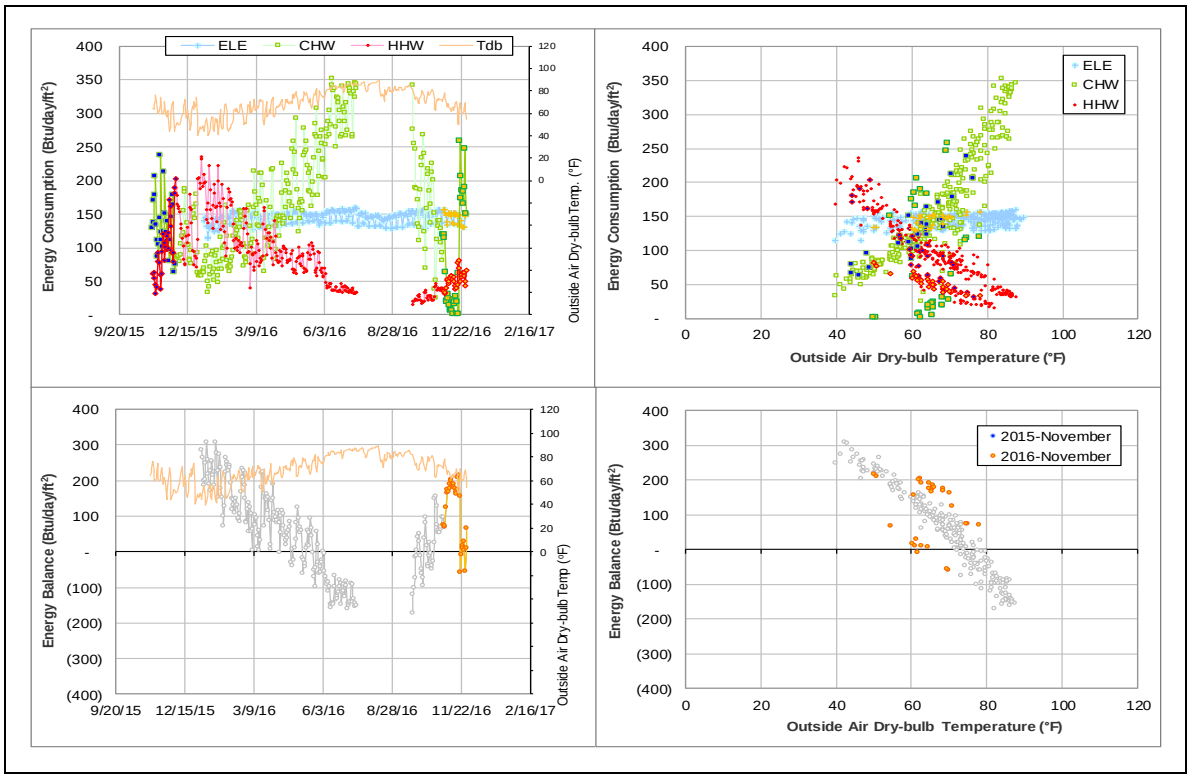
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The consumption significantly decreased after a missing period.	Since September 2016
HHW	The consumption significantly decreased after a missing period, but is at the same level last year.	Since September 2016

Comments

The CHW and HHW consumption decreased significantly after a missing and faulty period. Since 9/2016, CHW has a much steeper slope and much lower consumption at low temperature side. But there have been faulty temperature readings since 10/21/2016, resulting in scatter in itself and energy balance. HHW decreased by about 45 Btu/day/ft^2 in parallel. This decrease also happened last year. EB has scattered because of the faulty CHW data but was not affected by the decrease in the past months. See also section II-2.

Explanatory Figure: 13 months energy balance plot with original data.



DPC Annex (TAMU BLDG # 517)

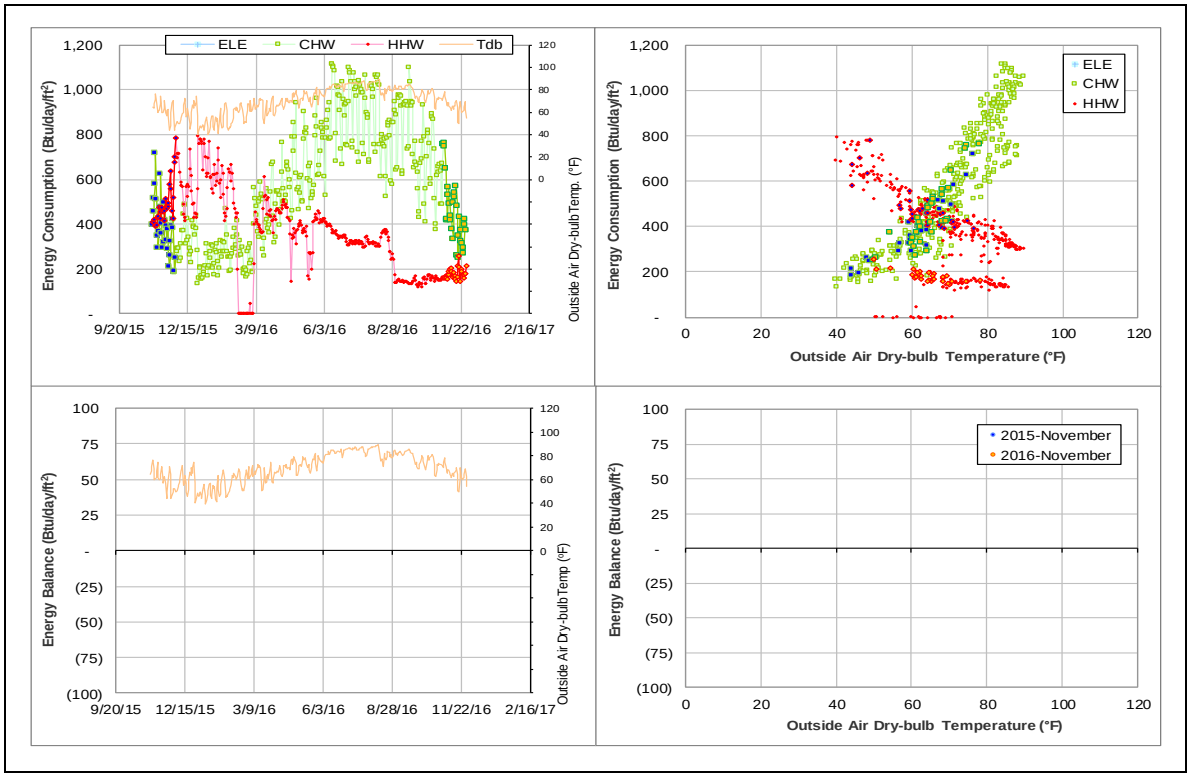
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The consumption has decreased significantly. A new pattern seems to be forming.	Since late August 2016

Comments

HHW consumption significantly decreased on 8/31/2016 by 200 Btu/day/ft^2 (60%). This level has been stable with fairly clean data since then and there has been no evidence of meter malfunctioning. Thus, this meter is not estimated. More data are needed to verify this new pattern.

Explanatory Figure: 13 months energy balance plot with original data



Biological Sciences Building – East (TAMU BLDG # 467)

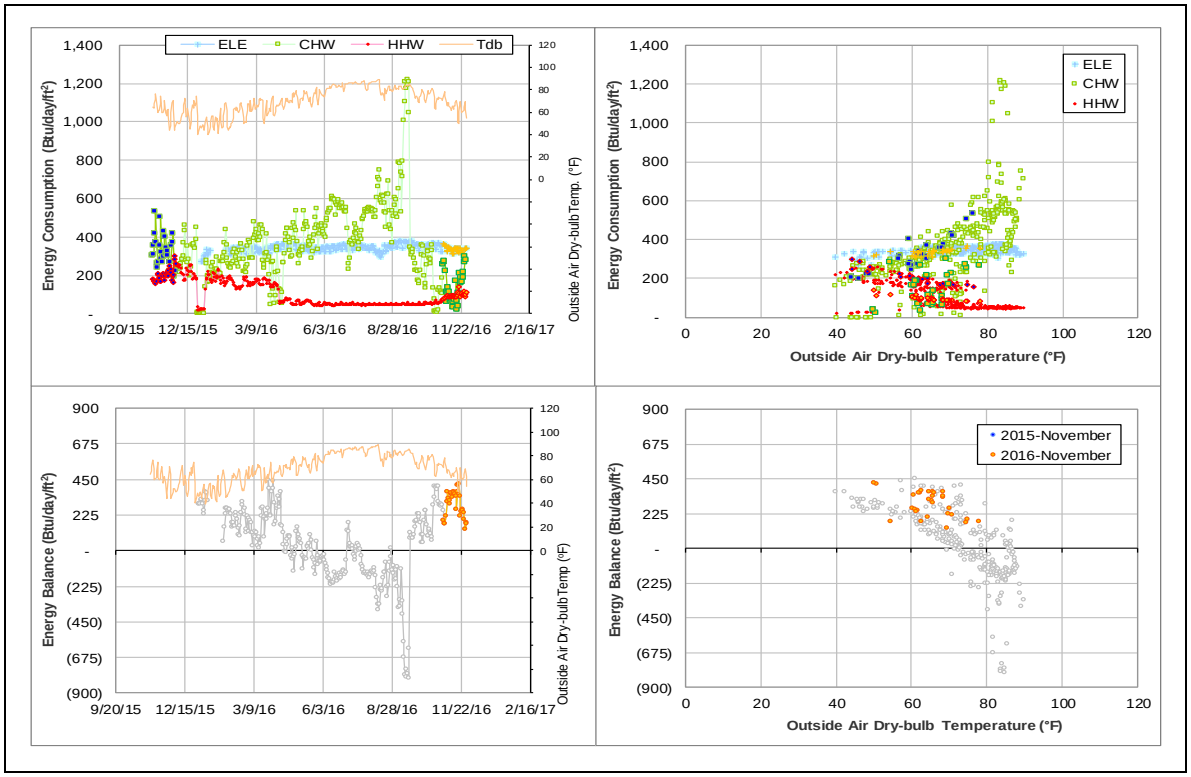
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	Decreased after a meter faulty period.	Starting July 2016
HHW	Decreased.	Starting April 2016

Comments

A recent decrease occurred to both CHW and HHW. CHW appears to have been lower than the main pattern starting 7/2016, but the meter readings have been faulty starting 8/6/2016 and the CHW supply temp reading is still 3°F higher than adjacent buildings. These data are questionable and was estimated in section II. HHW consumption dropped from 140 Btu/day/ft^2 level to 60 Btu/day/ft^2 level in 4/2016 due to a sharp increase of return temp. But new pattern was forming and more data is needed to verify this pattern.

Explanatory Figure: 13 months energy balance plot with original data



Scoates Hall (TAMU Bldg #478)

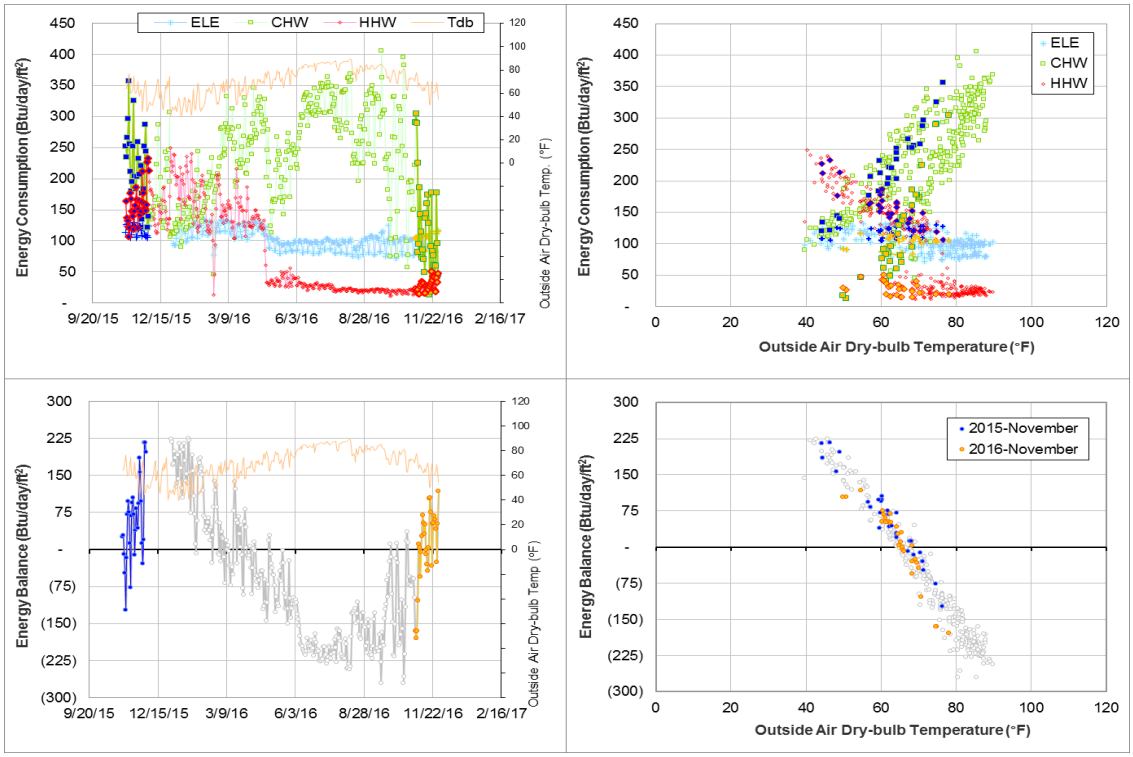
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE, CHW, and HHW	The consumption level has significantly decreased.	4/26/2016 – Ongoing

Comments

ELE, CHW, and HHW all saw a significant decrease in consumption starting 4/26/2016 and kept decreasing in steps. There has been a decrease in CHW flow rate starting around 9/21/2016 that may be causing the energy balance pattern to shift. More data is needed to see if the pattern continues.

Explanatory Figure: 13 months energy balance plot with original data.



Fermier Hall (TAMU Bldg #482)

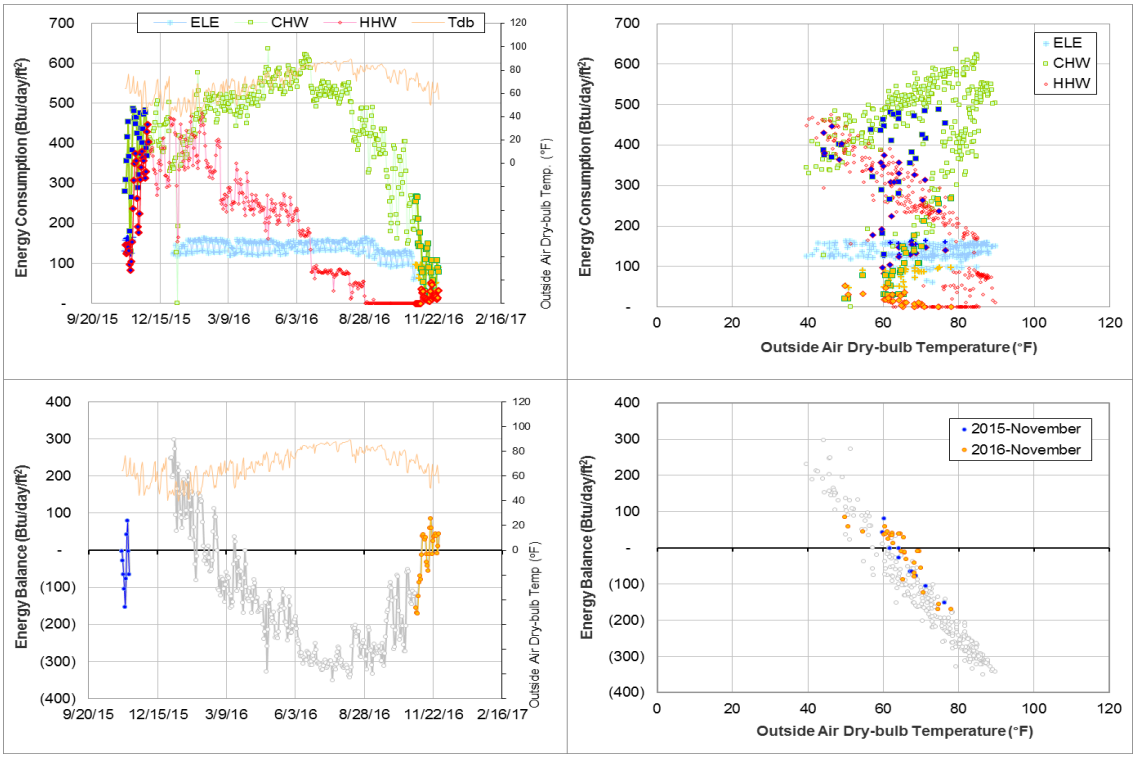
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW/HHW	The consumption level has significantly decreased.	6/24/2016 – Ongoing

Comments

CHW and HHW of this building decreased significantly in steps since 6/24/2016. Since the energy balance plot has retained its pattern, the drop may be due to a decrease in usage.

Explanatory Figure: 13 months energy balance plot with original data.



Utilities & Energy Services Central Office (TAMU Bldg #496)

Detected issues in the energy balance and/or the consumption data

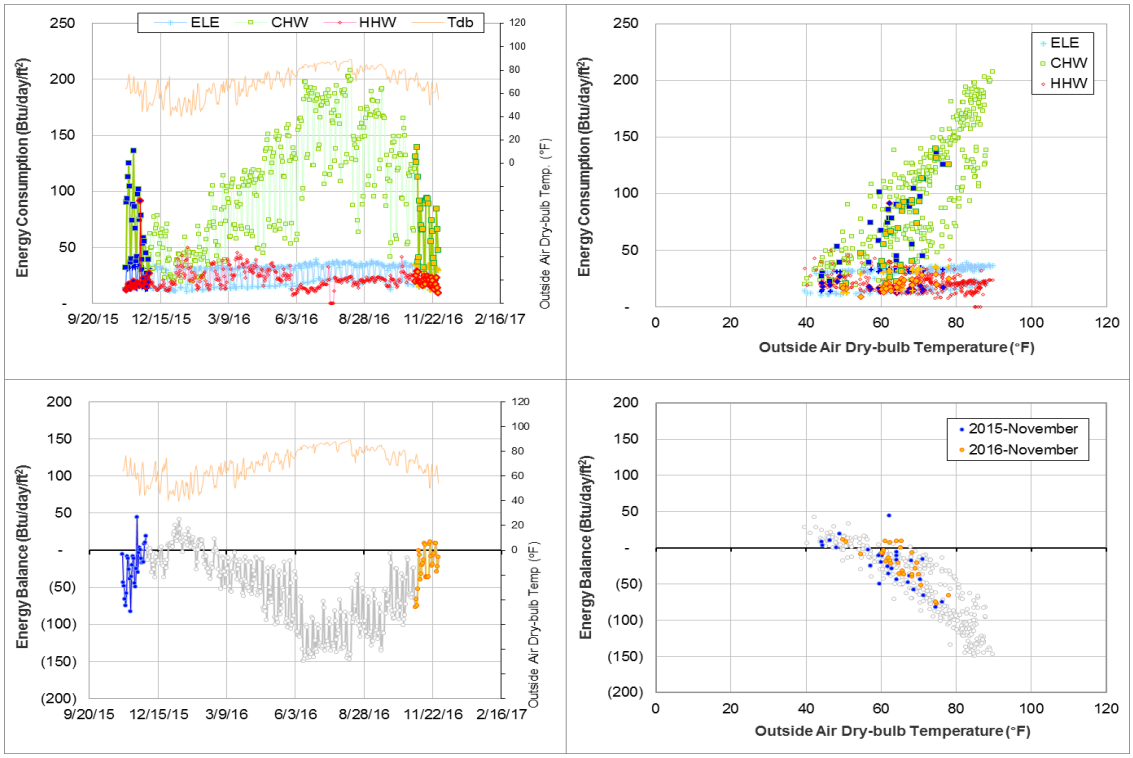
Data Type	Description of data behaviors	Period
ELE, CHW, and HHW	The energy use per unit floor area was low compared to other buildings.	Since the data became available on 7/1/2012

Comments

The peak electricity use density was around 0.65 W/ft^2 which is small compared to that of other office buildings on campus. The delta T for HHW seemed to be small for years. The CHW and HHW consumption per the unit floor area also seemed to be low. It is possible that the GSF we have (46,110 ft^2) includes substantial unoccupied space.

The energy balance was scattered due to the consumption level changes for CHW and HHW, the cross-point temperature of the energy balance was ranged around 50 to 70°F.

Explanatory Figure: 13 months energy balance plot with original data.



Engineering Innovation Center (TAMU Bldg # 499)

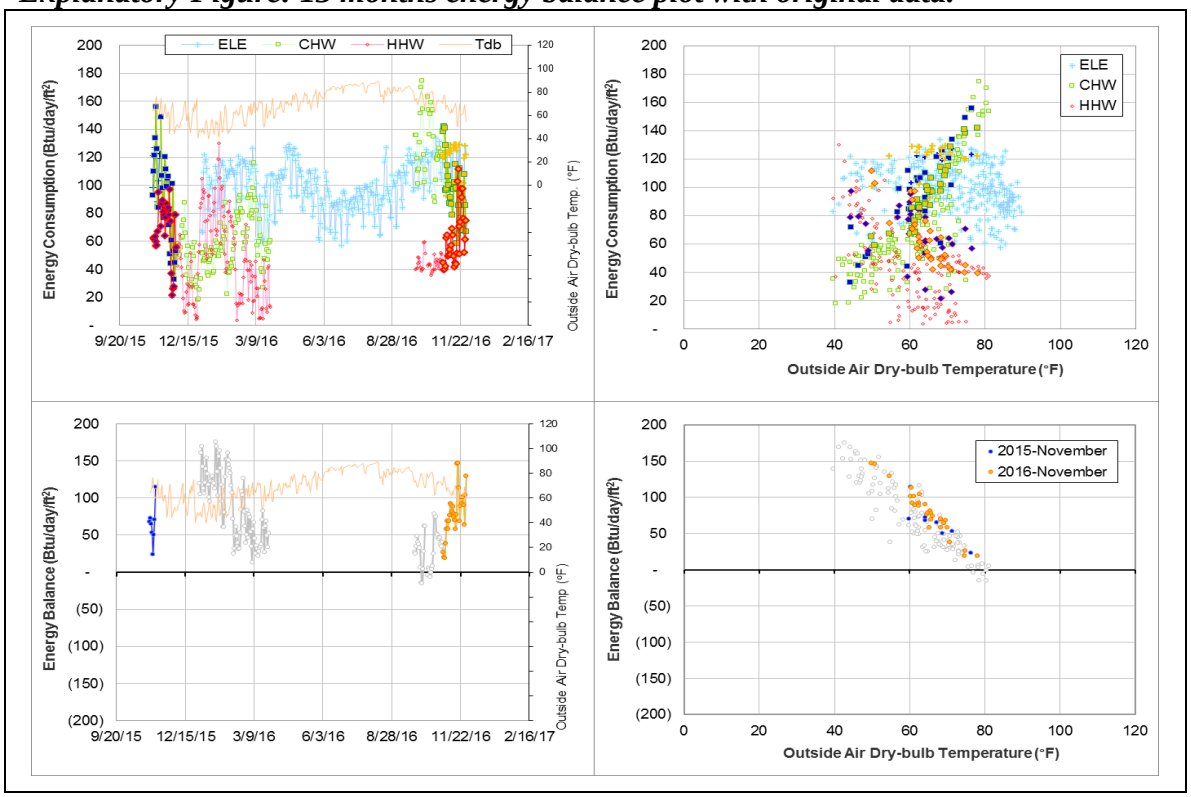
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
Energy Balance	The cross-point temperature is high, around 80 °F.	For years
CHW	The consumption level is low compared to the ELE and HHW consumption.	For years

Comments

The CHW consumption is relatively low compared to the ELE and HHW consumption and it could be the reason causing high cross-point temperature of energy balance for this building.

Explanatory Figure: 13 months energy balance plot with original data.



Nagle Hall (TAMU Bldg #506)

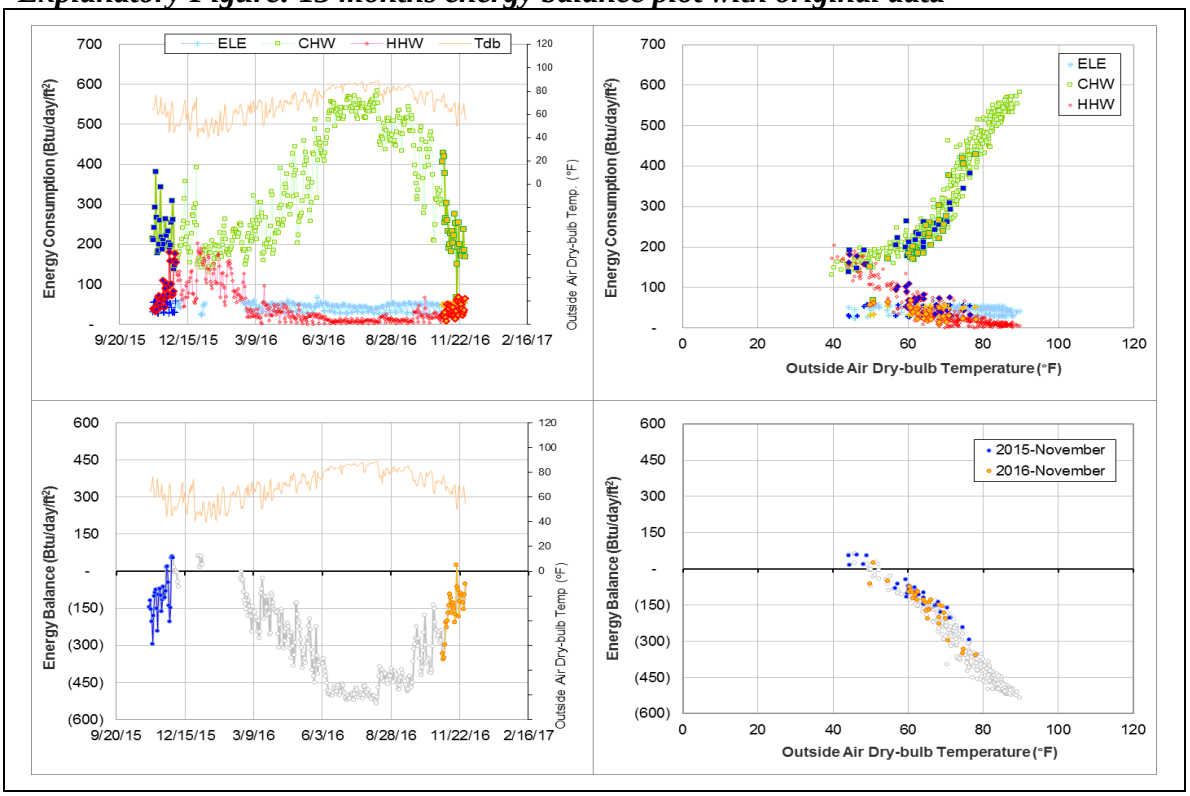
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
Energy Balance	The level was low and the cross-point temperature was around 50°F.	The cross-point temperature has always been low.
ELE	The consumption per unit floor area was smaller than those for other office buildings.	The level was always low and gradually decreased over the past 4 years.

Comments

The ELE consumption was about 100 Btu/day/ft^2 lower than the levels in typical office buildings on campus, and this might be a metering error or this meter might not cover the whole building.

Explanatory Figure: 13 months energy balance plot with original data



All Faiths Chapel (TAMU Bldg #512)

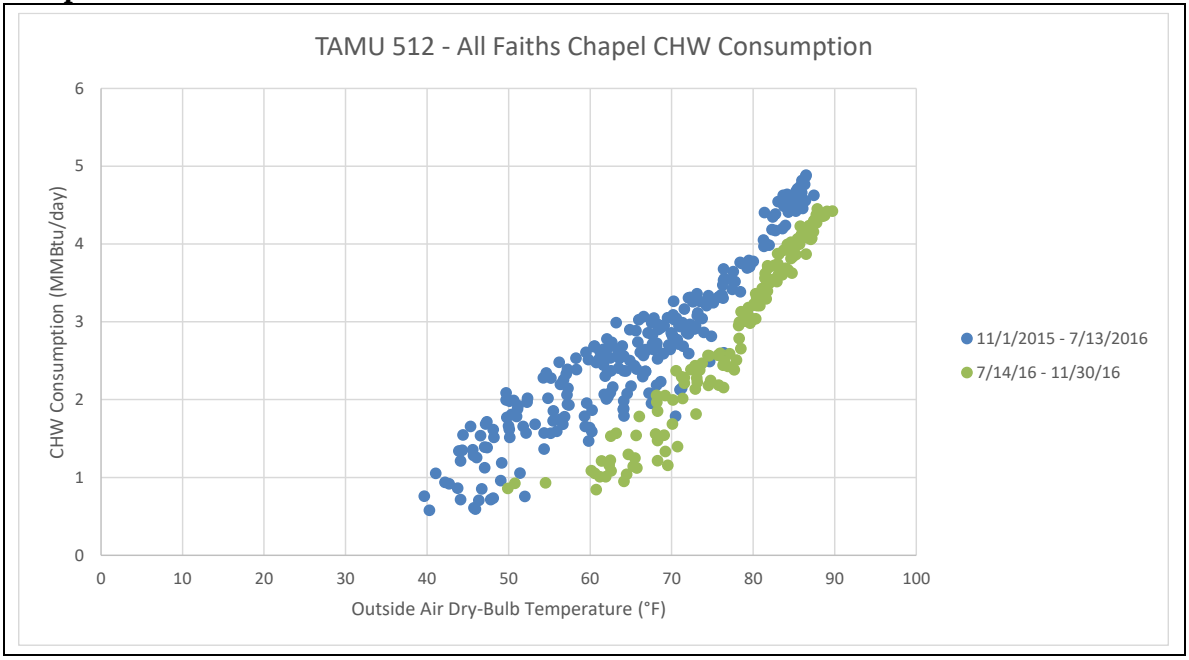
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The CHW consumption level decreased.	7/14/2016 – Ongoing

Comments

Starting around 7/14/2016, the CHW consumption level has decreased dropping out of the main pattern. More data is needed to see if the pattern continues.

Explanatory Figure: 13 months energy consumption versus outside air dry-bulb temperature.



Blocker Building (TAMU Bldg #524)

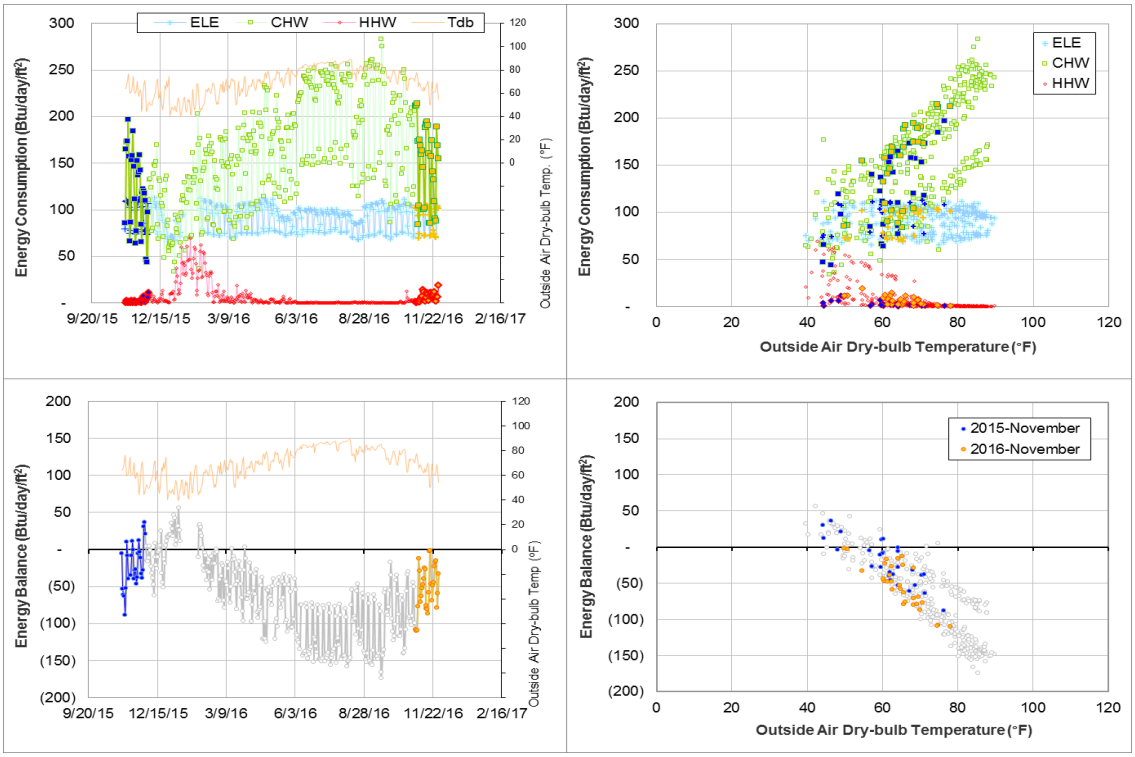
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
Energy balance	The level was low and the cross-point temperature was 50 - 60°F.	For years
HHW	The consumption level might be low.	Past several years

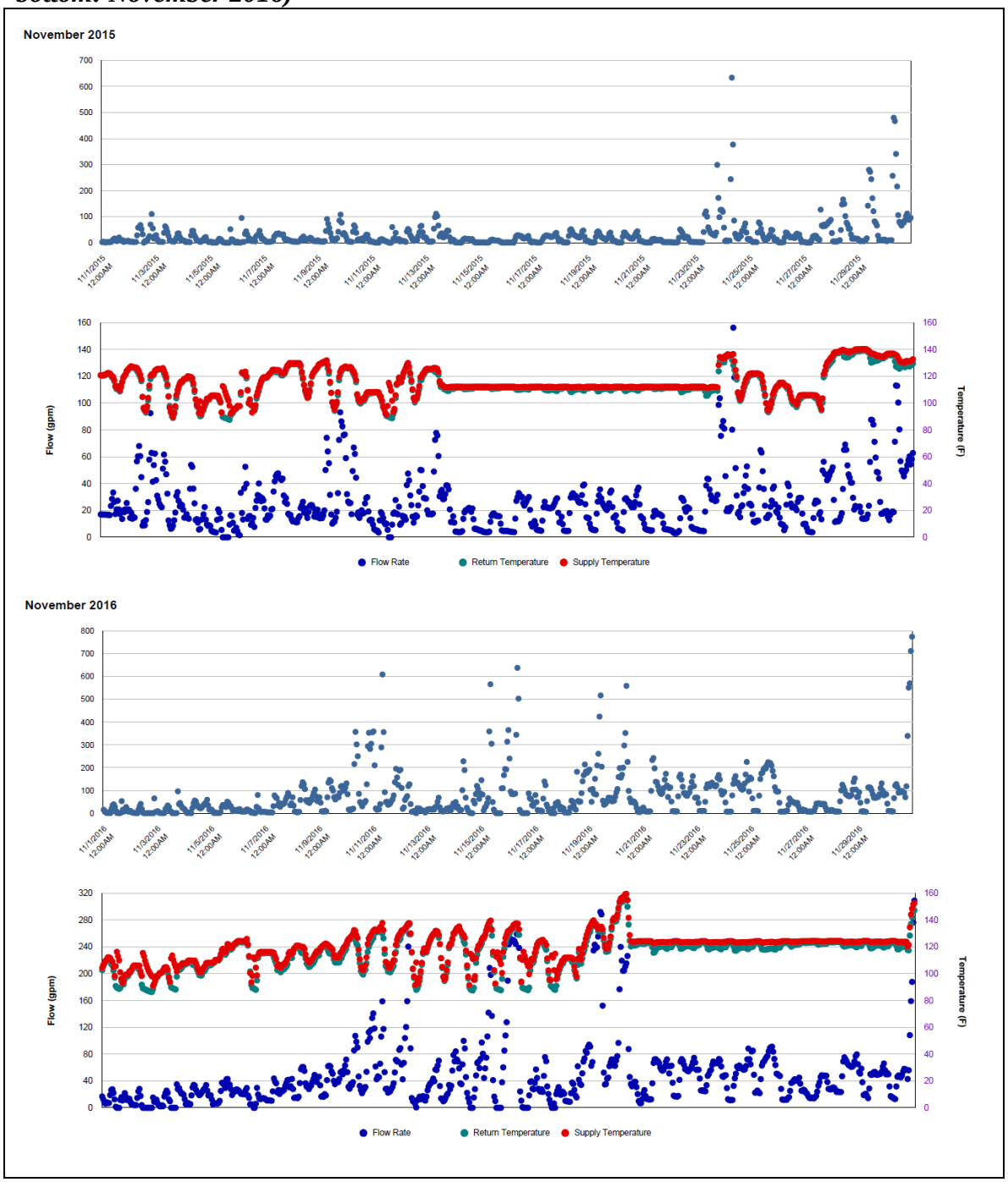
Comments

The cross-point of temperature of energy balance has been low for years. The delta T and consumption level for HHW seems low for the past couple of years. More information is needed to help identify the reason causing the low energy balance for this building.

Explanatory Figure: 13 months energy balance plot with original data



Explanatory Figure: Time series plots of hourly HHW energy consumption, flow rate, and supply and return temperatures from the utilities office. (top: November 2015, bottom: November 2016)



Neeley Residence Hall (TAMU Bldg #652)

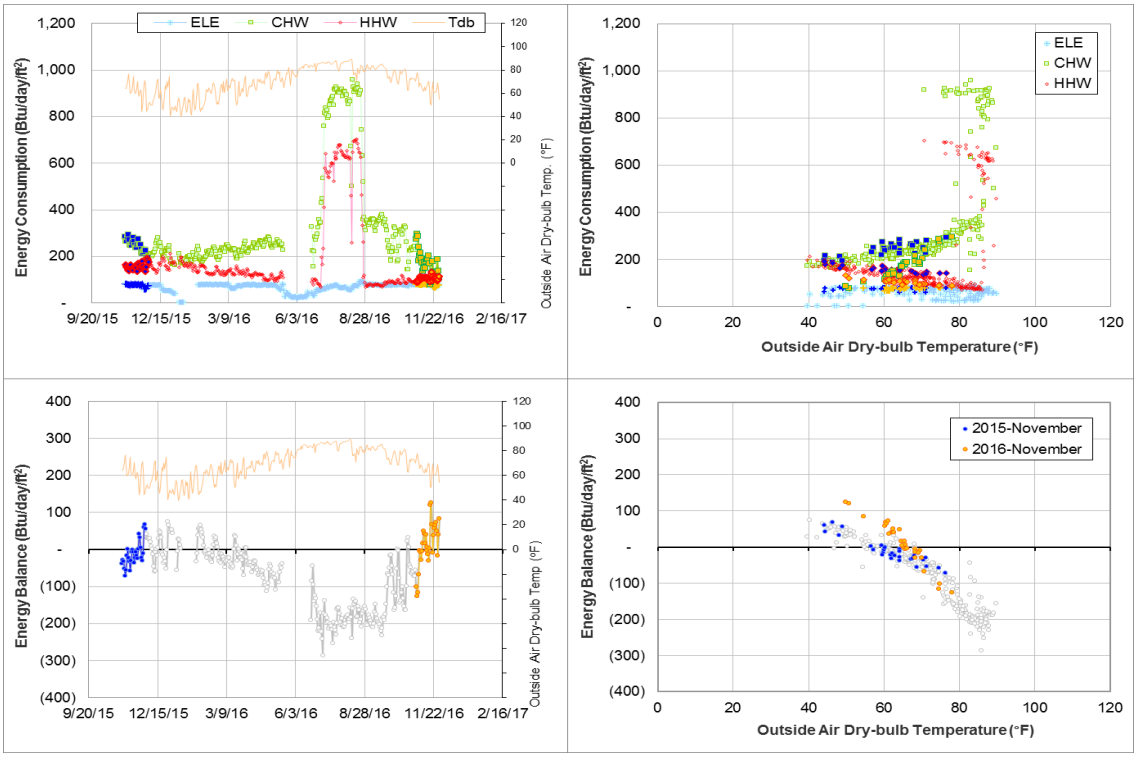
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW/HHW	The consumption level decreased.	8/25/2016 – Ongoing

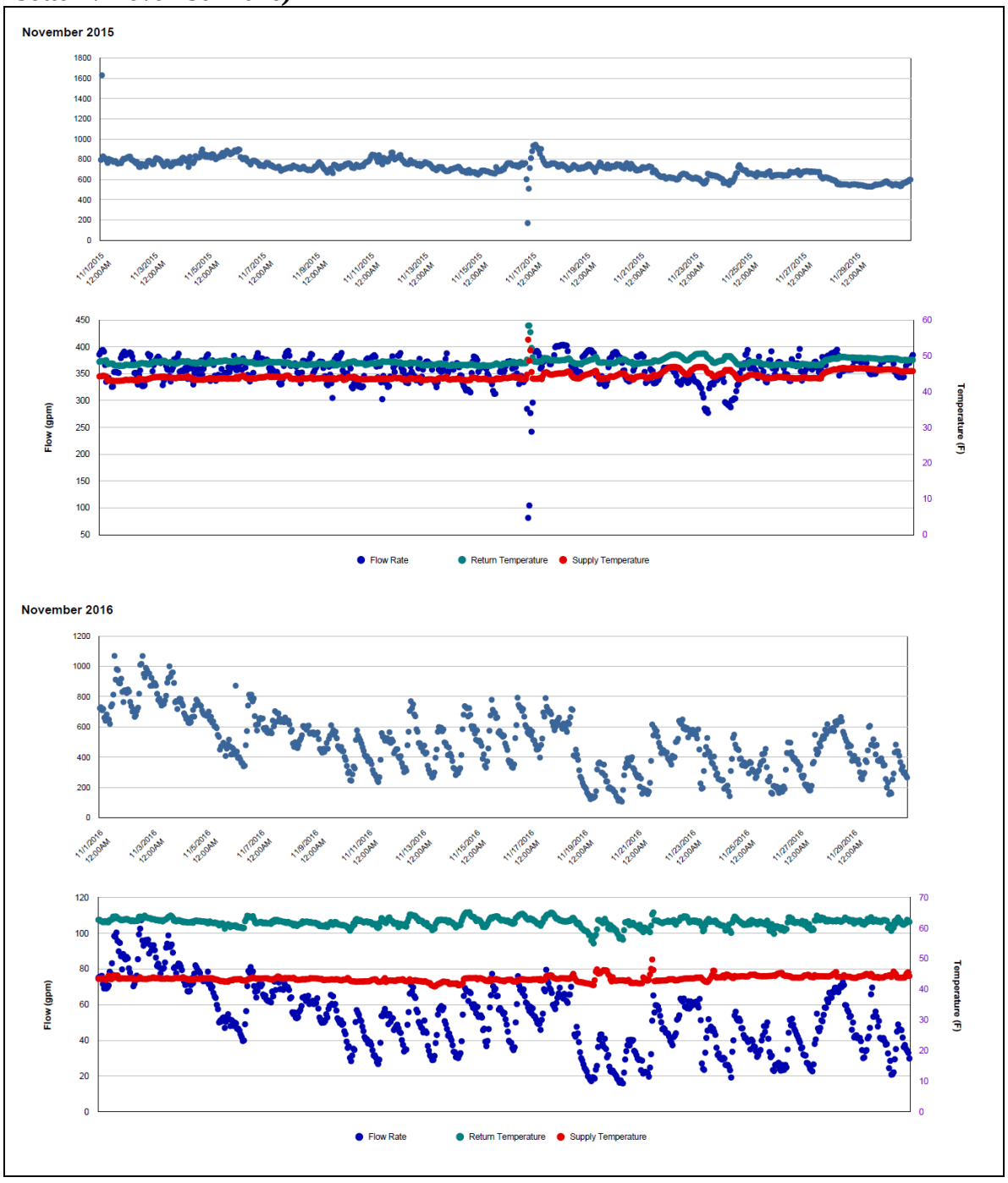
Comments

Since the HVAC system renovation in this summer the CHW and HHW consumption has decreased after 8/25/2016, especially in the low temperature range. The cross-point temperature of energy balance shifted to more reasonable range. (From ~60°F to ~68°F). More data is needed to verify the new pattern.

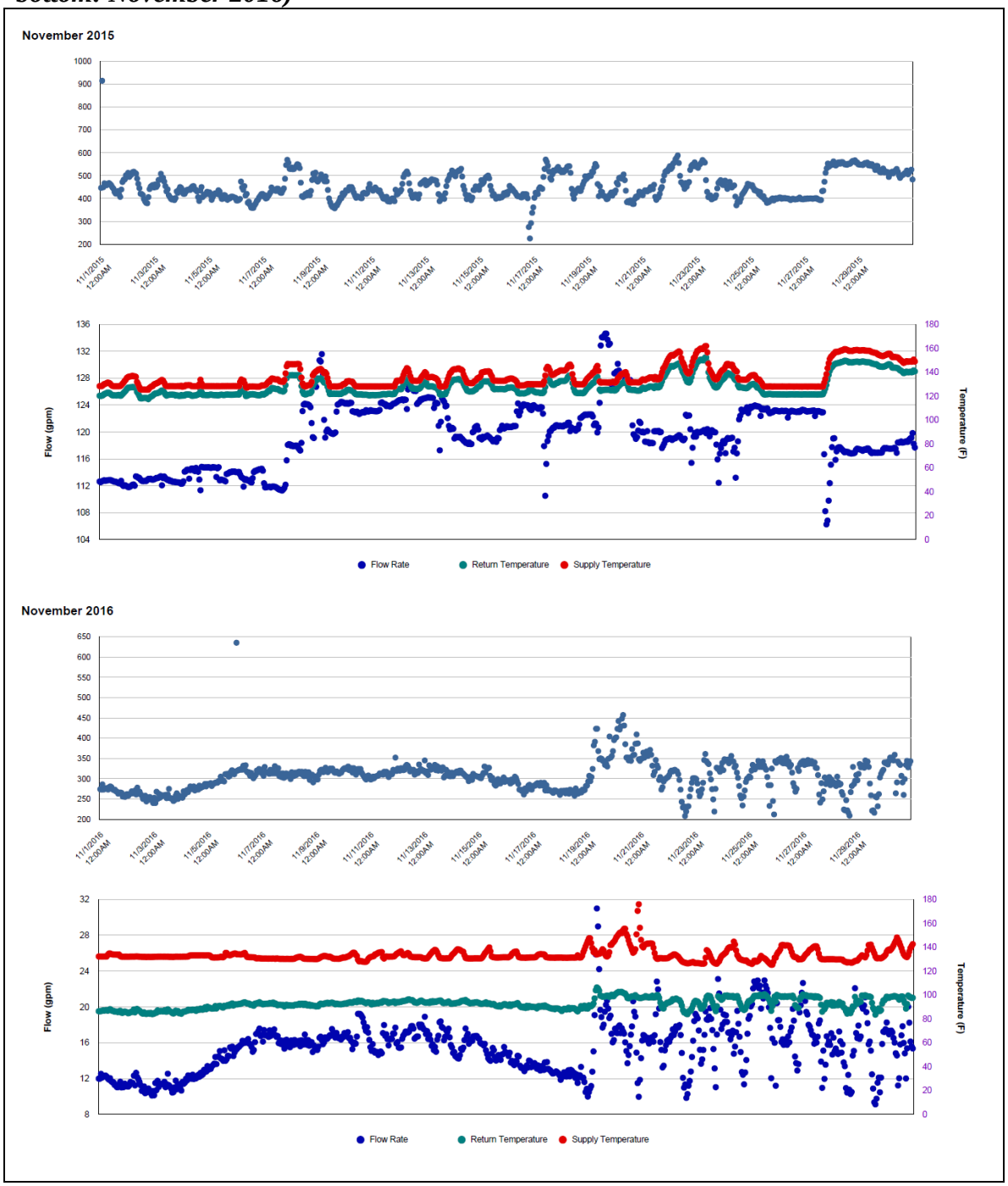
Explanatory Figure: 13 months energy balance plot with original data



Explanatory Figure: Time series plots of hourly CHW energy consumption, flow rate, and supply and return temperatures from the utilities office. (top: November 2015, bottom: November 2016)



Explanatory Figure: Time series plots of hourly HHW energy consumption, flow rate, and supply and return temperatures from the utilities office. (top: November 2015, bottom: November 2016)



McNew Laboratory (TAMU Bldg #740)

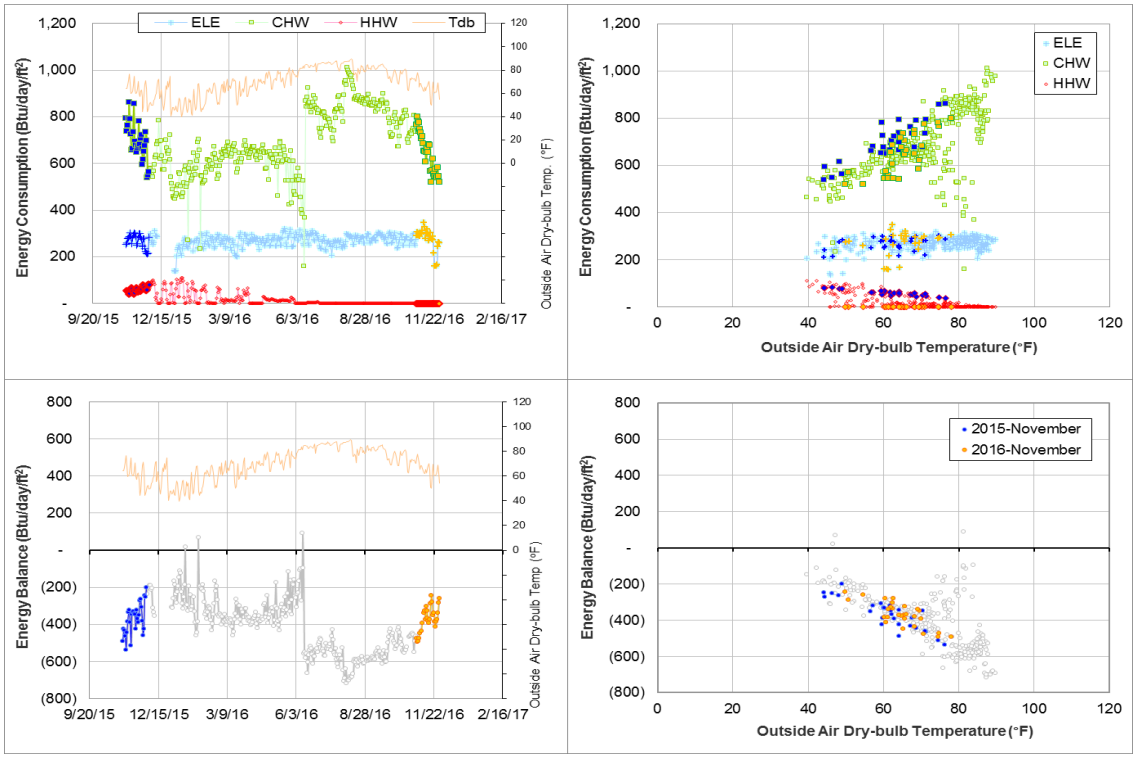
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
Energy Balance	The level was low.	For years

Comments

The energy balance level has consistently been low for years. More information is needed to help identify the reason causing the low energy balance for this building.

Explanatory Figure: 13 months energy balance plot with original data



Entomology Research Lab (TAMU Bldg #815)

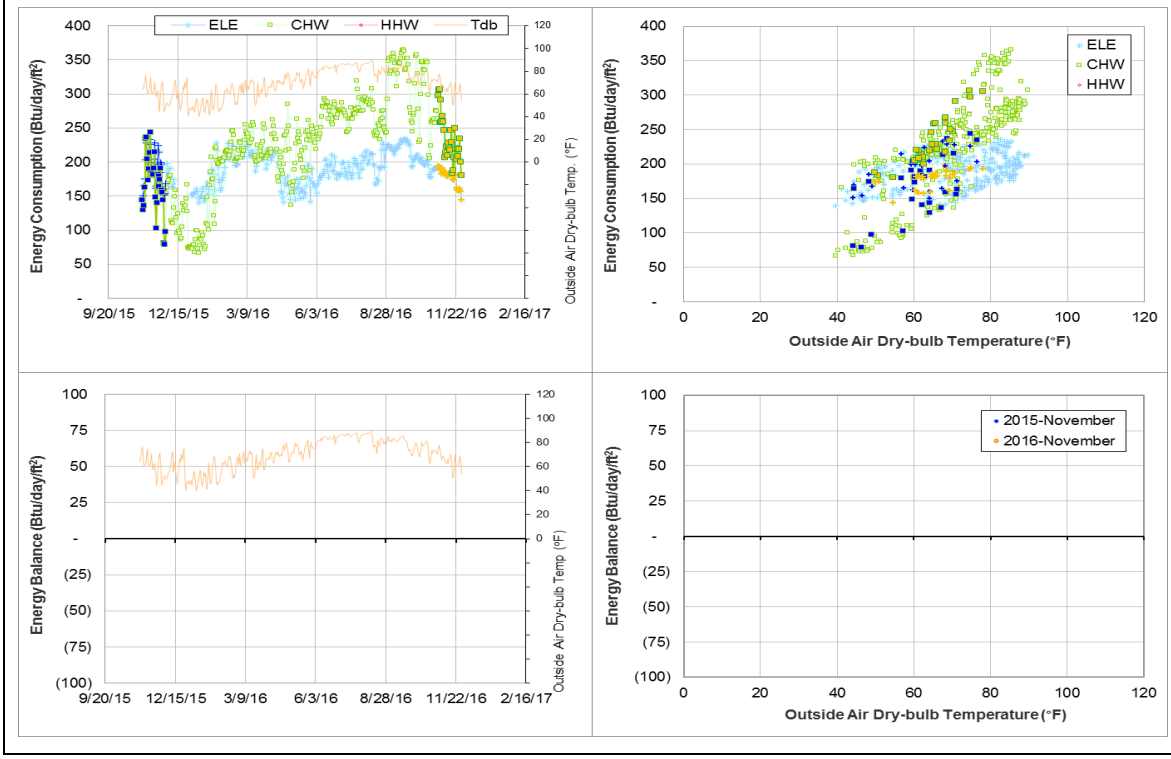
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	Change in energy consumption pattern	9/1/2016 – Ongoing

Comments

Starting the month of September 2016, the CHW energy consumption pattern appears to becoming more steep. Higher consumption levels are being reach at lower temperatures compared to previous months. Since there is no HHW for this building, an energy balance chart cannot be created to check the change in CHW with the overall building balance.

Explanatory Figure: 13 months energy balance plot with original data



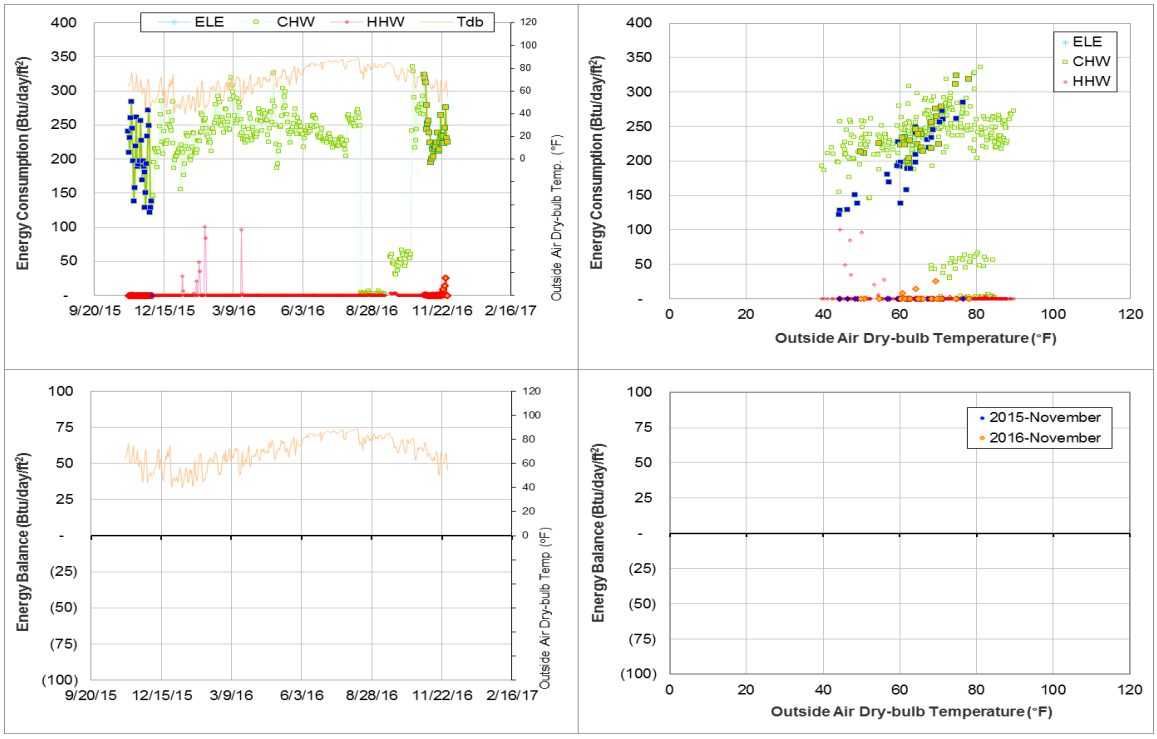
TVMC-Small Animal Building (TAMU Bldg# 880)

Data Type	Description of data behaviors	Period
HHW	The daily consumption is zero or nearly zero for the majority of the days during the year.	Since the data became available in October 2008

Comments

The daily HHW consumption pattern is zero or nearly zero for the majority of the days for years. Because the HHW consumption level appears unstable since the data became available, a valid consumption model for this meter has not been created.

Explanatory Figure: 13 months energy balance plot with original data



Veterinary Medicine Administration (TAMU Bldg# 1026)

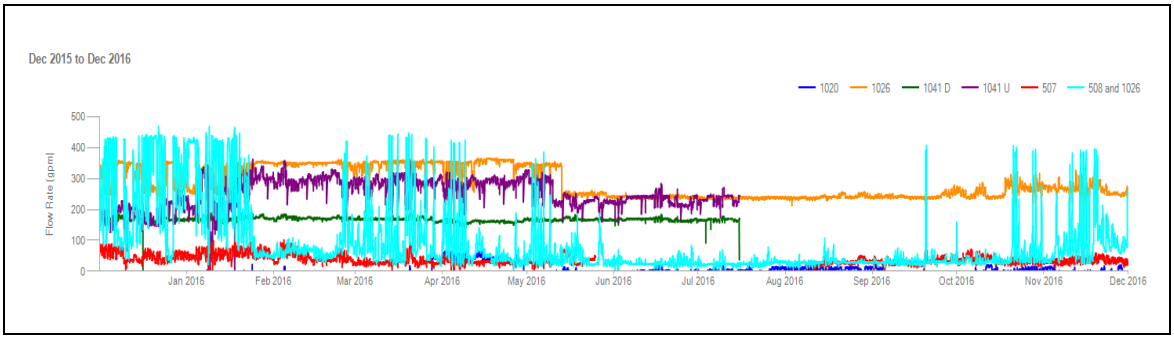
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW 006053	The sub-meter's (006053) flow rate for one building sometimes is higher than the total meter (004170) for two buildings.	For several years

Comments

The HHW meter ID 006053 is a sub-meter of the meter ID 004170 which meters the total energy use in the buildings #508 and 1026. It is questionable that the flow rate of the sub-meter exceeds the flow rate of the main meter. We would like to know the HHW distribution route for the two buildings and the locations of the sensors.

Explanatory Figure: Time series of hourly HHW flow rates for Veterinary Medicine Administration (Bldg #1026) and neighboring buildings during 12/1/2015–12/1/2016. The combined HHW metered for Bldg #1026 and #508 (light blue) is lower than the standalone HHW meter for only Bldg #1026 (dark blue).



Physical Plant Administration & Shops (TAMU Bldg# 1156)

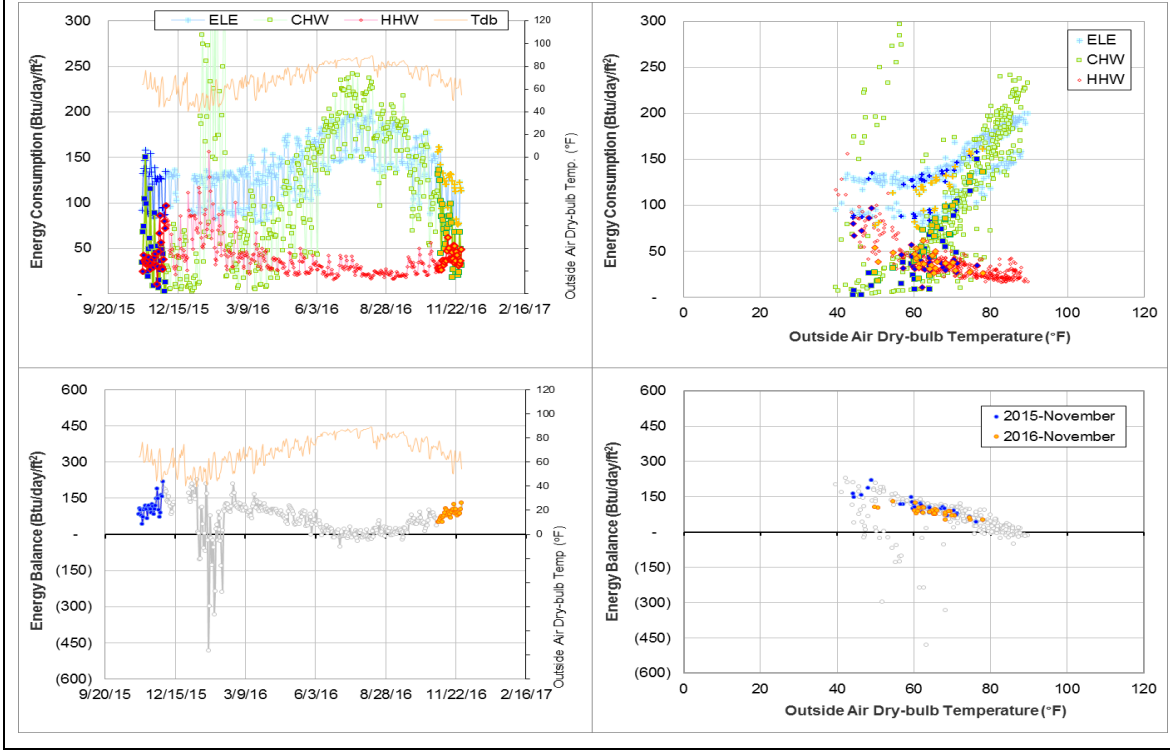
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
Energy Balance	The cross-point temperature is high, ~85°F.	7/1/2014-ongoing
CHW	The consumption level might be low compared to the ELE and HHW use level.	Since the data became available on 7/1/2012.

Comments

The electricity is not available until 7/1/2014. CHW consumption level might be low compared to the ELE and HHW use level. But the CHW consumption level has been stable since the data became available on 7/1/2012. More information might be needed to help identify which type energy causes the high cross-point temperature.

Explanatory Figure: 13 months energy balance plot with original data



Veterinary Research Building (TAMU Bldg# 1197)

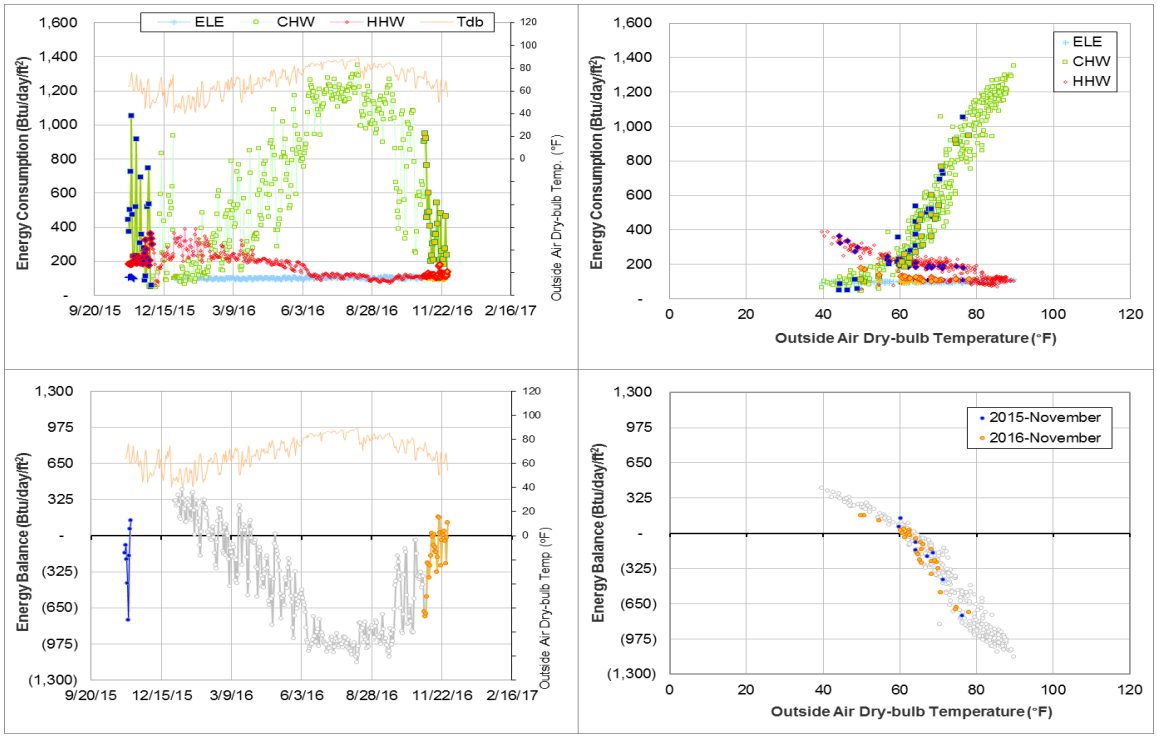
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE	The consumption is low for a laboratory building.	Since January 2010 when the meter was added to this report

Comments

The whole building hourly electricity use is in the range 130 kWh to 180 kWh (1.13 W/ft^2 to 1.57 W/ft^2), which is low for a veterinary laboratory building on the campus. This seems to be the reason for the low level of the energy balance load. The temperature-axis intercept of the energy balance is around 62°F.

Explanatory Figure: 13 months energy balance plot with original data



Reynolds Medical Sciences Building (TAMU Bldg# 1504)

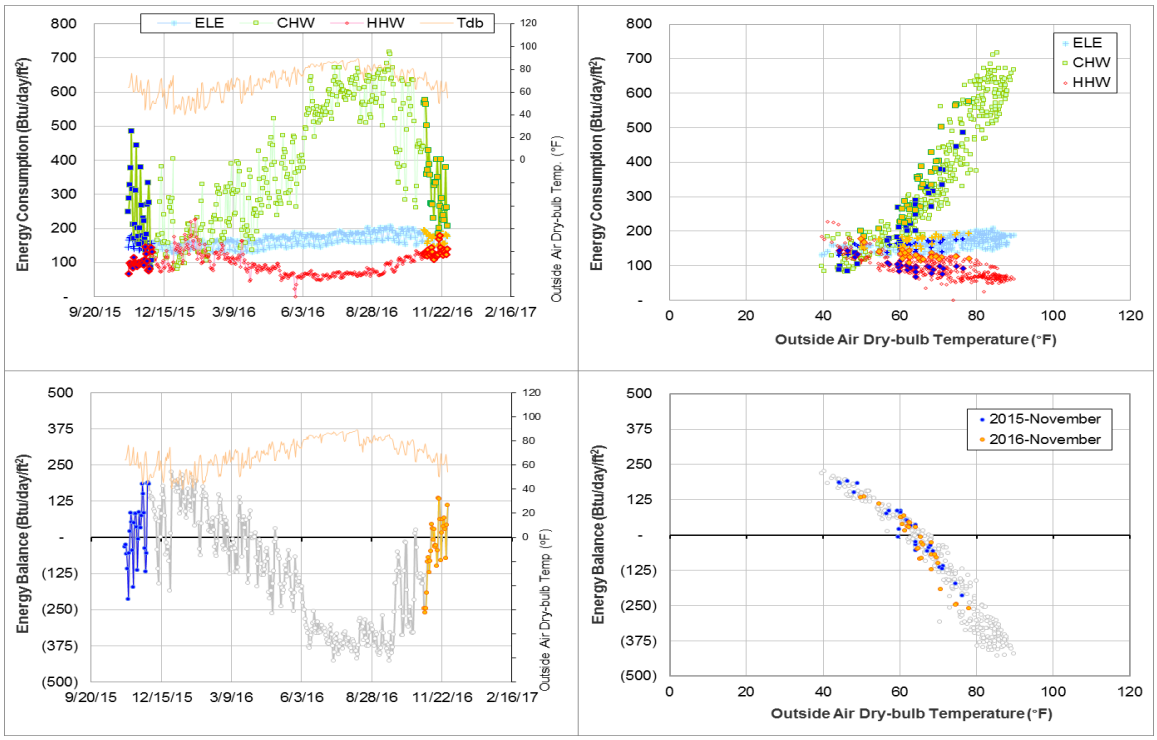
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	Slight increase in energy consumption pattern.	September 2016 – Ongoing
HHW	Increase in energy consumption pattern	September 2016 – Ongoing

Comments

The HHW energy consumption pattern has increased by approximately 40 Btu/day/ft^2 starting in September 2016. Around the same time the CHW and ELE energy consumption also shows a slight increase. Even though the energy consumption has increased, the energy balance for the building is still within the range of the previous months.

Explanatory Figure: 13 months energy balance plot with original data



Cox-McFerrin Center for Aggie Basketball (TAMU Bldg# 1558)

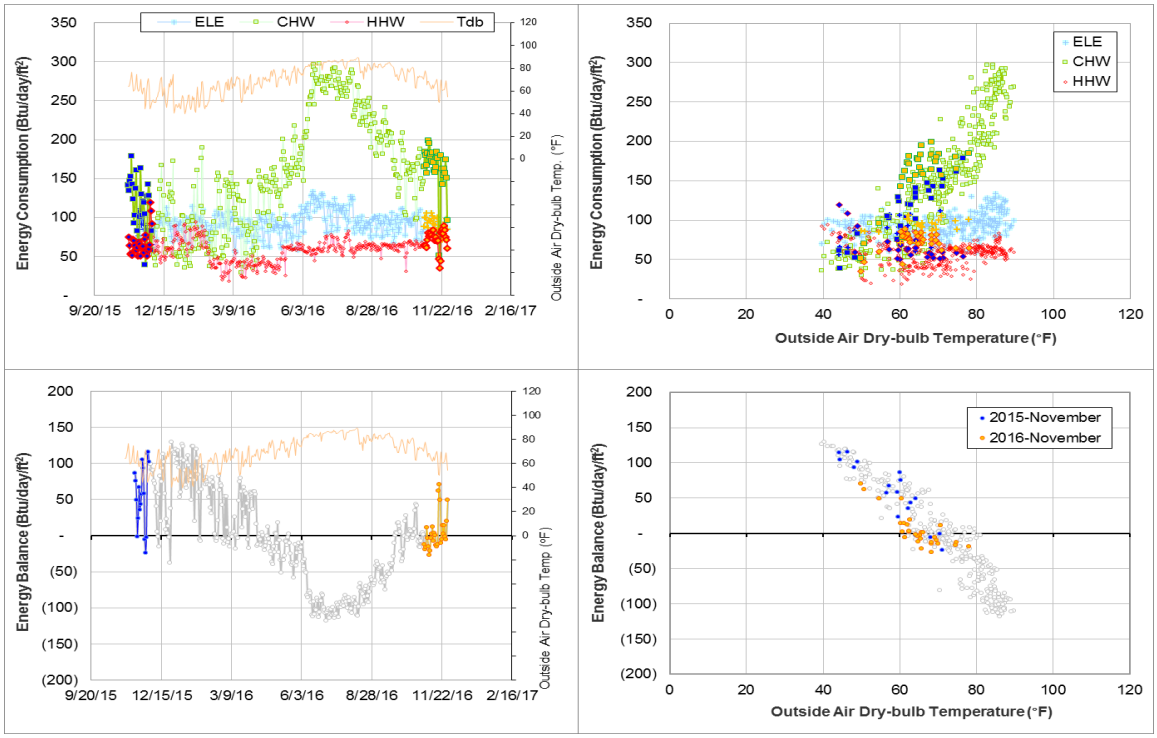
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	Increase in energy consumption pattern	11/5/2016 – Ongoing
HHW	Increase in energy consumption pattern	11/5/2016 – Ongoing

Comments

The CHW and HHW energy consumption patterns appear to be shifting to a higher level. The CHW consumption is showing an increase in warmer temperatures by about 40 Btu/day/ft^2, and the HHW consumption is showing an increase of 10 – 15 Btu/day/ft^2.

Explanatory Figure: 13 months energy balance plot with original data



Student Recreation Center (TAMU Bldg# 1560)

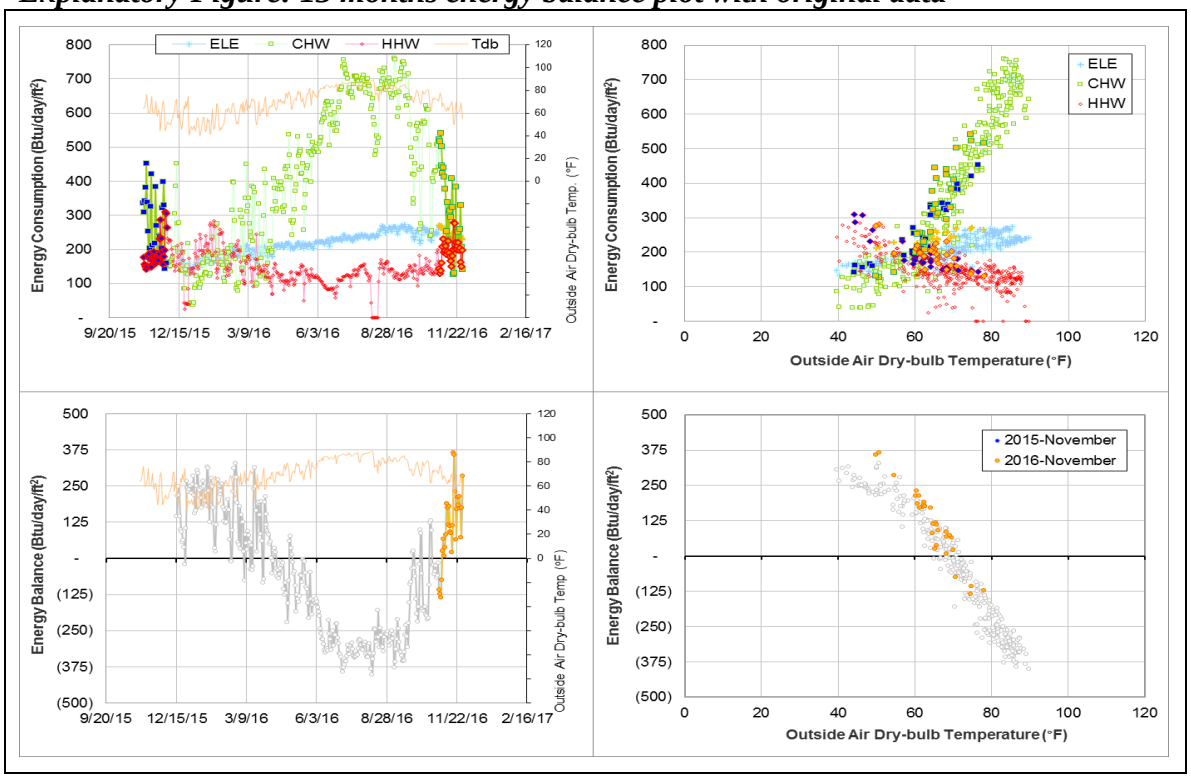
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE, CHW, HHW	Increase in energy consumption pattern	11/5/2016 – Ongoing
Energy Balance	Change in pattern slope for cooler temperatures	11/5/2016 – Ongoing

Comments

The consumption patterns for ELE, CHW, and HHW are showing a slight increase. The energy balance pattern is also showing an increase in energy in the lower temperature range.

Explanatory Figure: 13 months energy balance plot with original data



International Ocean Discovery Building (TAMU Bldg# 1601)

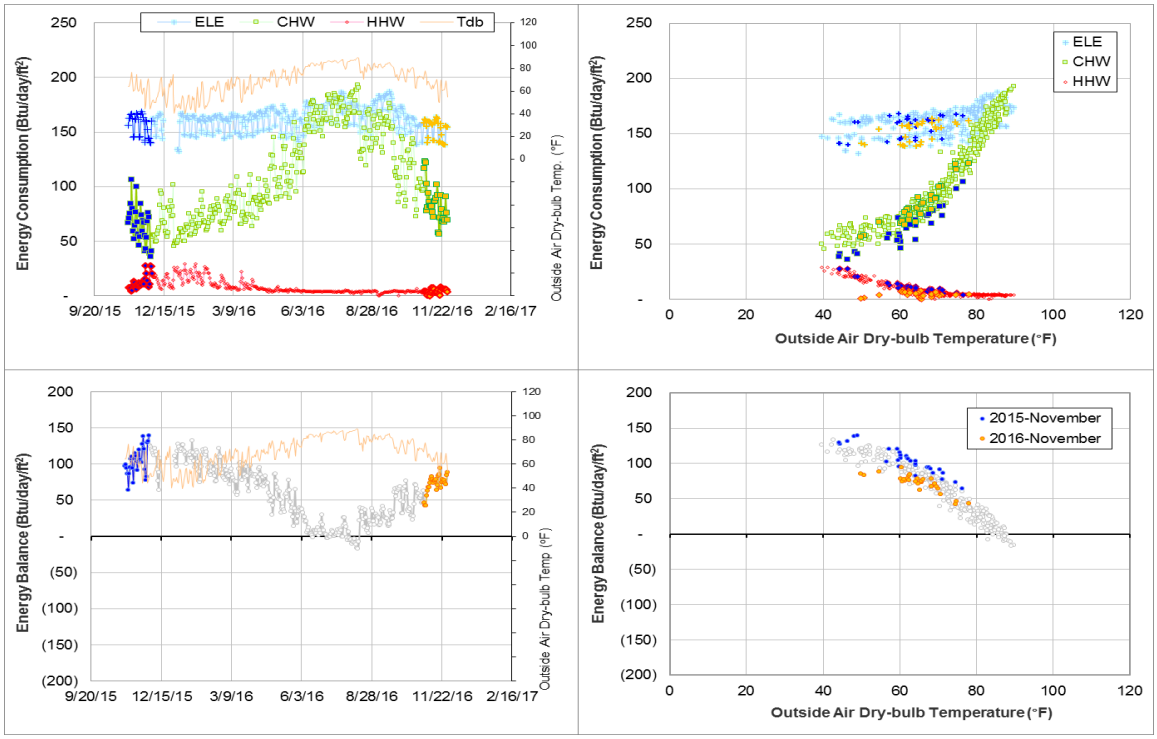
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
Energy Balance	The cross-point is high, around 85°F.	Since data became available in Feb 2015

Comments

The cross-point temperature is high for this building, around 85°F. The daily CHW consumption for last year is 40 – 200 Btu/day/ft^2. The CHW consumption level is low compared to ELE and HHW levels. This building might have its chillers.

Explanatory Figure: 13 months energy balance plot with original data



Offshore Technology Research Center (TAMU Bldg# 1604)

Detected issues in the energy balance and/or the consumption data

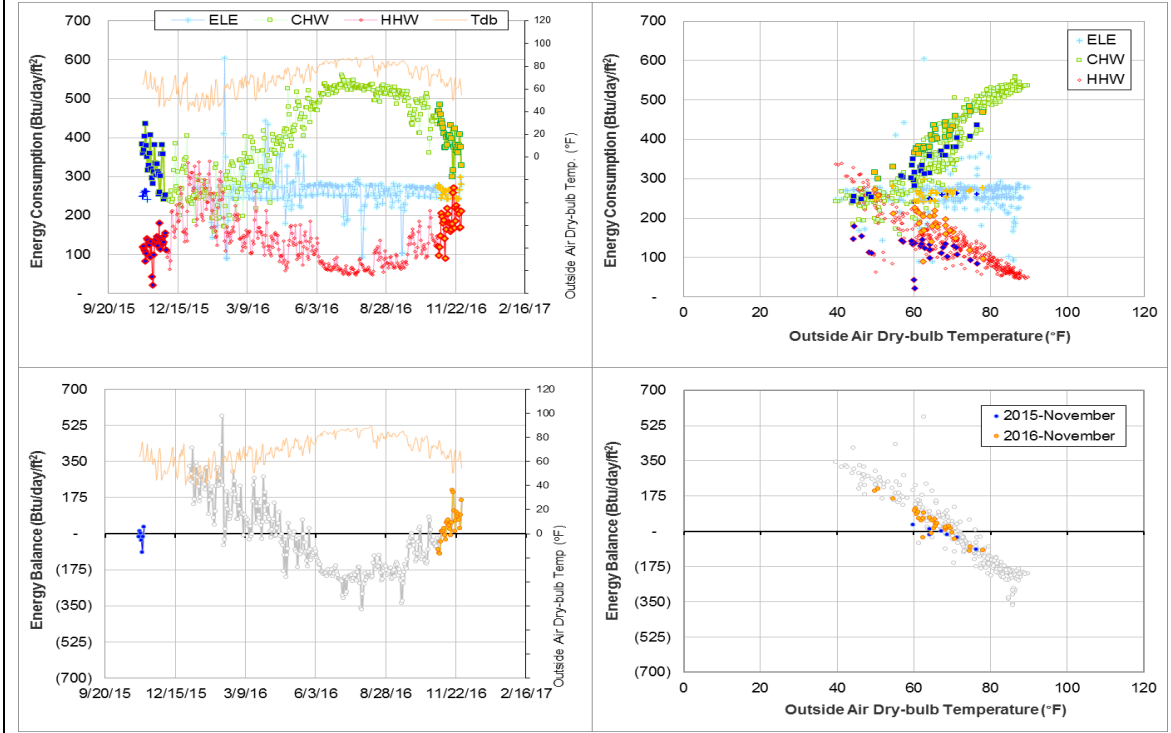
Data Type	Description of data behaviors	Period
CHW and HHW	The consumption level is higher than that of last year.	5/1/2016-ongoing
ELE (006660)	The daily consumption was recorded as zero for the majority of the days.	Since data became available in February 2015

Comments

There are two ELE meters (006659 and 006660). The daily consumption for MeterID 006660 was recorded as zero for the majority of the days since data became available in February 2015. The daily consumption for several days in recent several months varied largely and caused scattering energy balance.

Both CHW and HHW consumption level is higher than that of last year in this month. It appears that new consumption patterns are developing and at a slightly higher level.

Explanatory Figure: 13 months energy balance plot with original data



III. Time Series Plots for November 2016 Consumption

Figure III-1 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Emerging Technologies Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-2 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Liberal Arts and Arts & Humanities Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

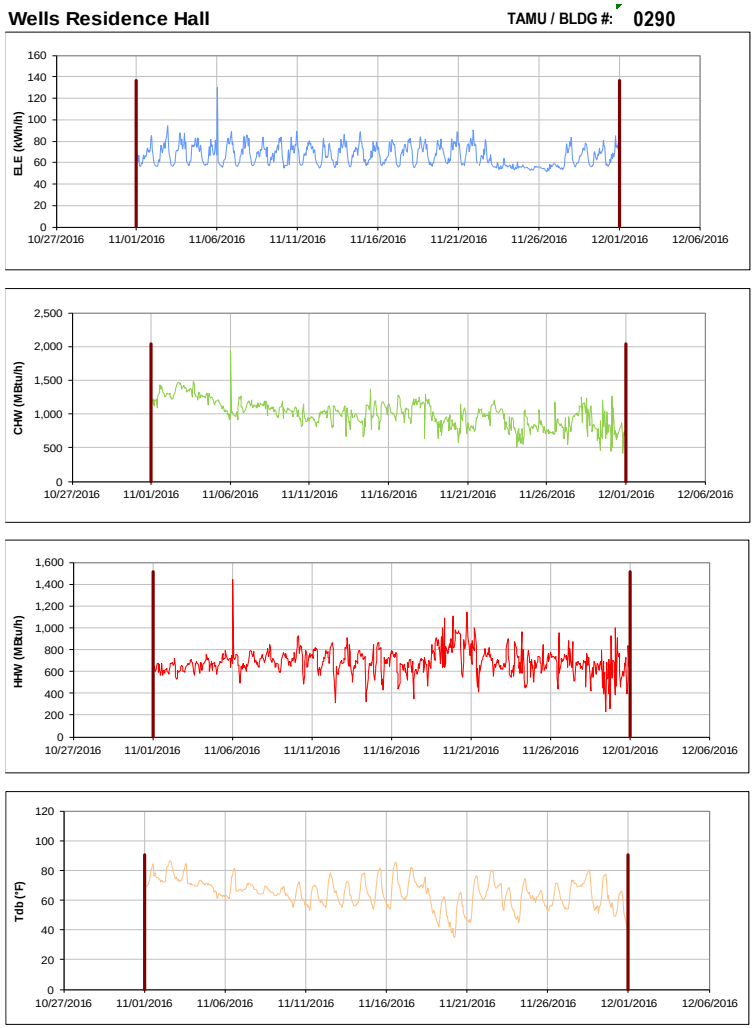


Figure III-3 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Wells Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

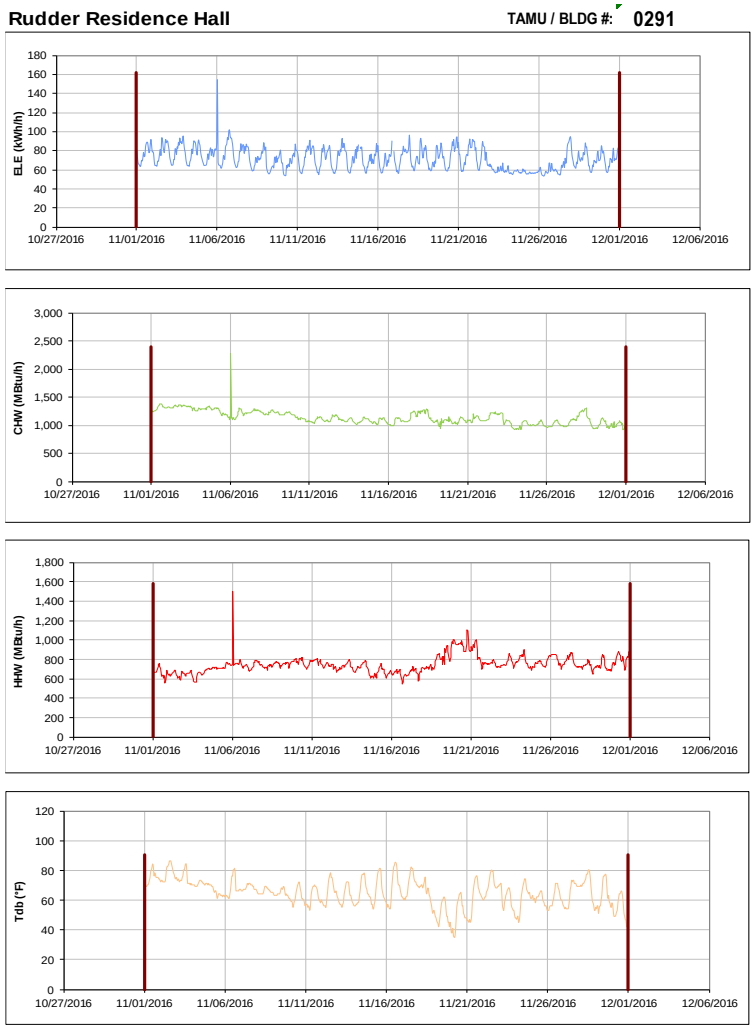


Figure III-4 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Rudder Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

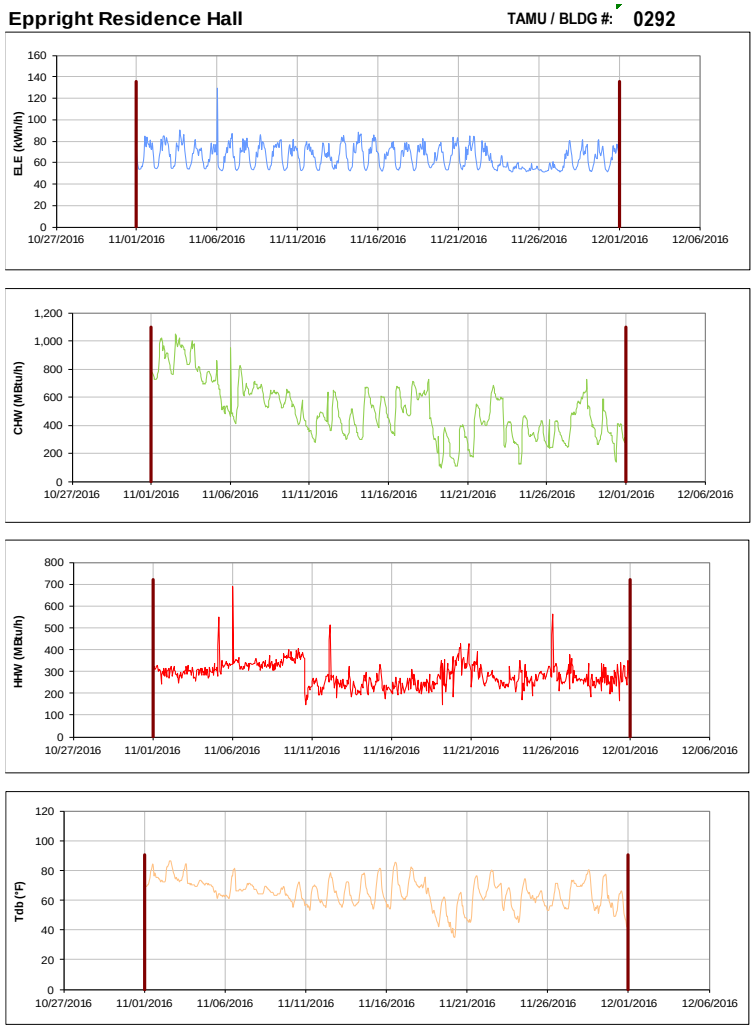


Figure III-5 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Eppright Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

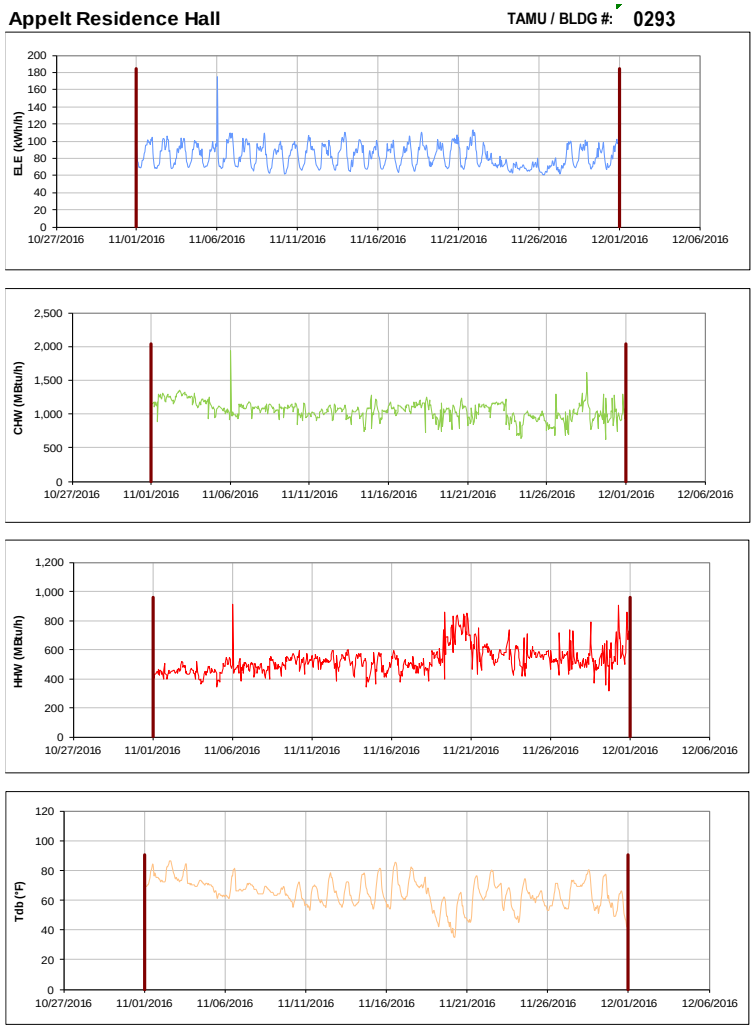


Figure III-6 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Appelt Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

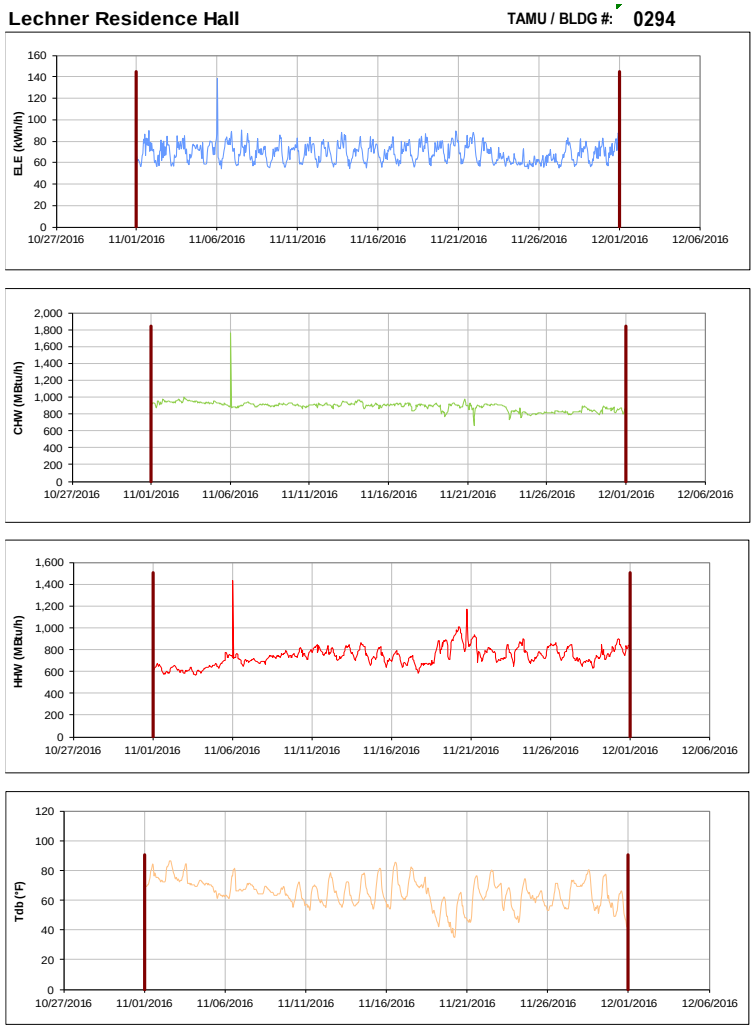


Figure III-7 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Lechner Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-8 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Mitchell Inst. for Fundamental Phys & Astronomy during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-9 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for CE TTI Office & Lab Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-10 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Bright Aerospace Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

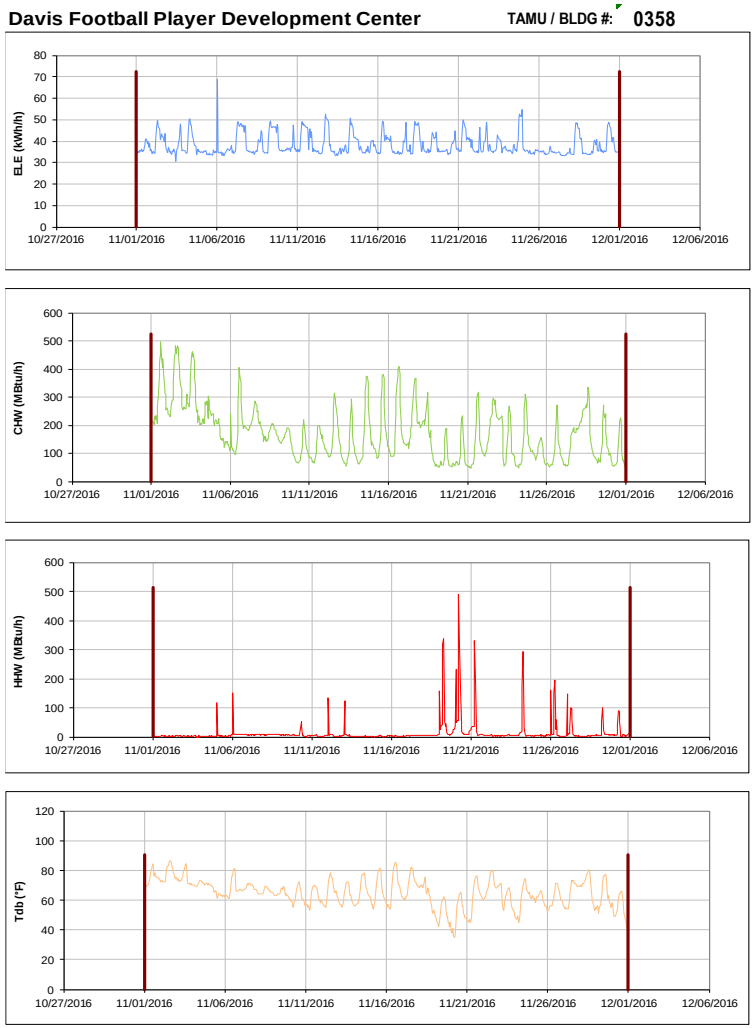


Figure III-11 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Davis Football Player Development Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

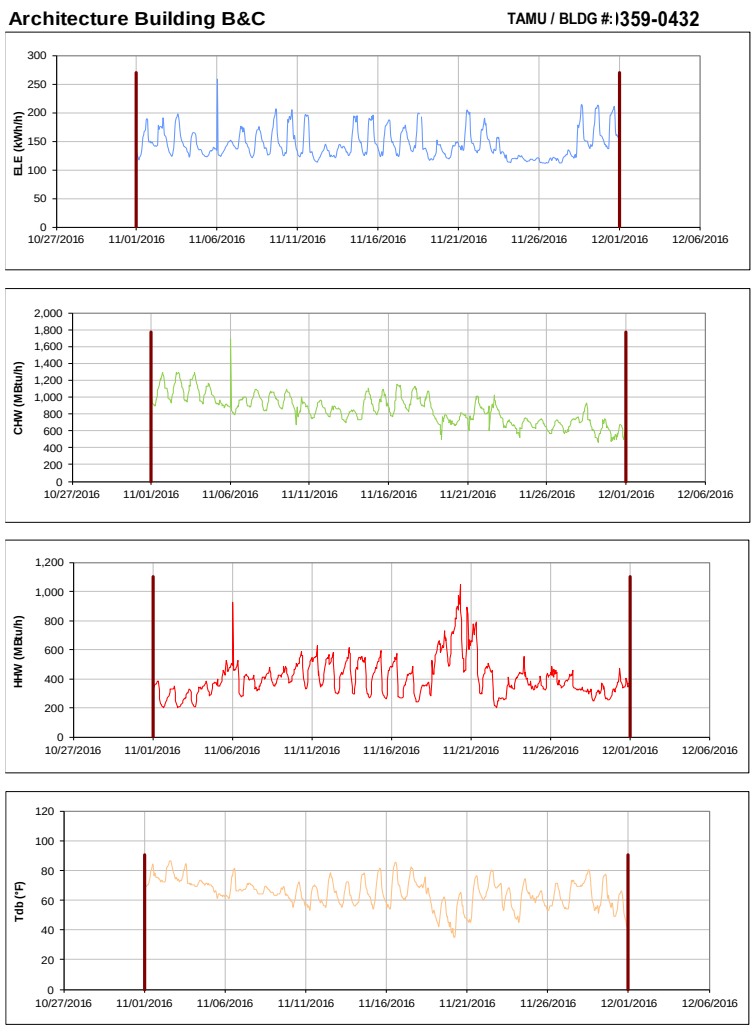


Figure III-12 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Architecture Building B&C during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

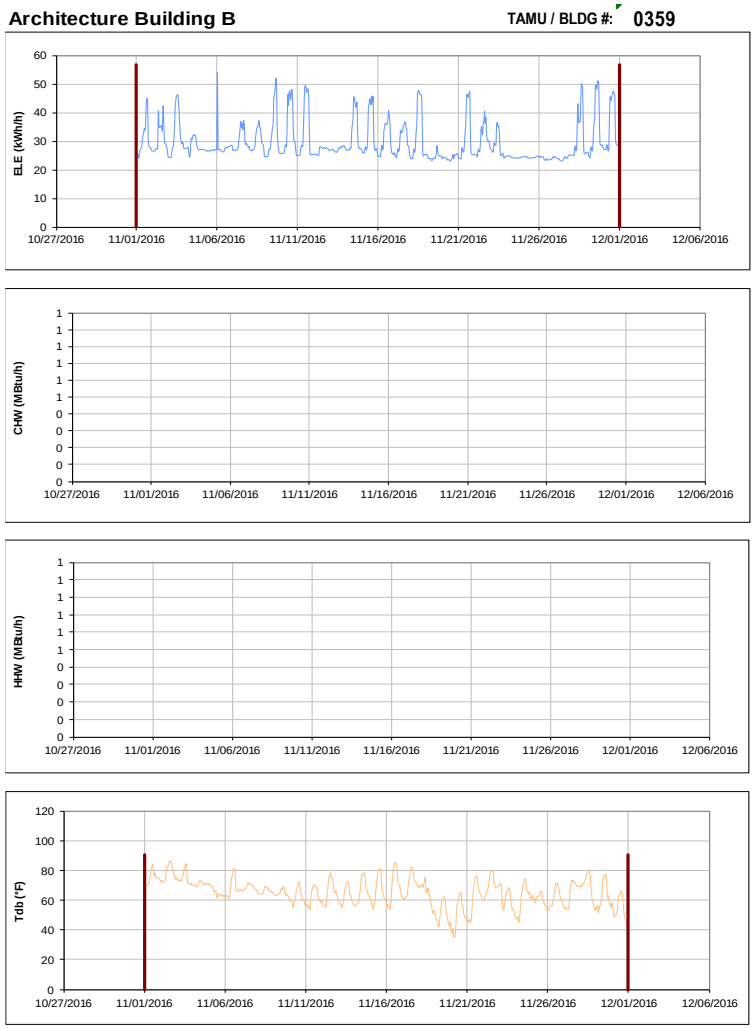


Figure III-13 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Architecture Building B during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

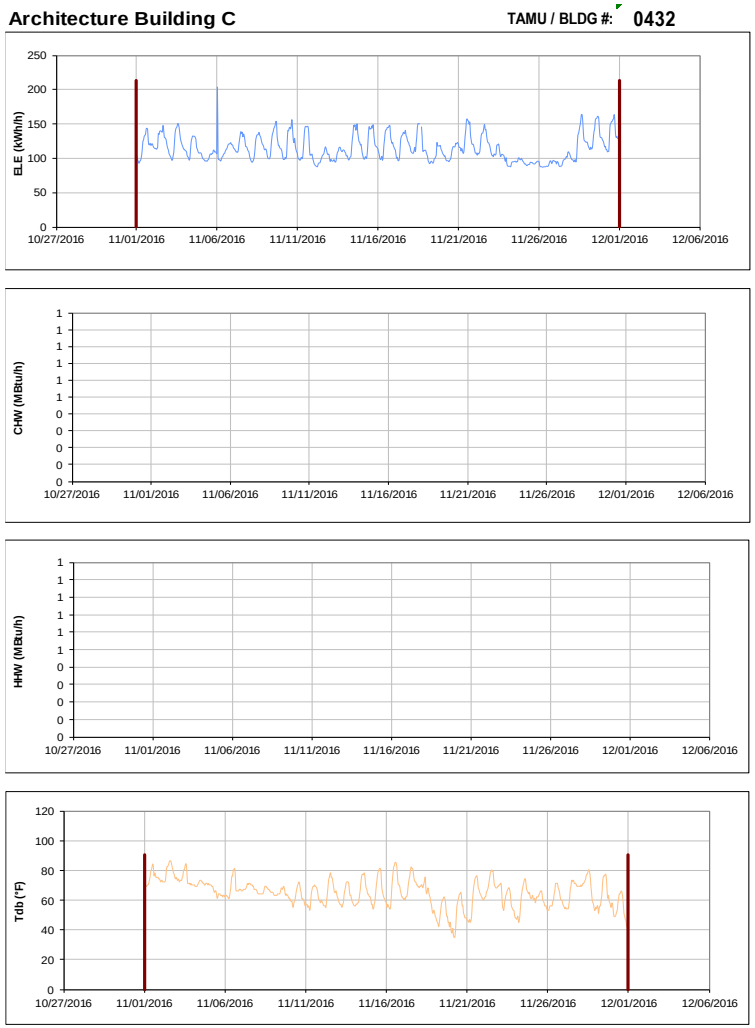


Figure III-14 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Architecture Building C during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-15 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Bright Football Complex during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

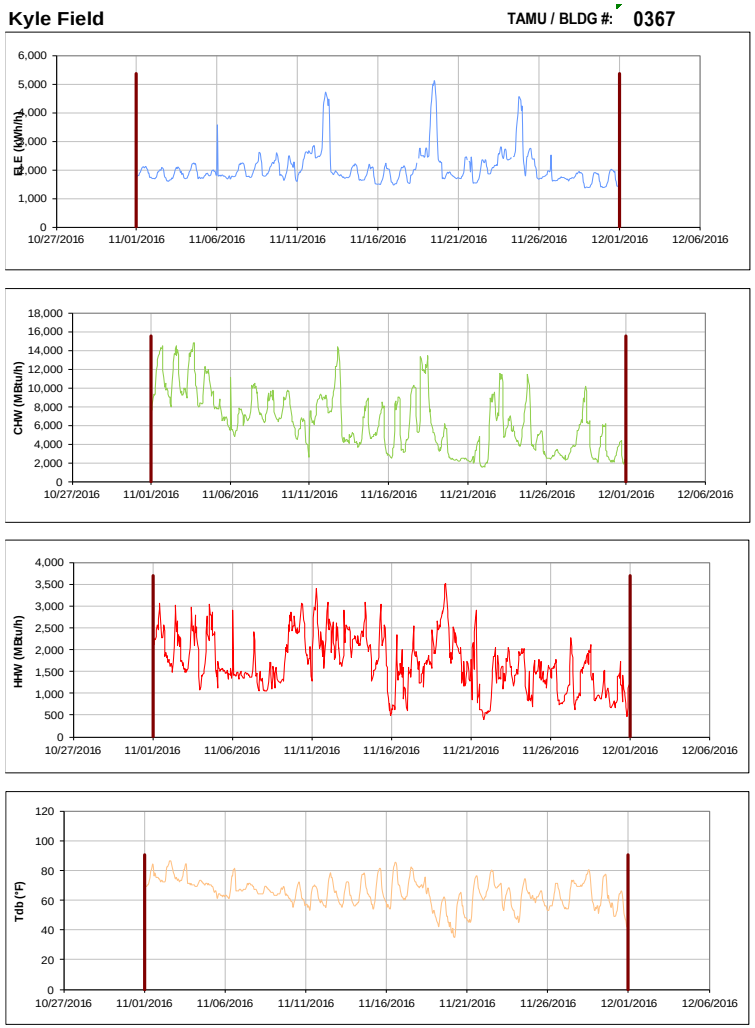


Figure III-16 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Kyle Field during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-17 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Chemistry Building Addition during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-18 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Koldus Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

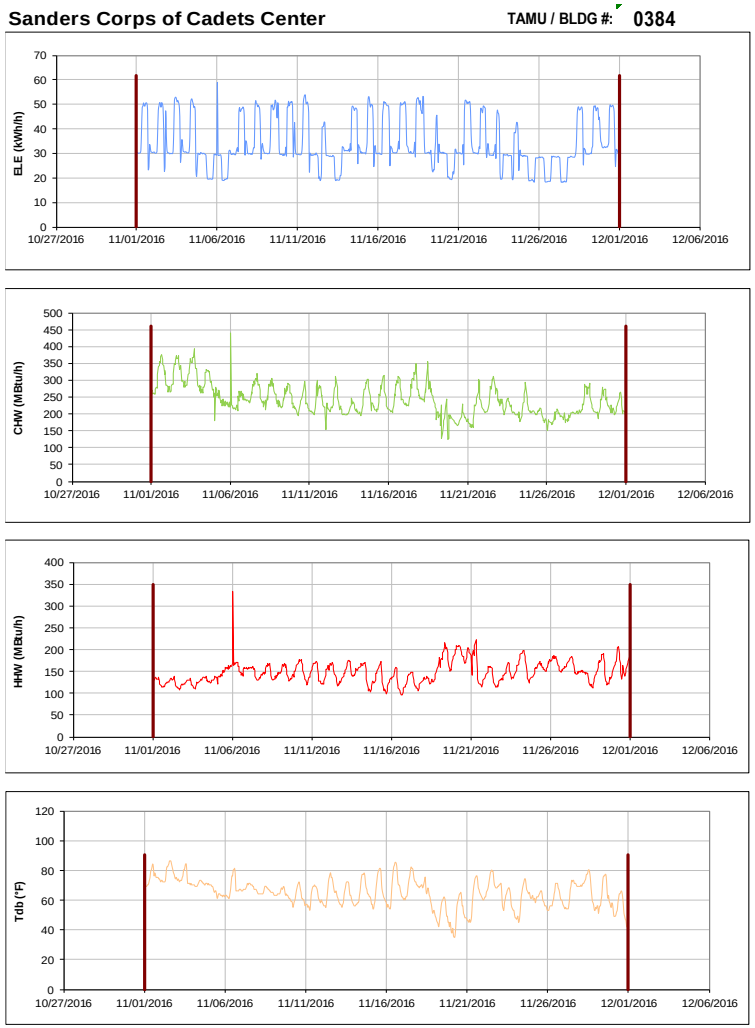


Figure III-19 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Sanders Corps of Cadets Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-20 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Jack E. Brown Chemical Engineering Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-21 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Richardson Petroleum Engineering Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-22 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for James J. Cain'51 and Mechanical Engineering Office Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station,

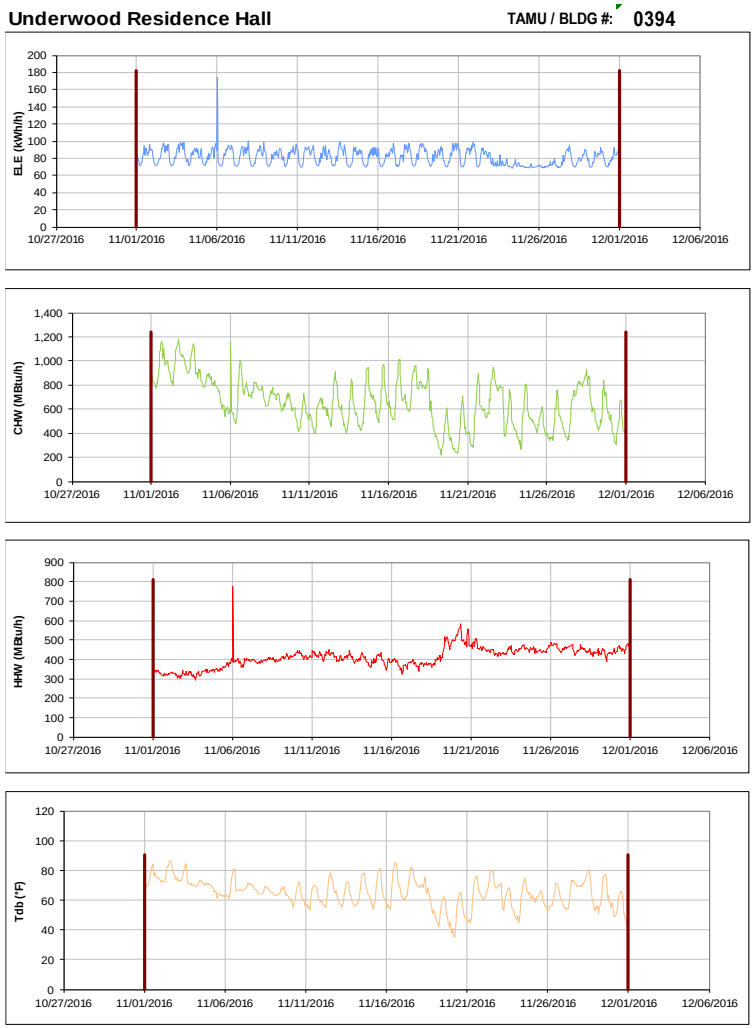


Figure III-23 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Underwood Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

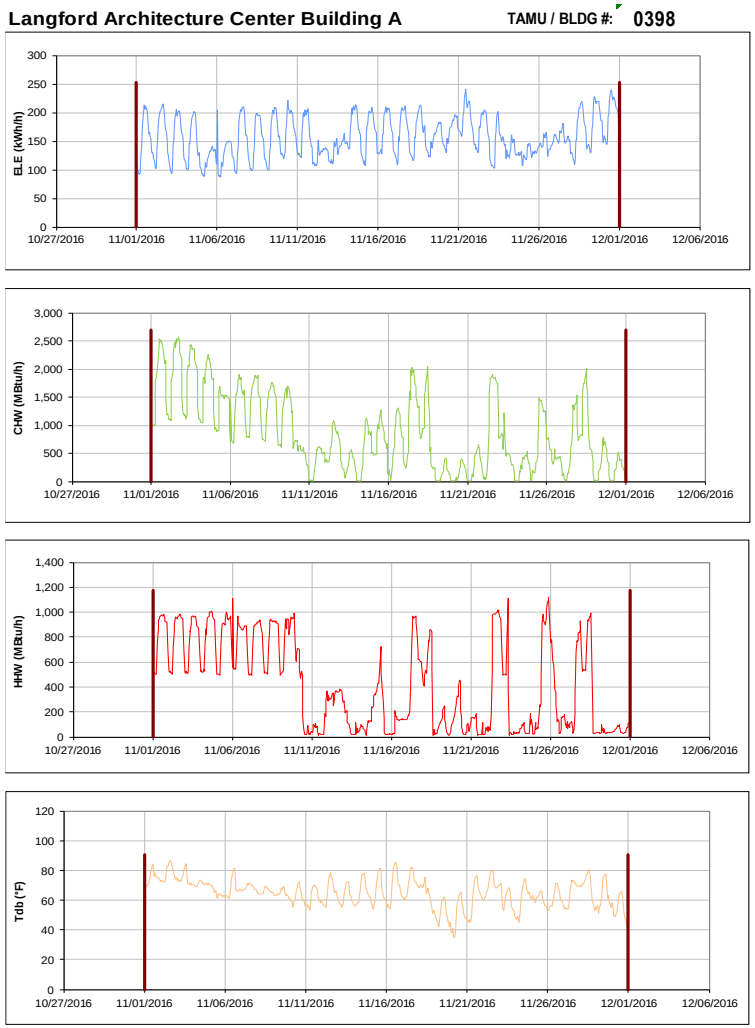


Figure III-24 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Langford Architecture Center Building A during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

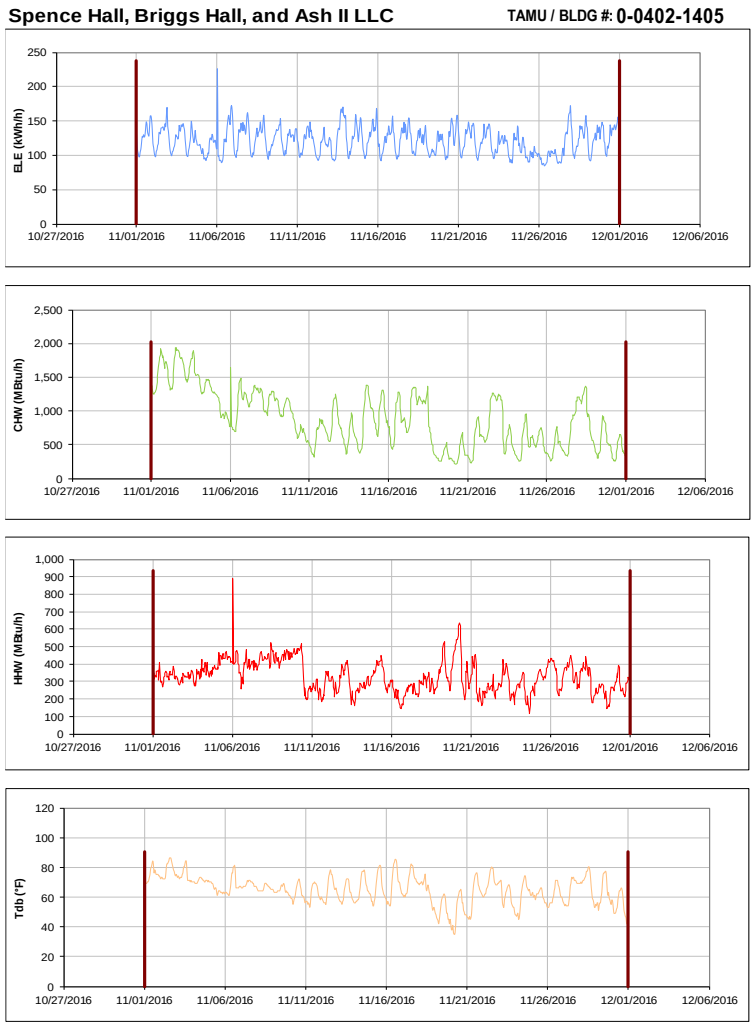


Figure III-25 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Spence Hall, Briggs Hall, and Ash II LLC during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

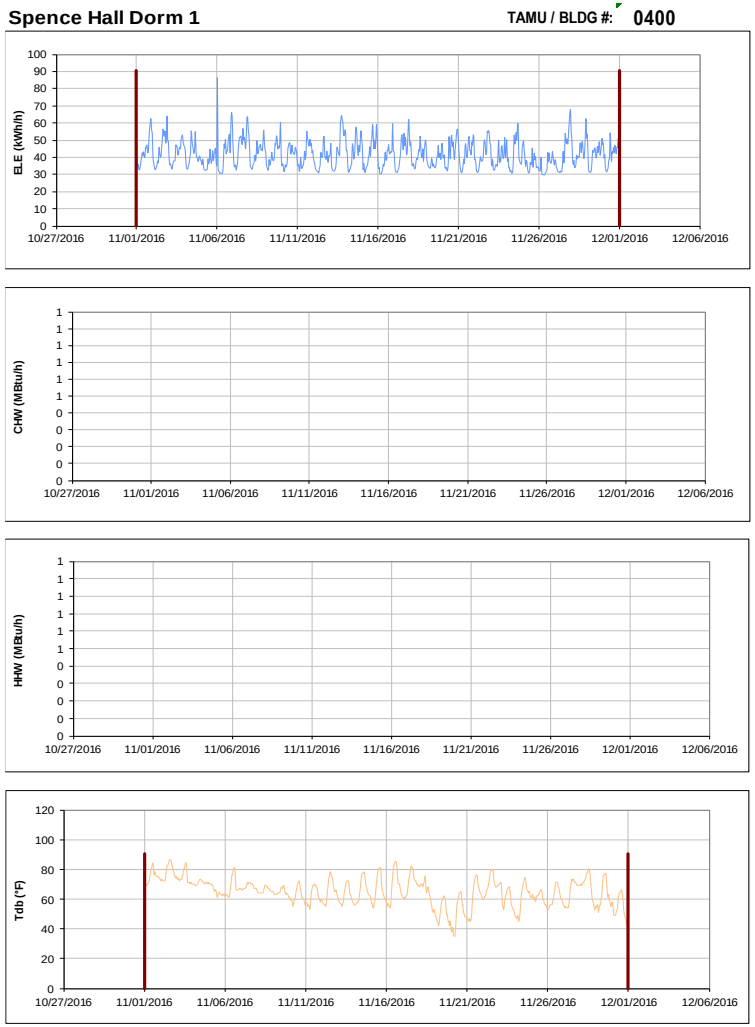


Figure III-26 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Spence Hall Dorm 1 during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

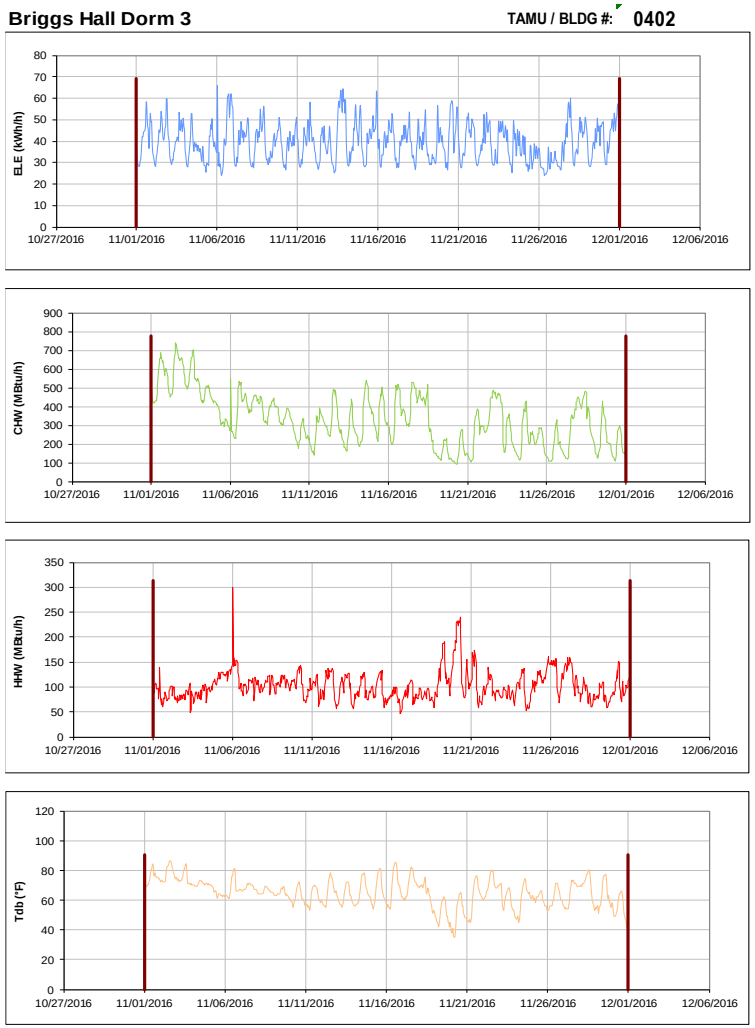


Figure III-27 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Briggs Hall Dorm 3 during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

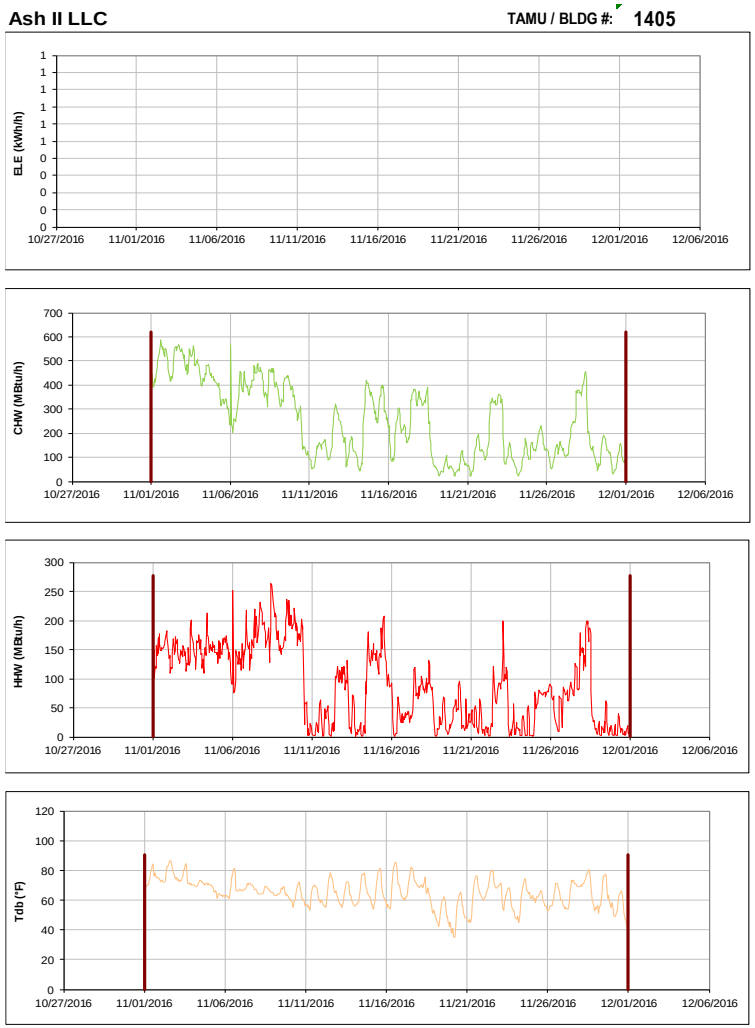


Figure III-28 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Ash II LLC during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

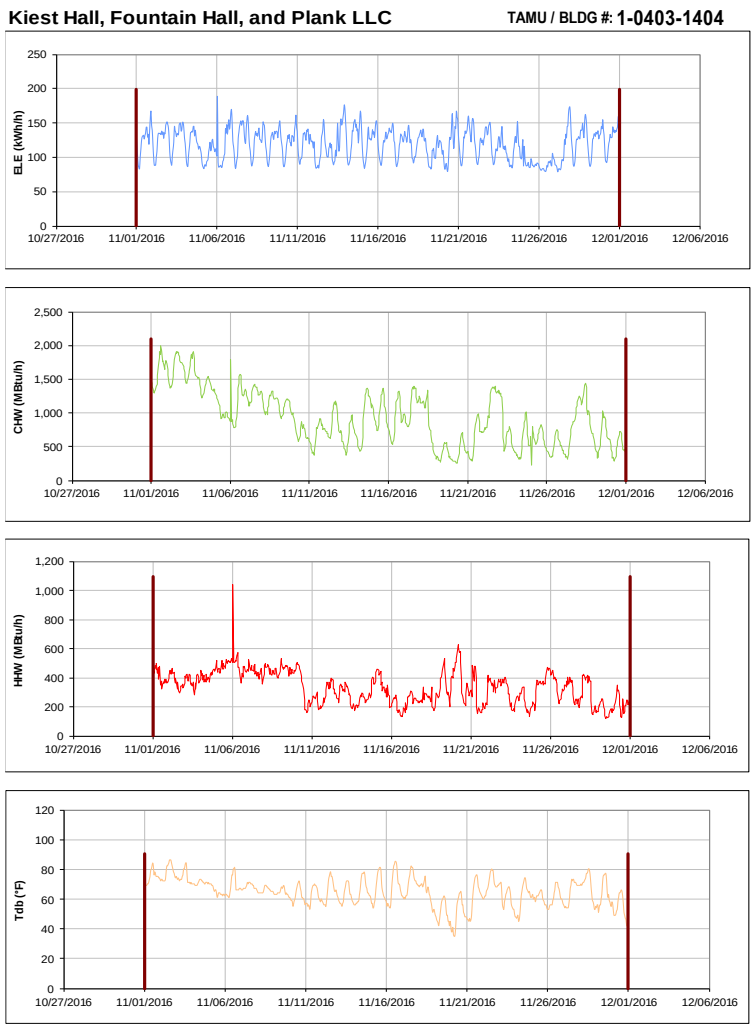


Figure III-29 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Kiest Hall, Fountain Hall, and Plank LLC during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

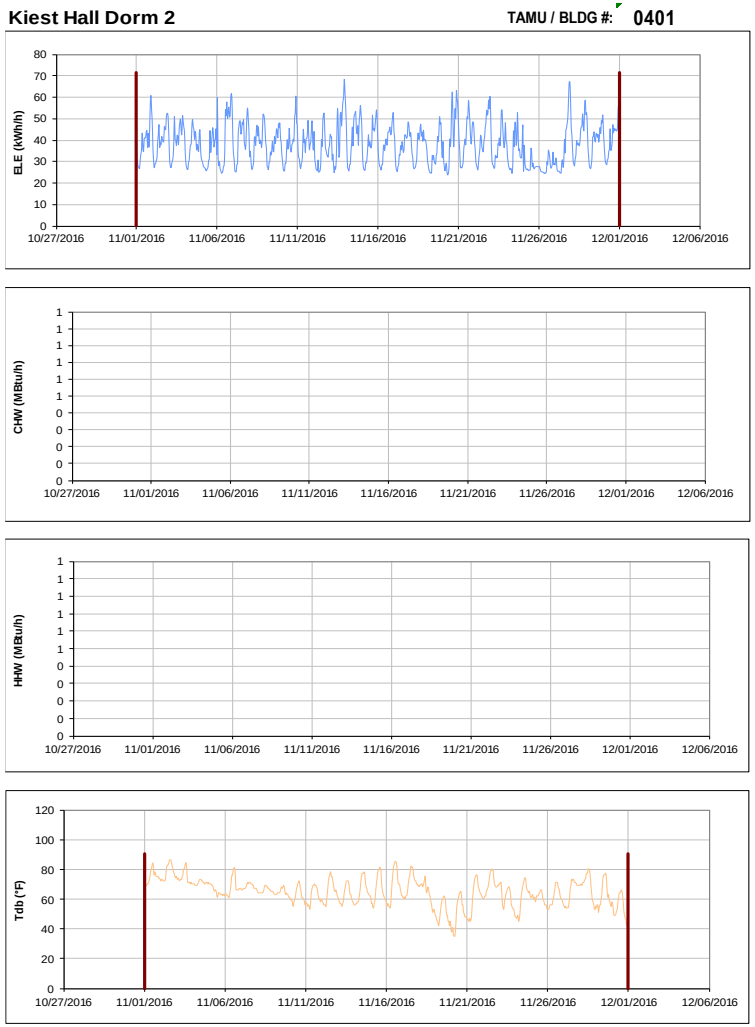


Figure III-30 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Kiest Hall Dorm 2 during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

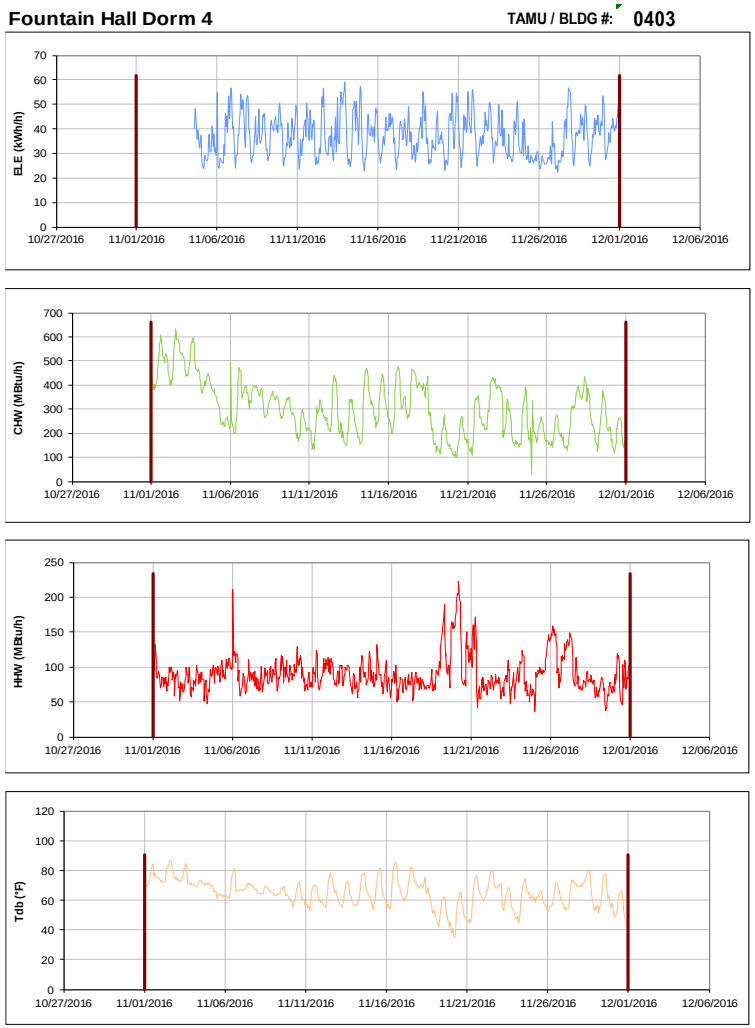


Figure III-31 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Fountain Hall Dorm 4 during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

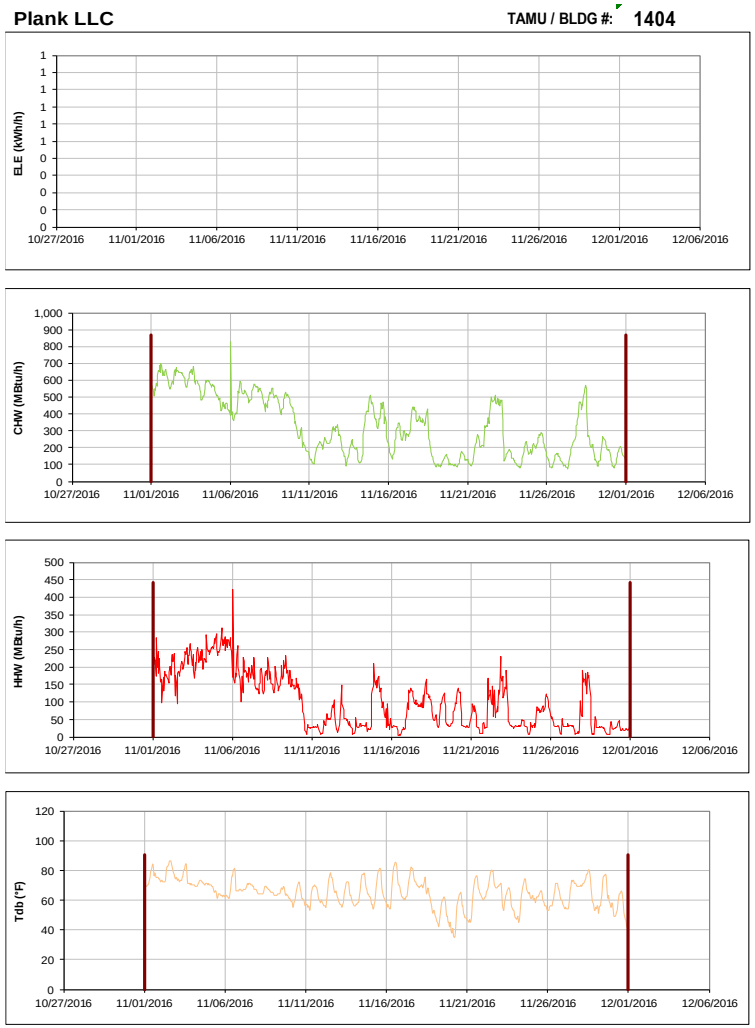


Figure III-32 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Plank LLC during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

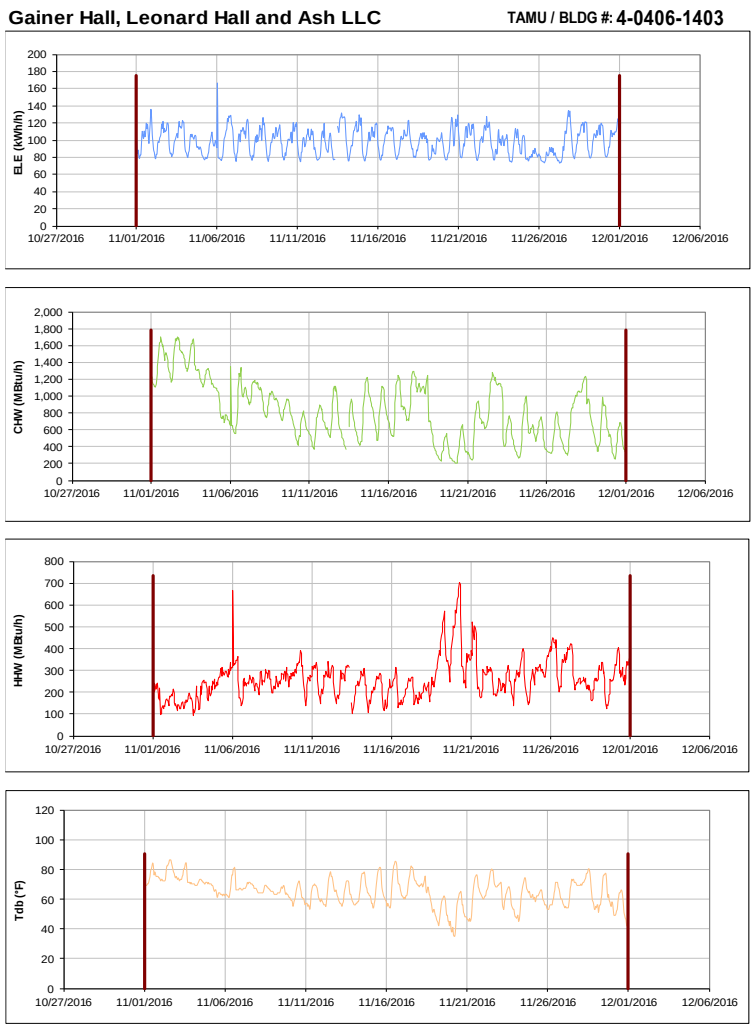


Figure III-33 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Gainer Hall, Leonard Hall and Ash LLC during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

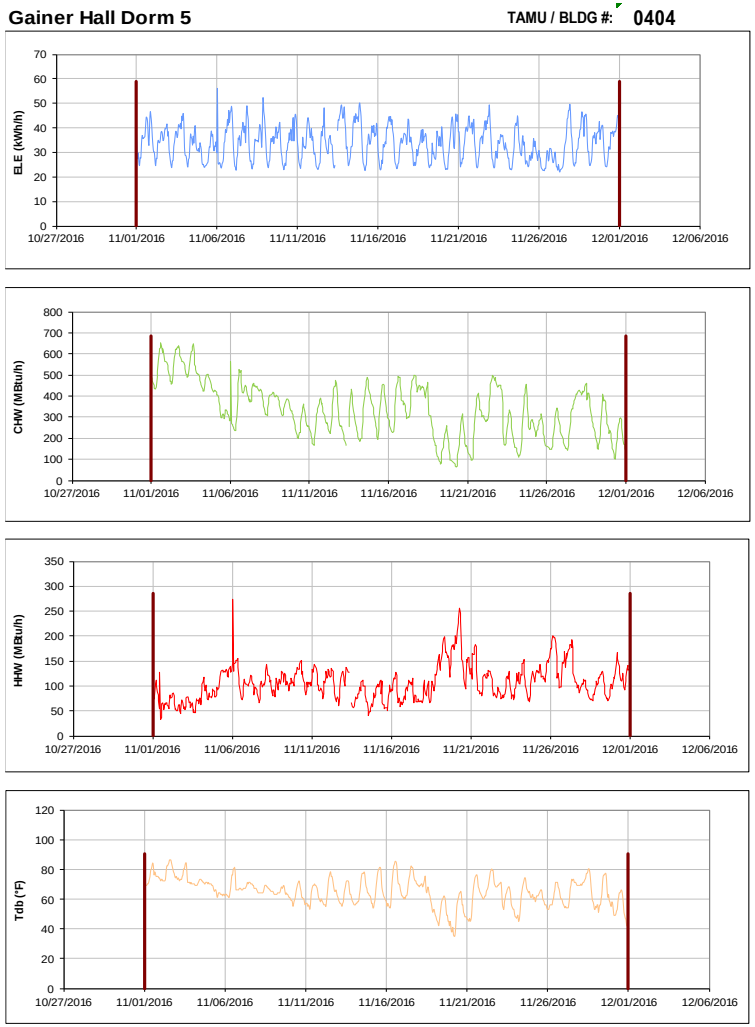


Figure III-34 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Gainer Hall Dorm 5 during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

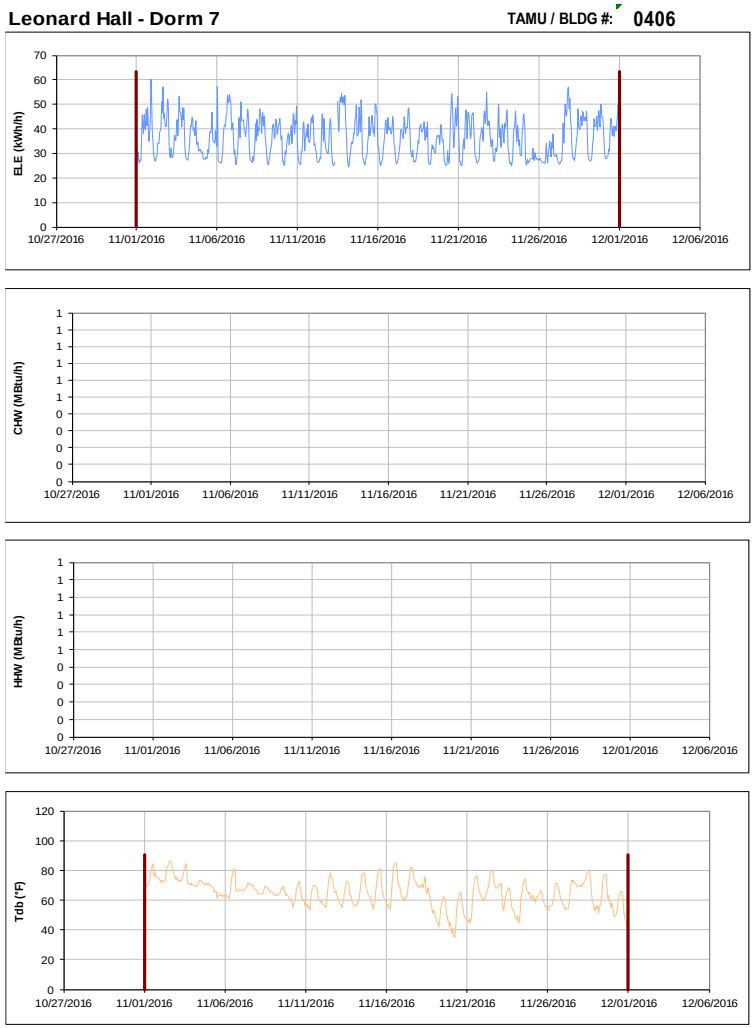


Figure III-35 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Leonard Hall - Dorm 7 during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

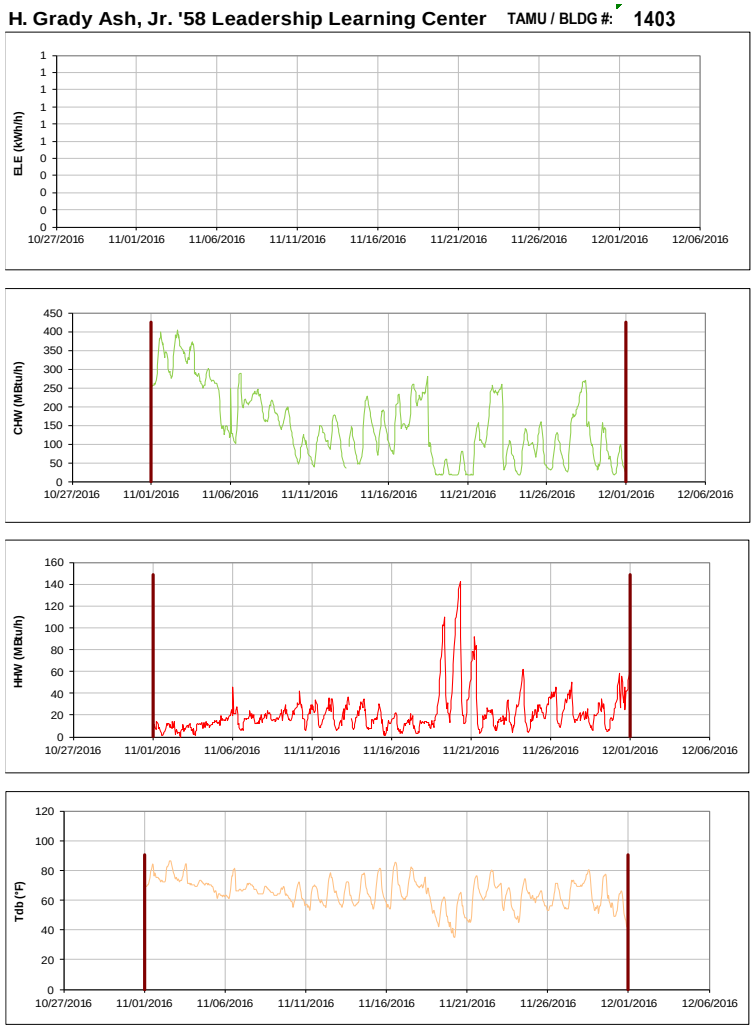


Figure III-36 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for H. Grady Ash, Jr. '58 Leadership Learning Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

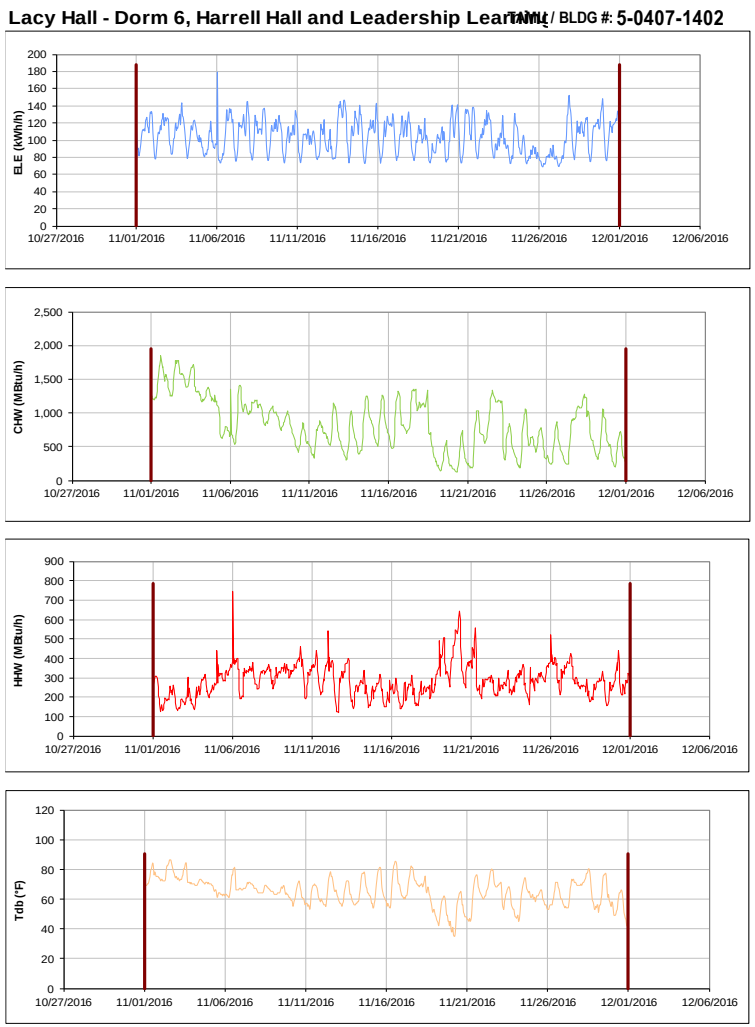


Figure III-37 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Lacy Hall - Dorm 6, Harrell Hall and Leadership Learning Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

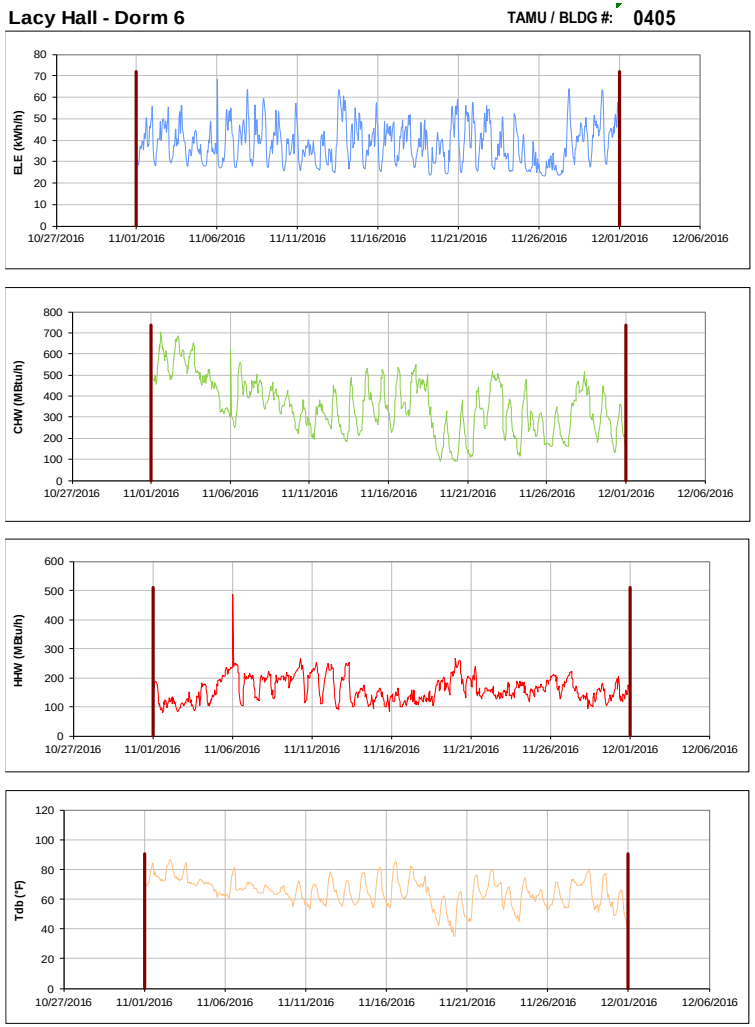


Figure III-38 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Lacy Hall - Dorm 6 during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

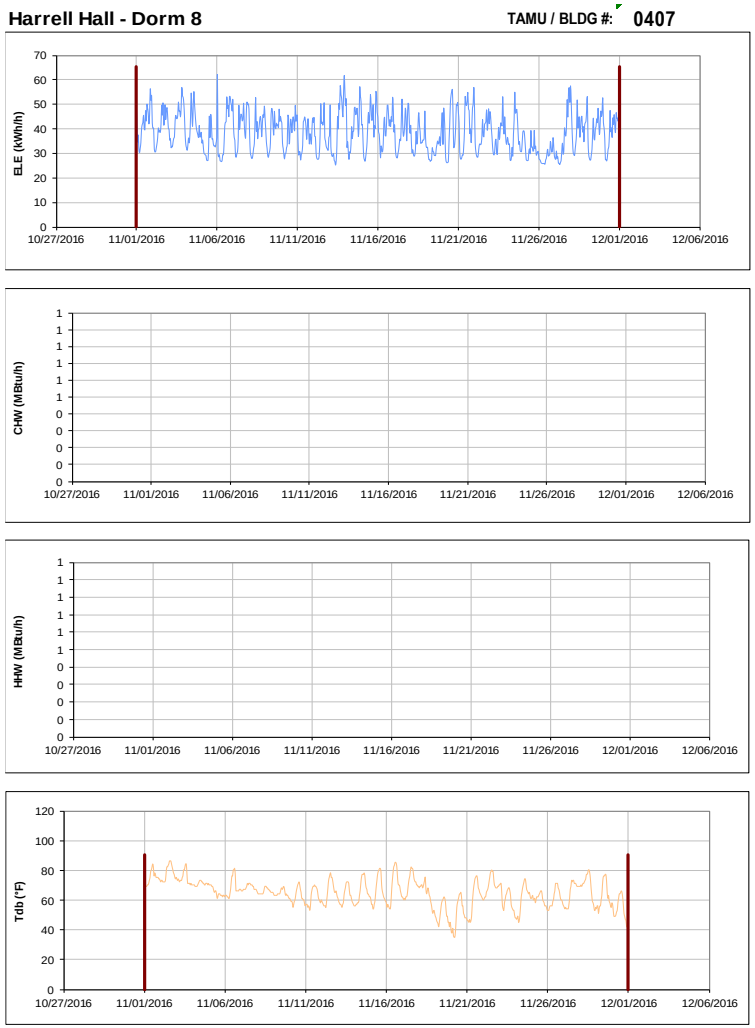


Figure III-39 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Harrell Hall - Dorm 8 during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

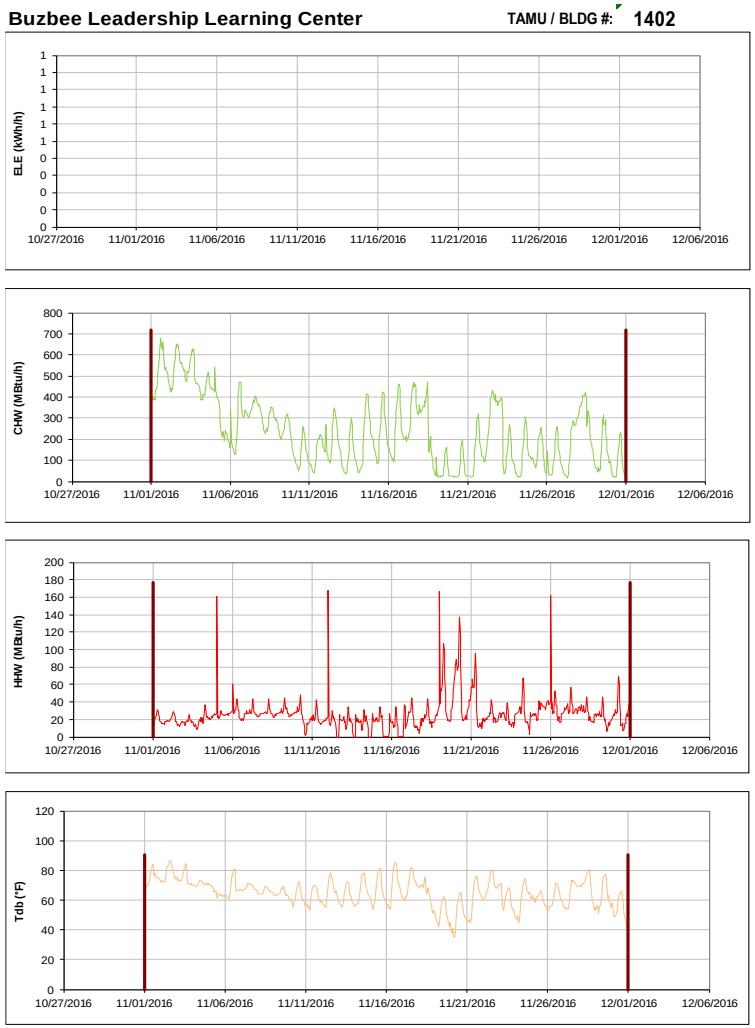


Figure III-40 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Buzbee Leadership Learning Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

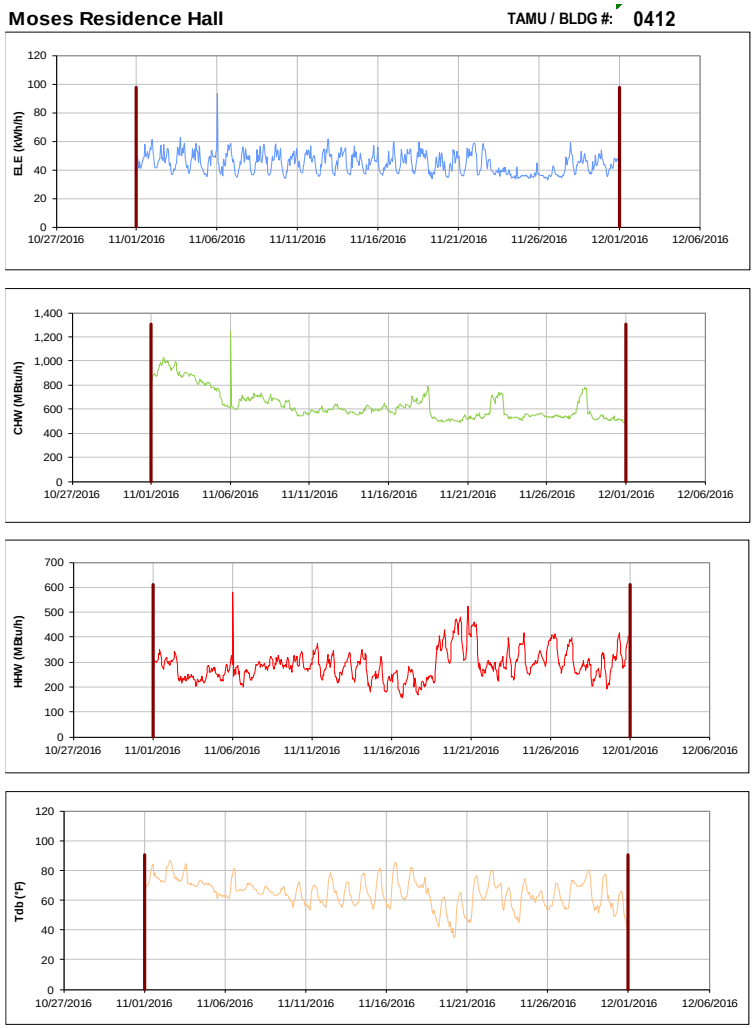


Figure III-41 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Moses Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

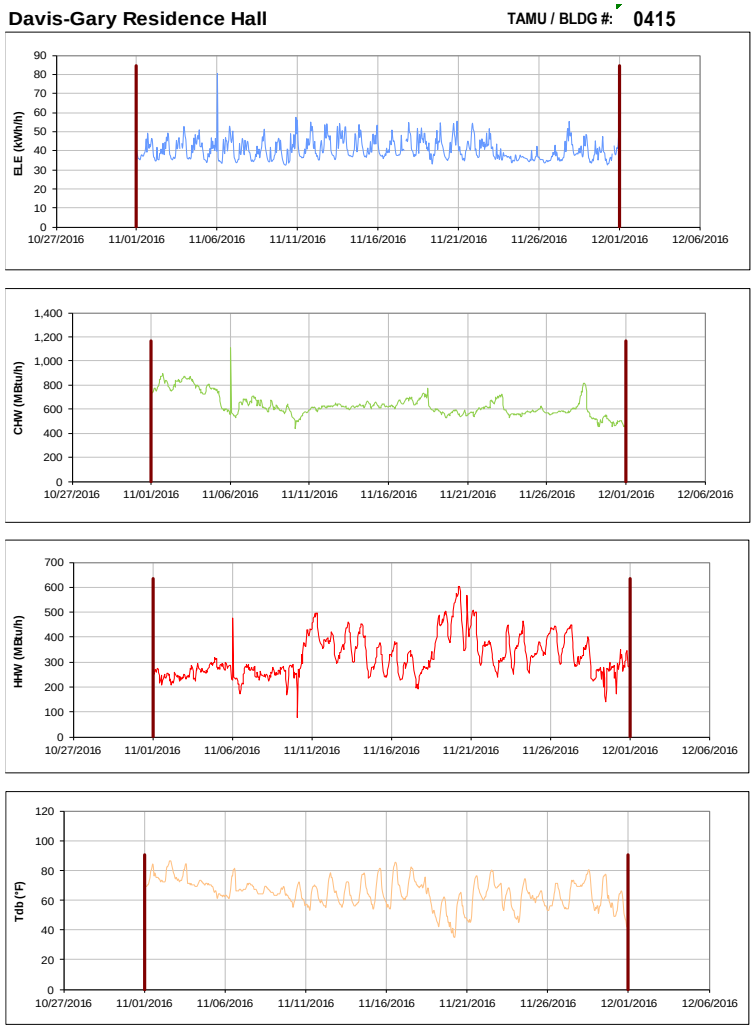


Figure III-42 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Davis-Gary Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

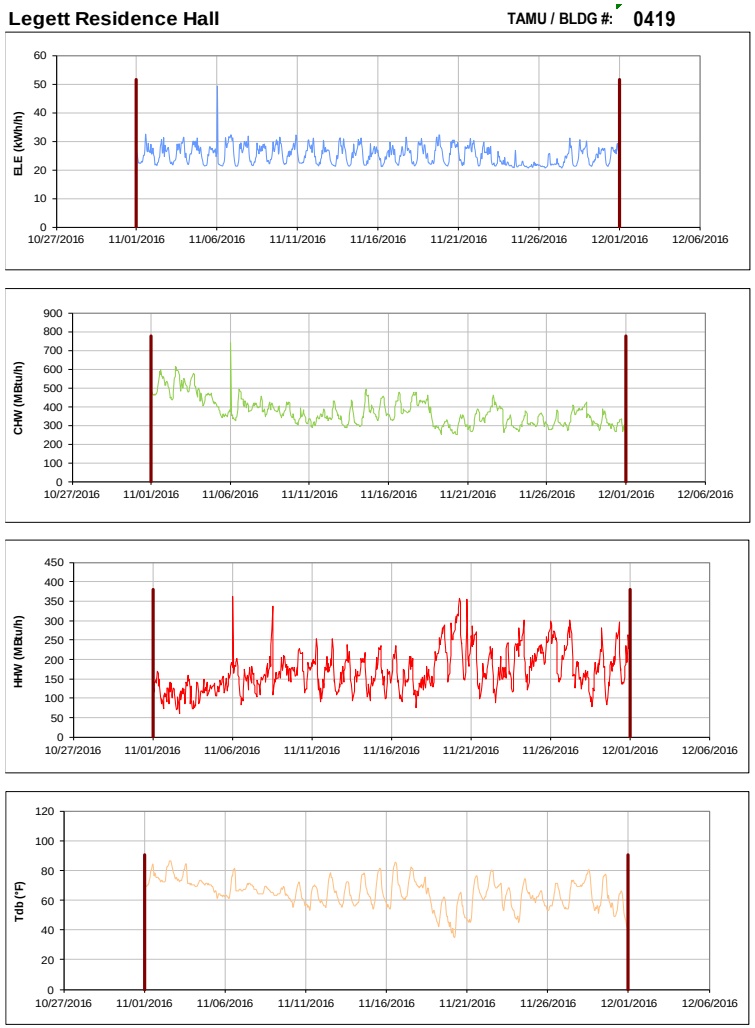


Figure III-43 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Legett Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

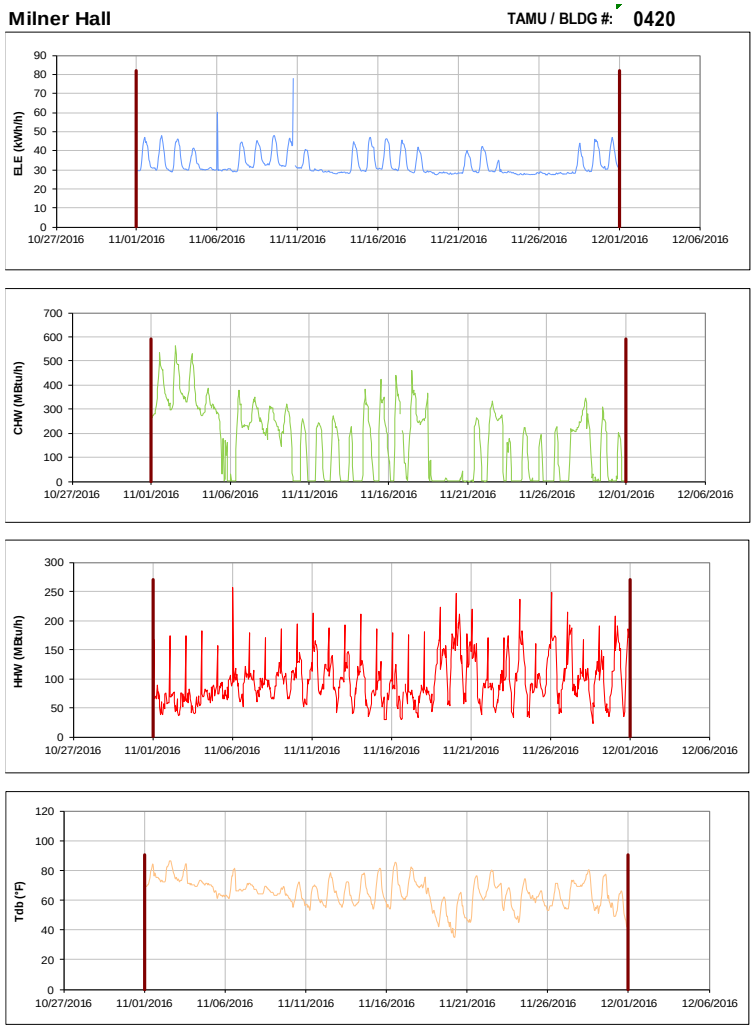


Figure III-44 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Milner Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

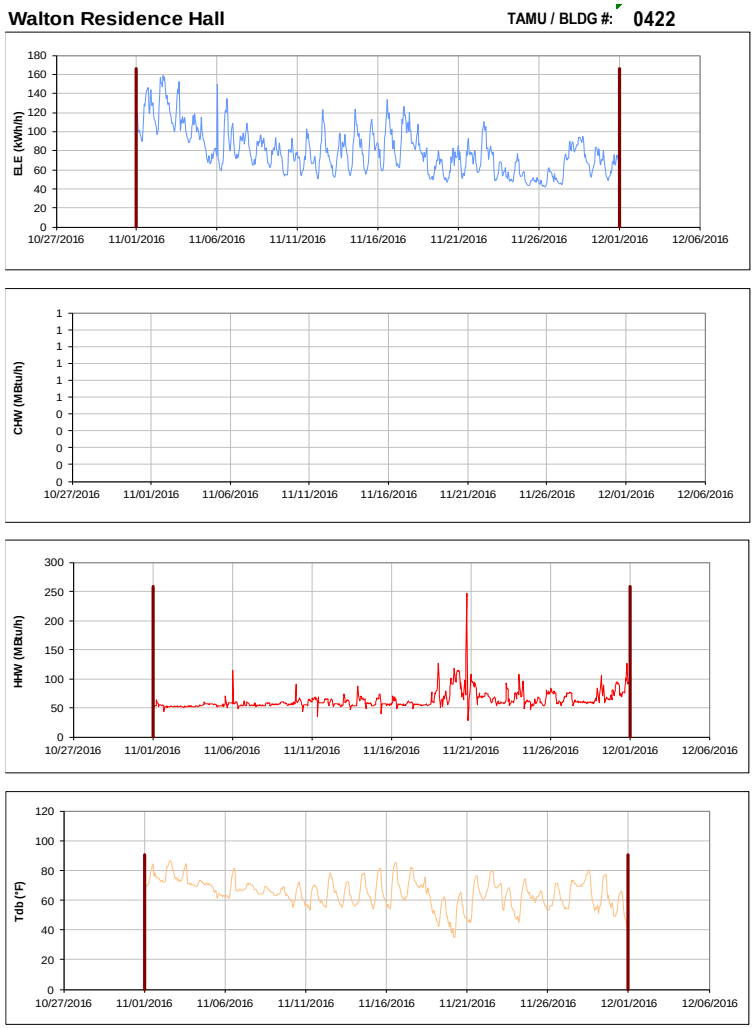


Figure III-45 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Walton Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-46 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Hotard Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-47 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Henderson Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

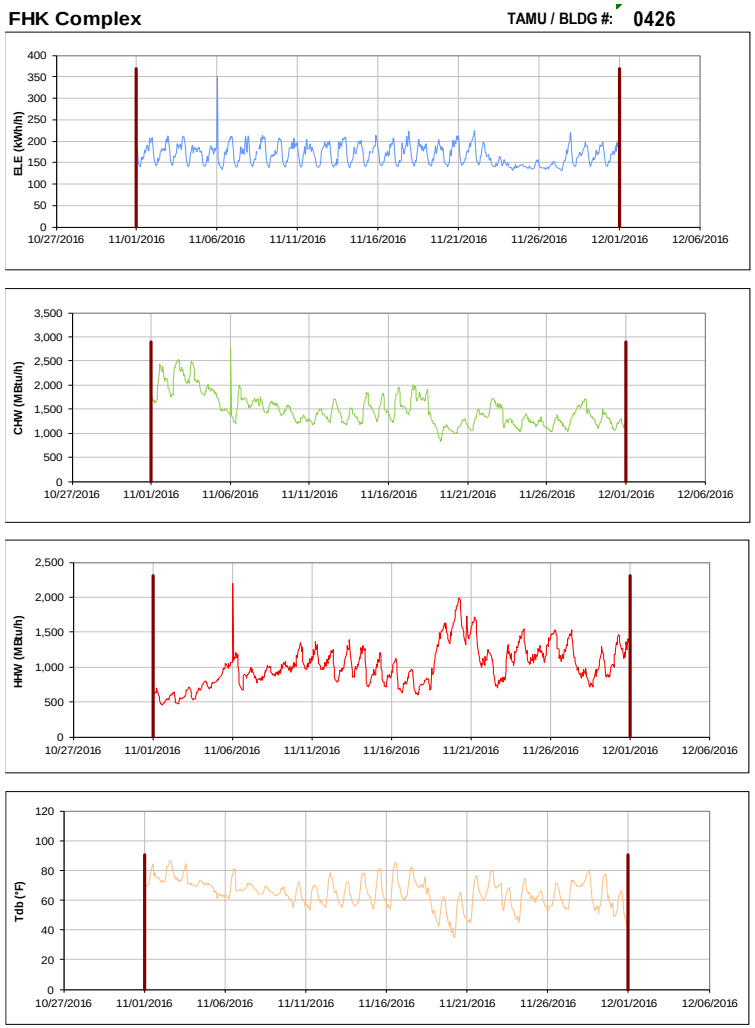


Figure III-48 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for FHK Complex during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

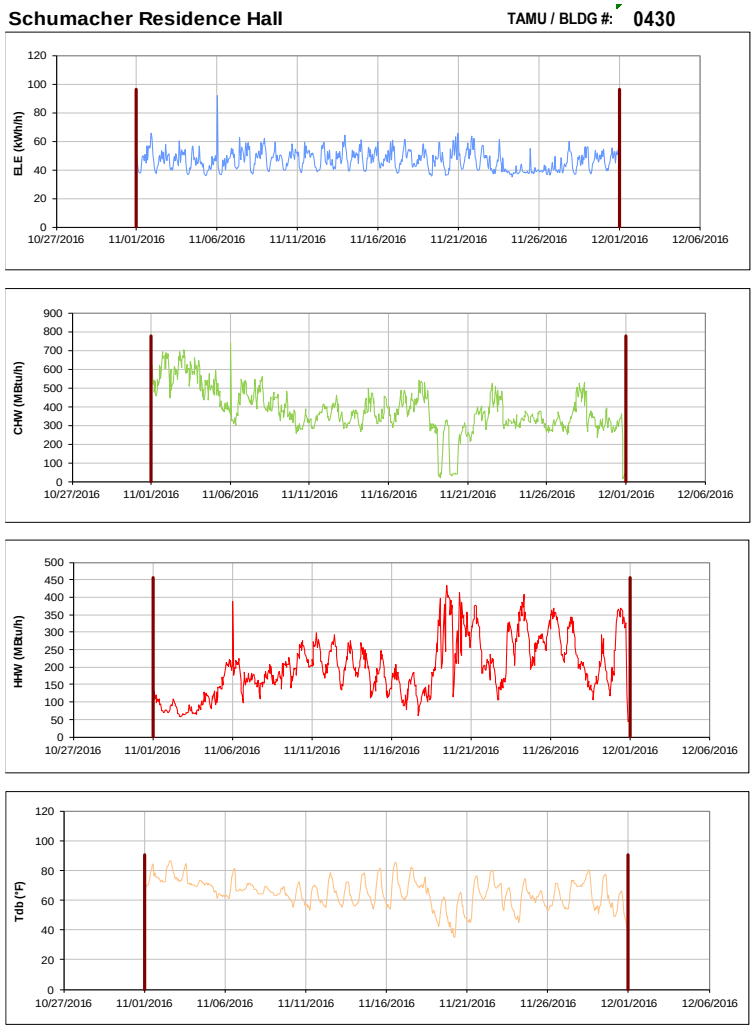


Figure III-49 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Schumacher Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

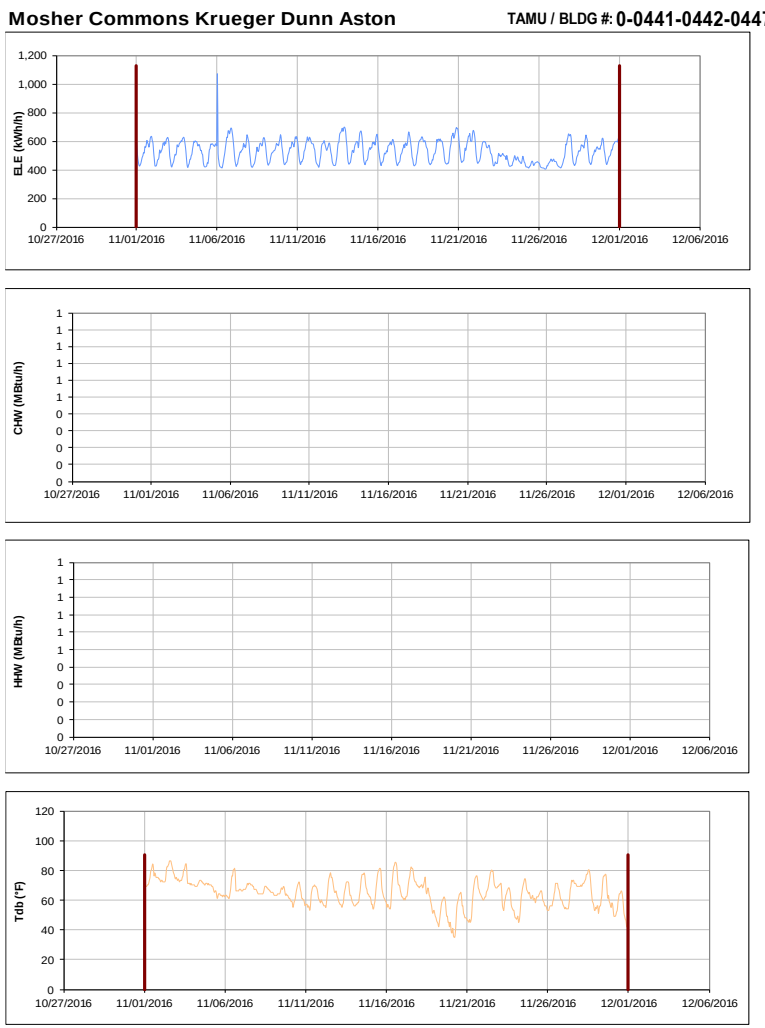


Figure III-50 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Mosher Commons Krueger Dunn Aston during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

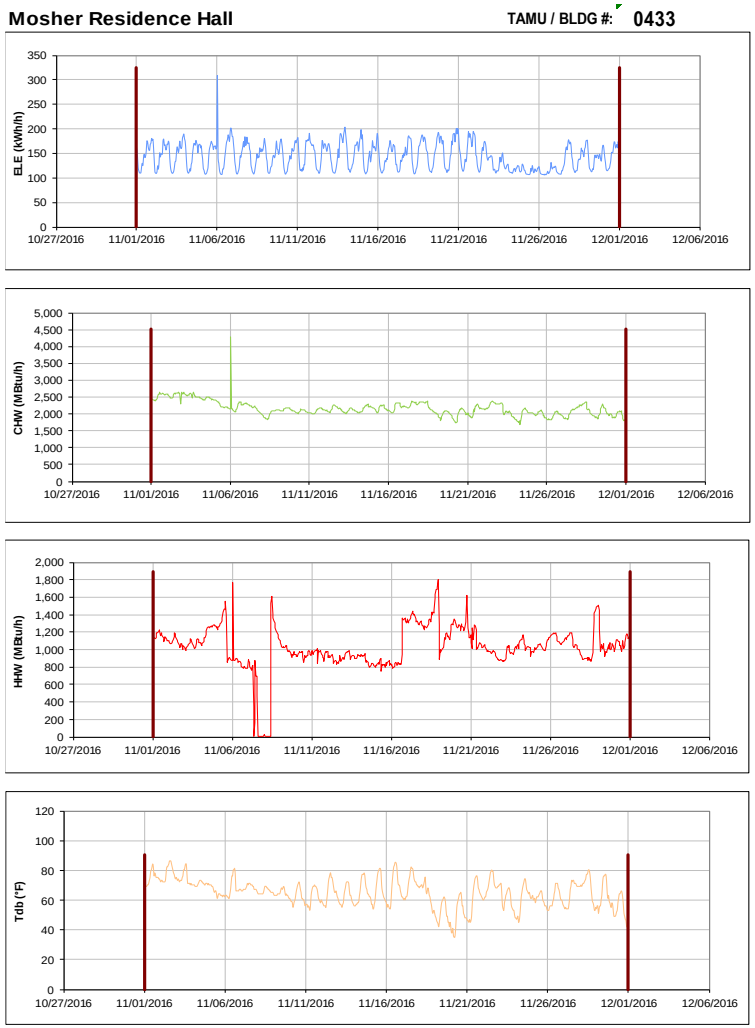


Figure III-51 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Mosher Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-52 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Commons Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

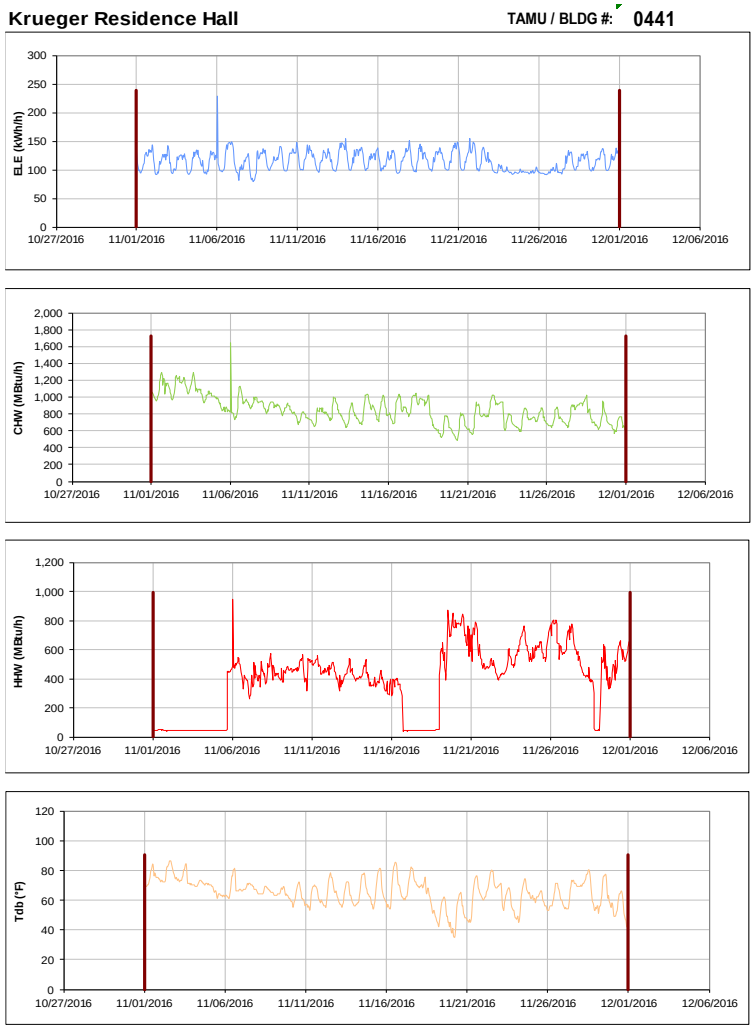


Figure III-53 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Krueger Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

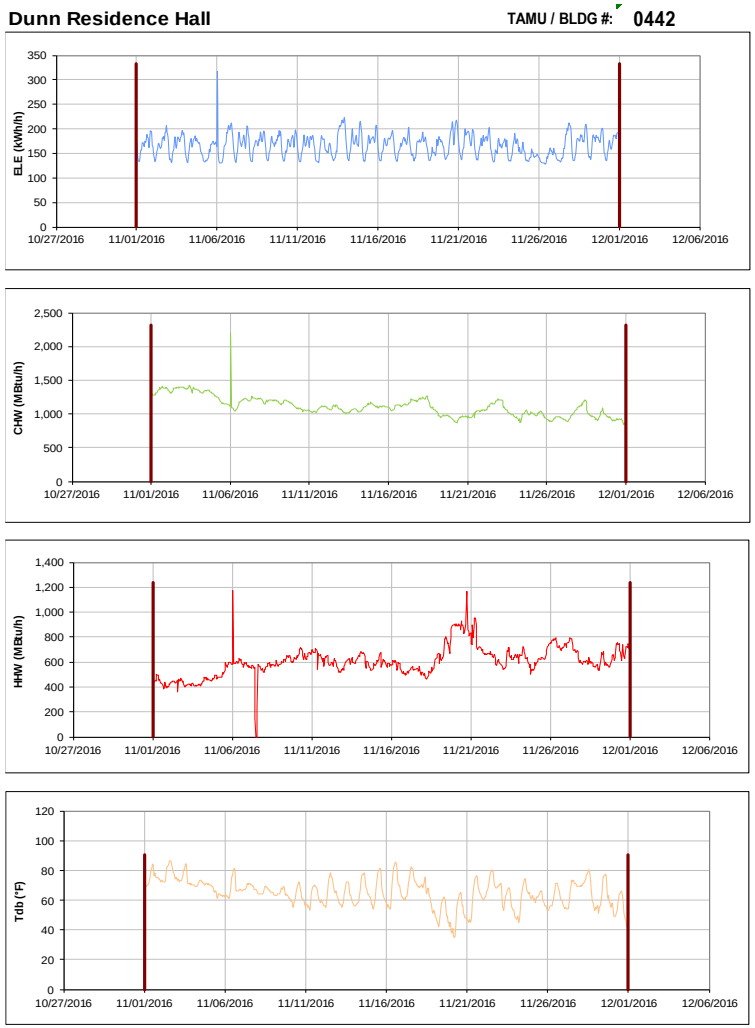


Figure III-54 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Dunn Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

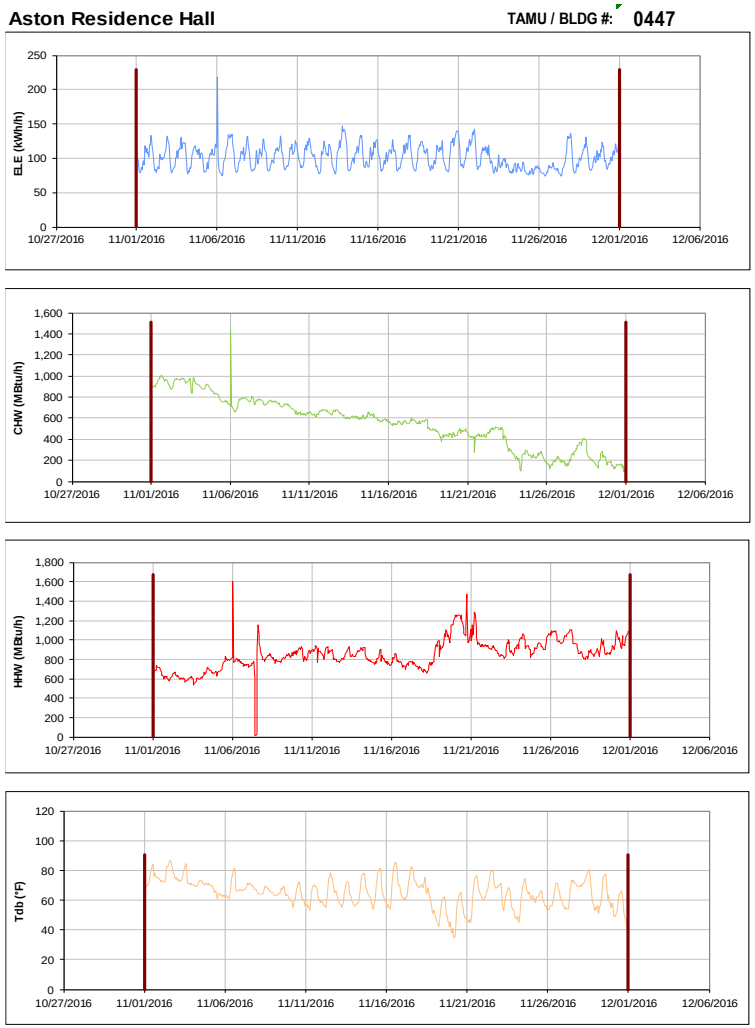


Figure III-55 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Aston Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-56 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Luedecke Building (Cyclotron) during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-57 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Harrington Education Center Office Tower during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-58 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Reed-McDonald and Engineering Innovation Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-59 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Reed-McDonald Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

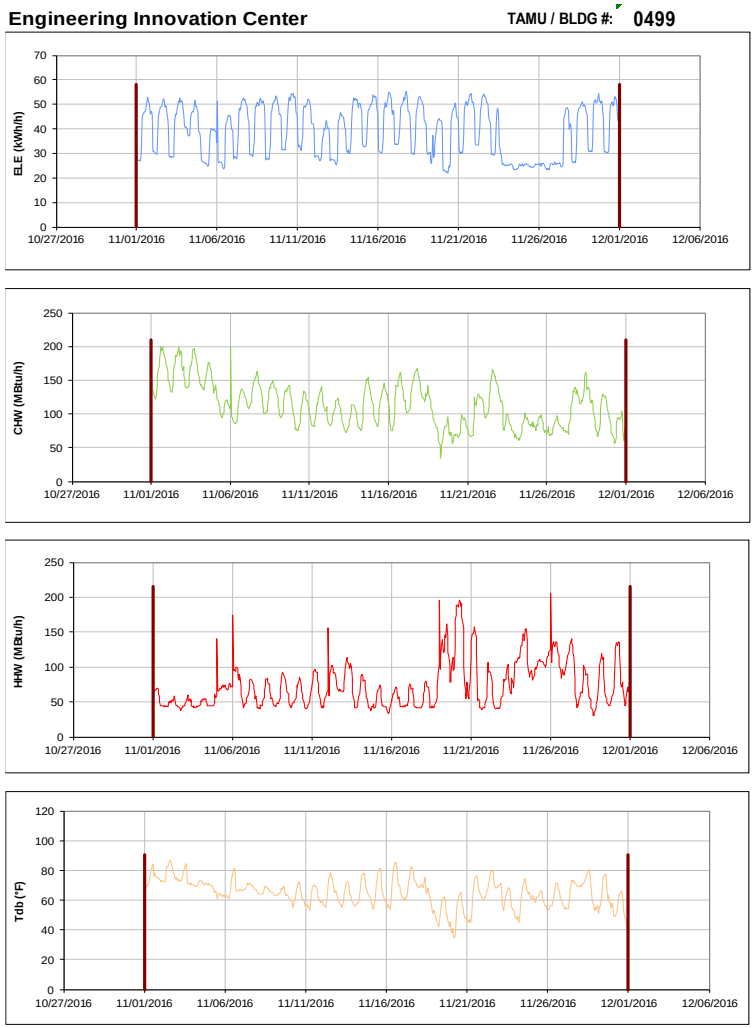


Figure III-60 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Engineering Innovation Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

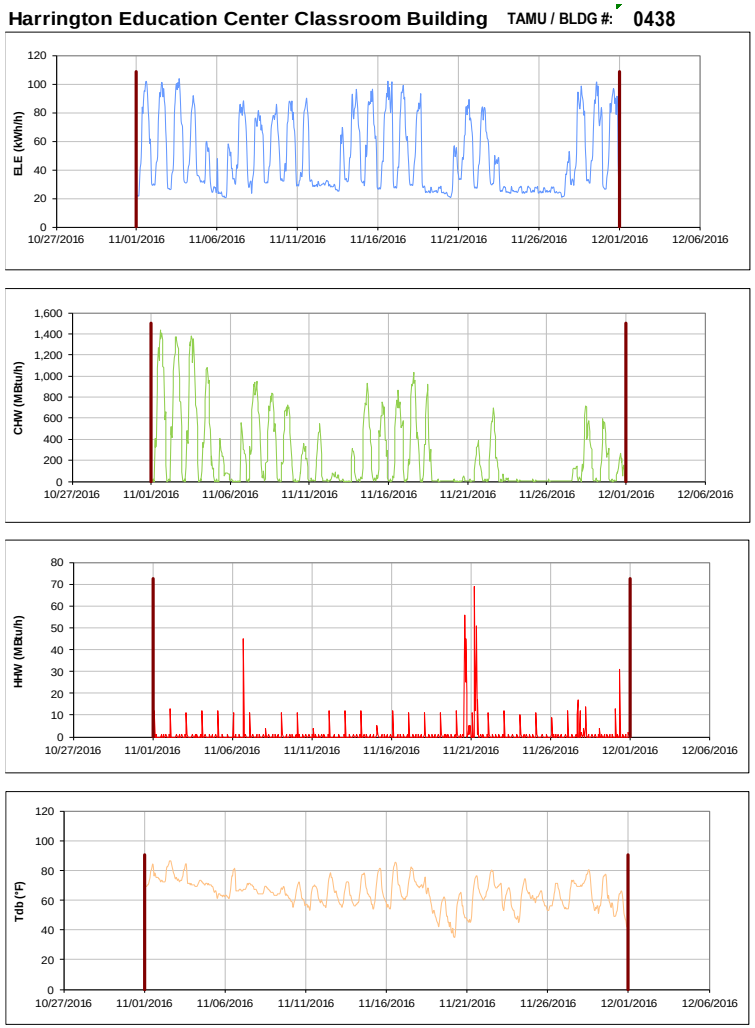


Figure III-61 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Harrington Education Center Classroom Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

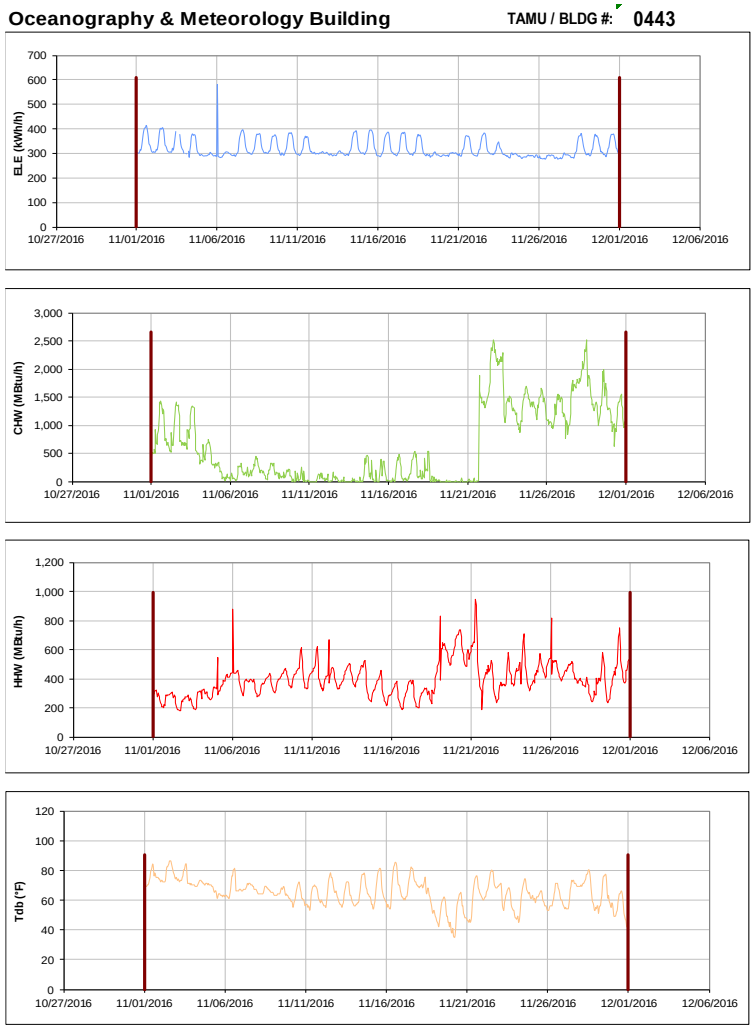


Figure III-62 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Oceanography & Meteorology Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

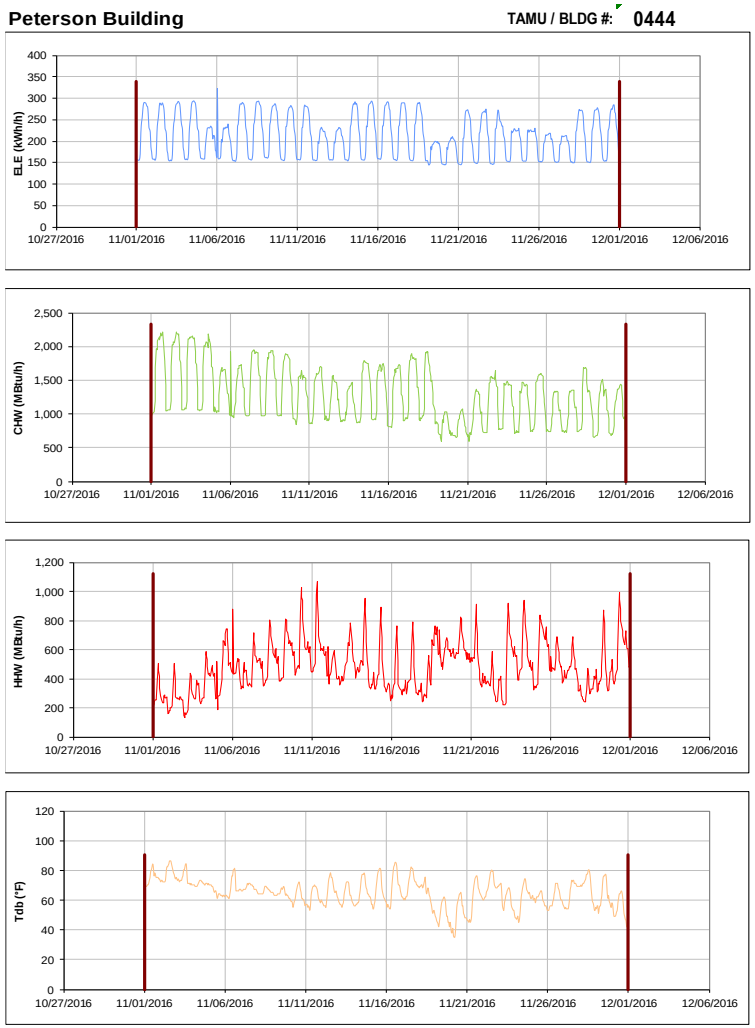


Figure III-63 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Peterson Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

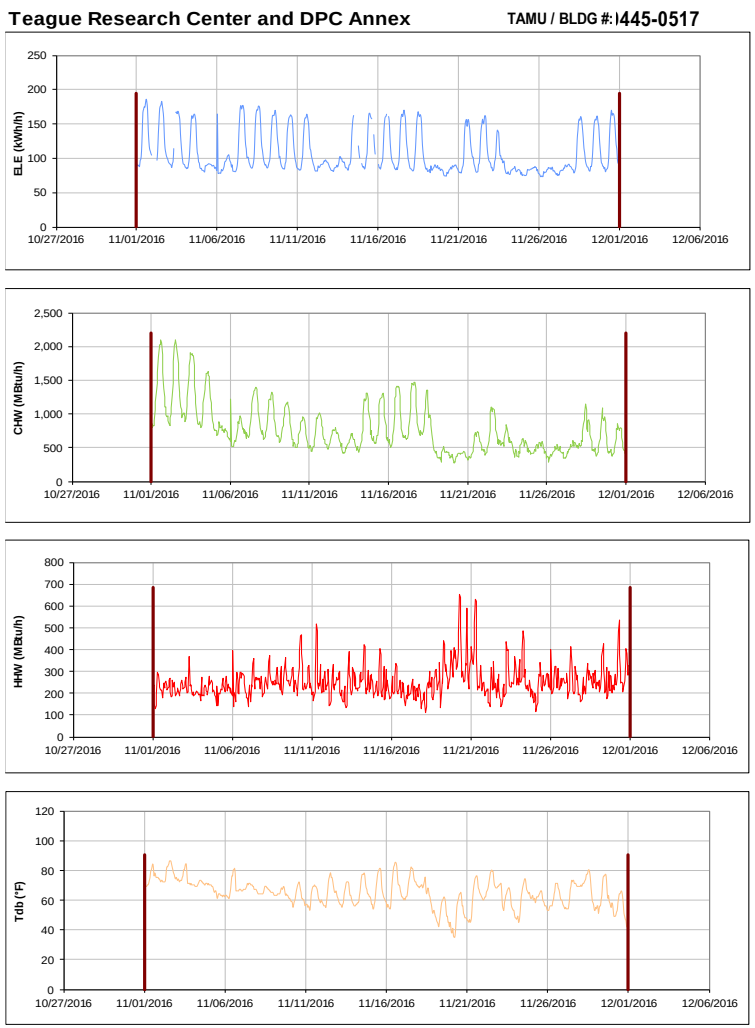


Figure III-64 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Teague Research Center and DPC Annex during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Outdoor Dry Bulb Temperature for College Station, TX

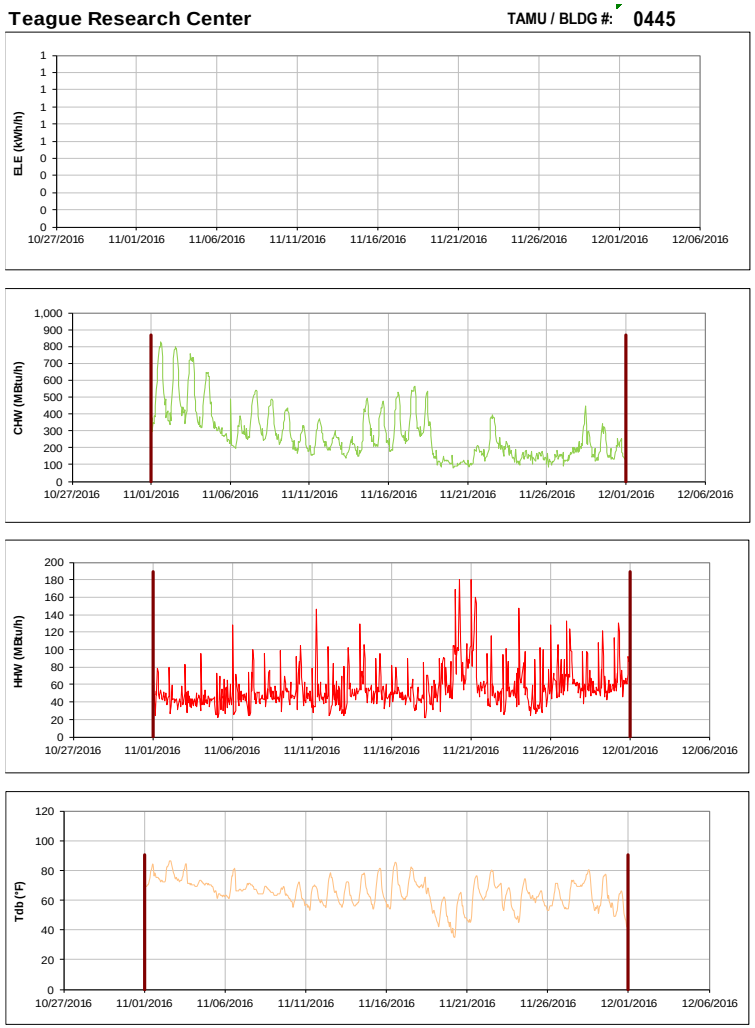


Figure III-65 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Teague Research Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-66 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for DPC Annex during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

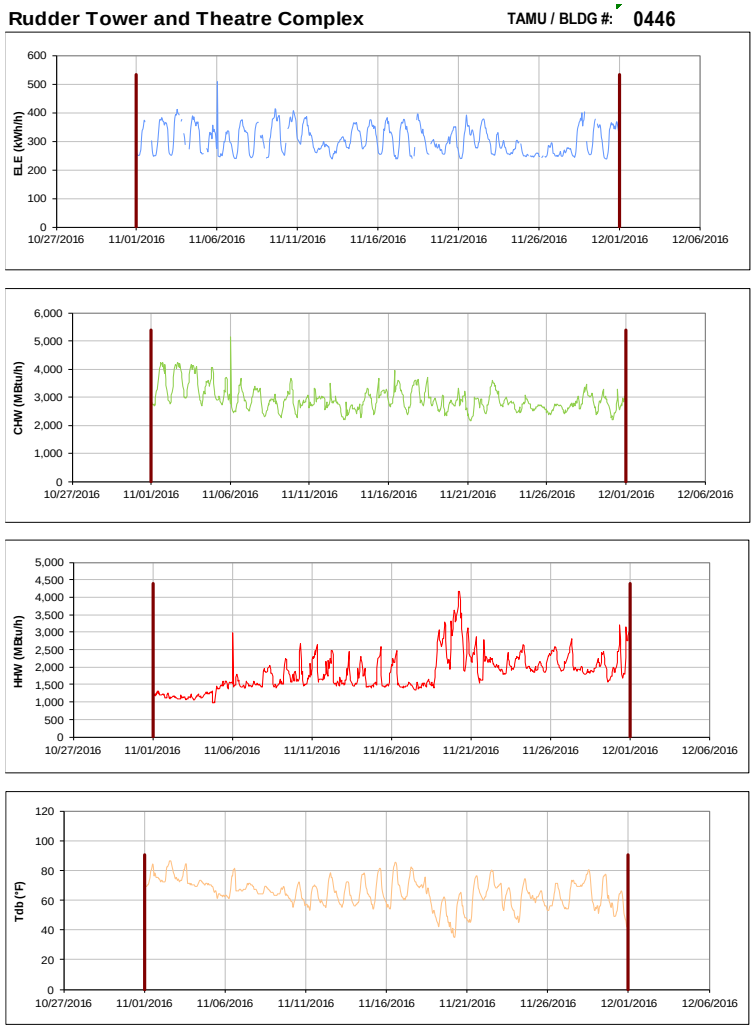


Figure III-67 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Rudder Tower and Theatre Complex during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

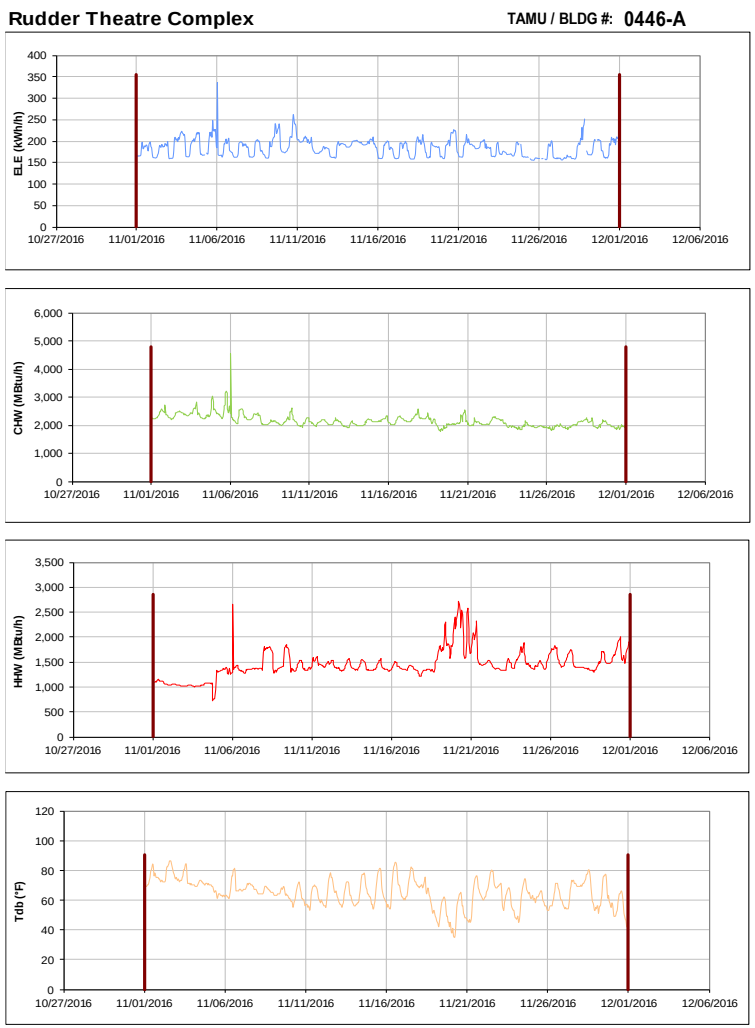


Figure III-68 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Rudder Theatre Complex during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

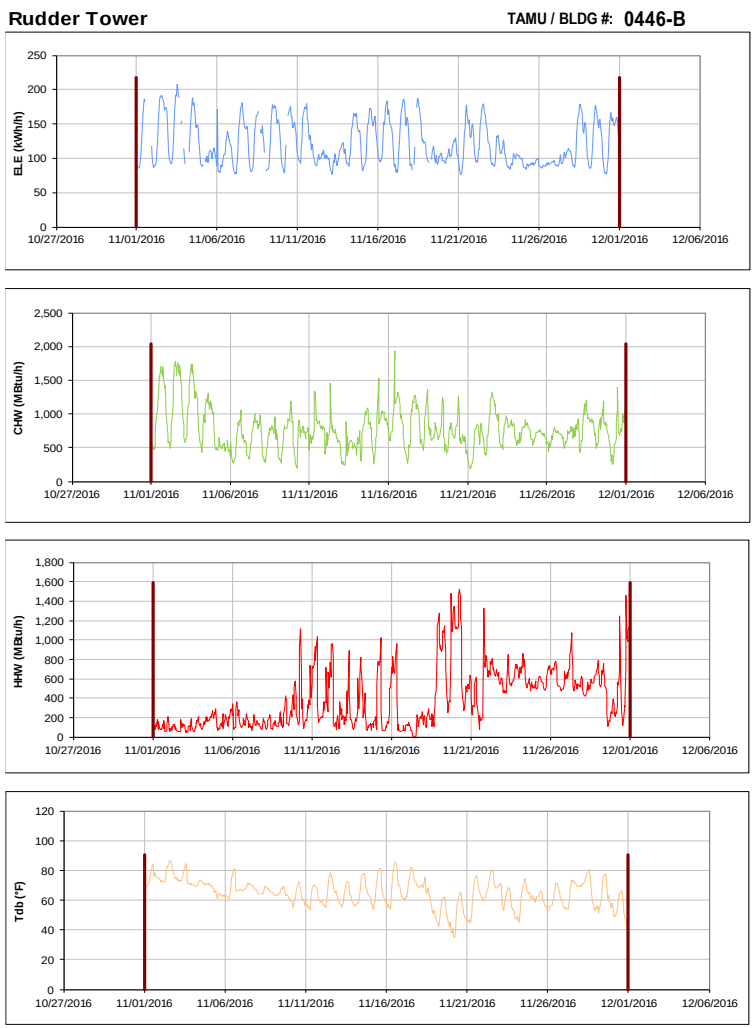


Figure III-69 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Rudder Tower during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

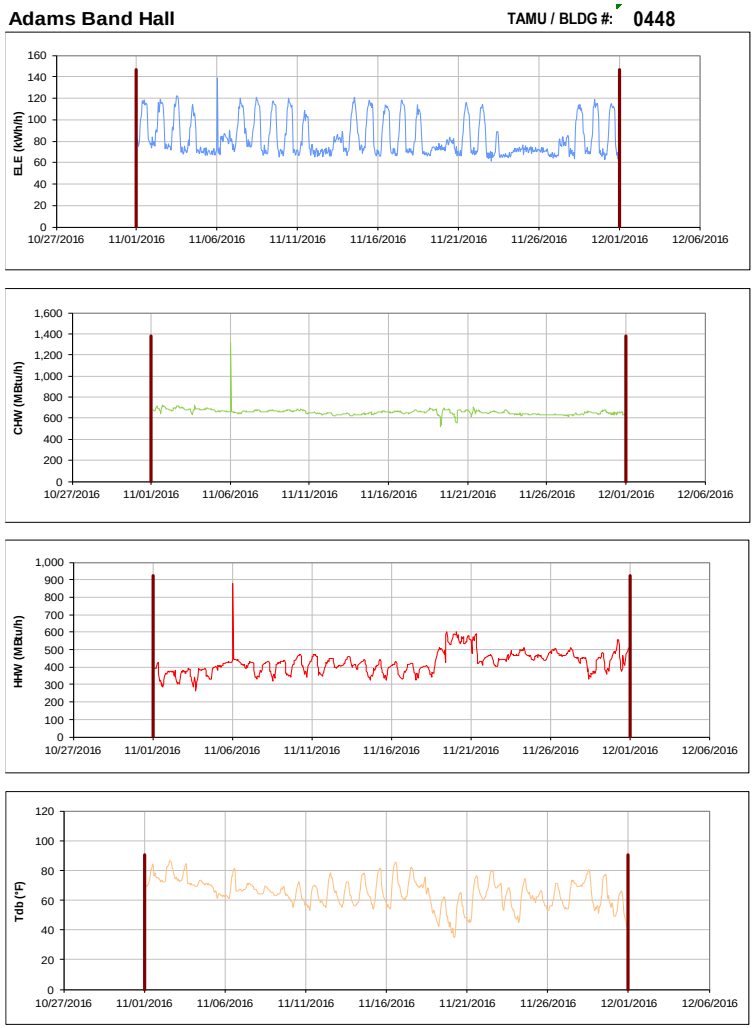


Figure III-70 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Adams Band Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-71 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Biological Sciences Building - West during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-72 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Duncan Dining Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-73 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for MSC during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

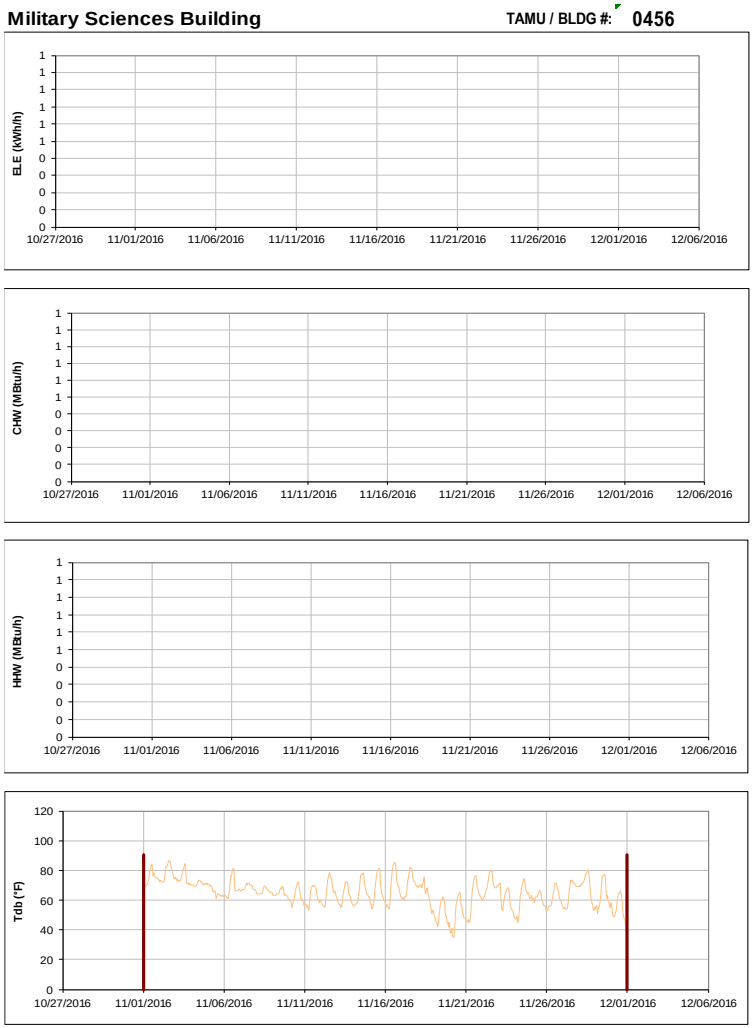


Figure III-74 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Military Sciences Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

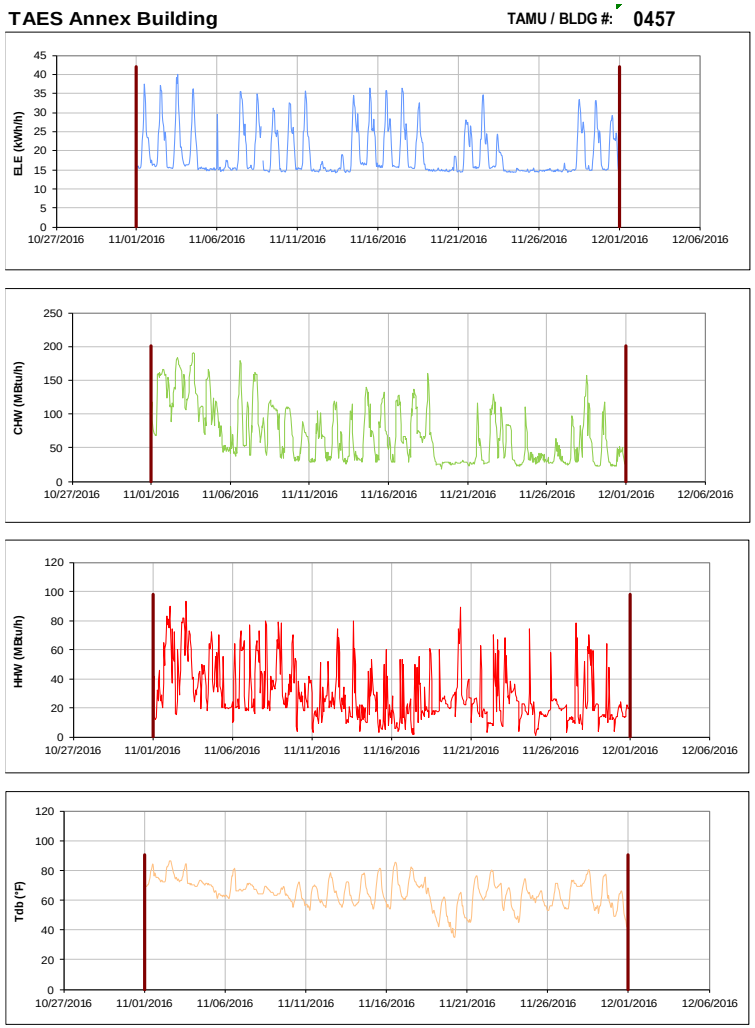


Figure III-75 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for TAES Annex Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-76 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Coke Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-77 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Academic Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-78 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Psychology Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

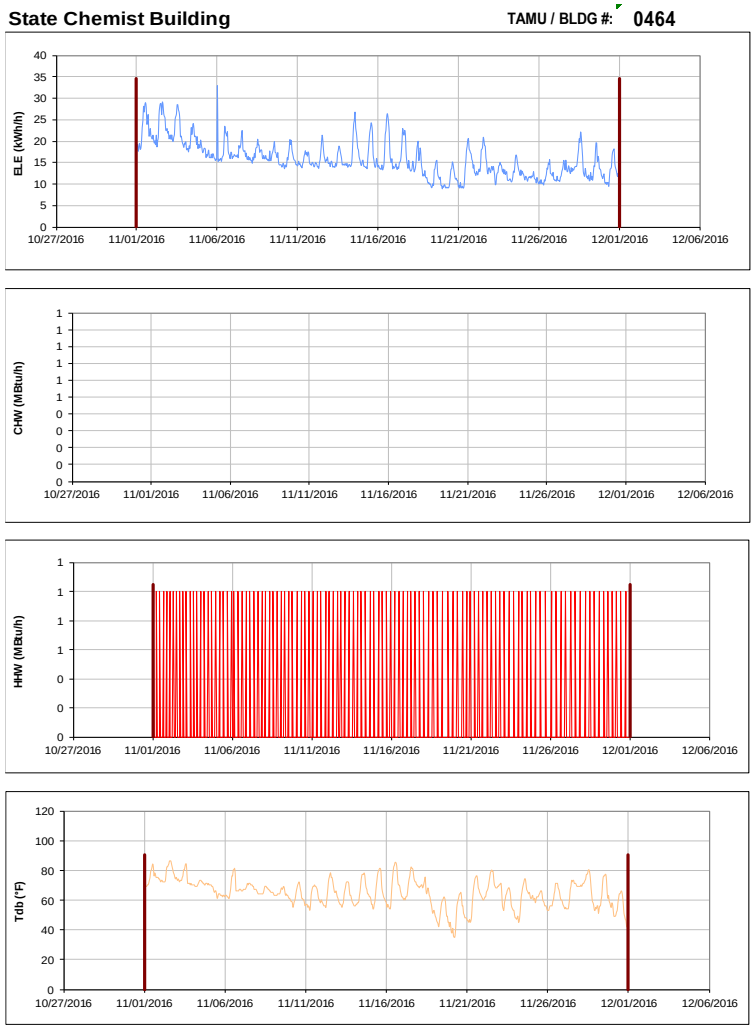


Figure III-79 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for State Chemist Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-80 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Butler Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-81 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Biological Sciences Building - East during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

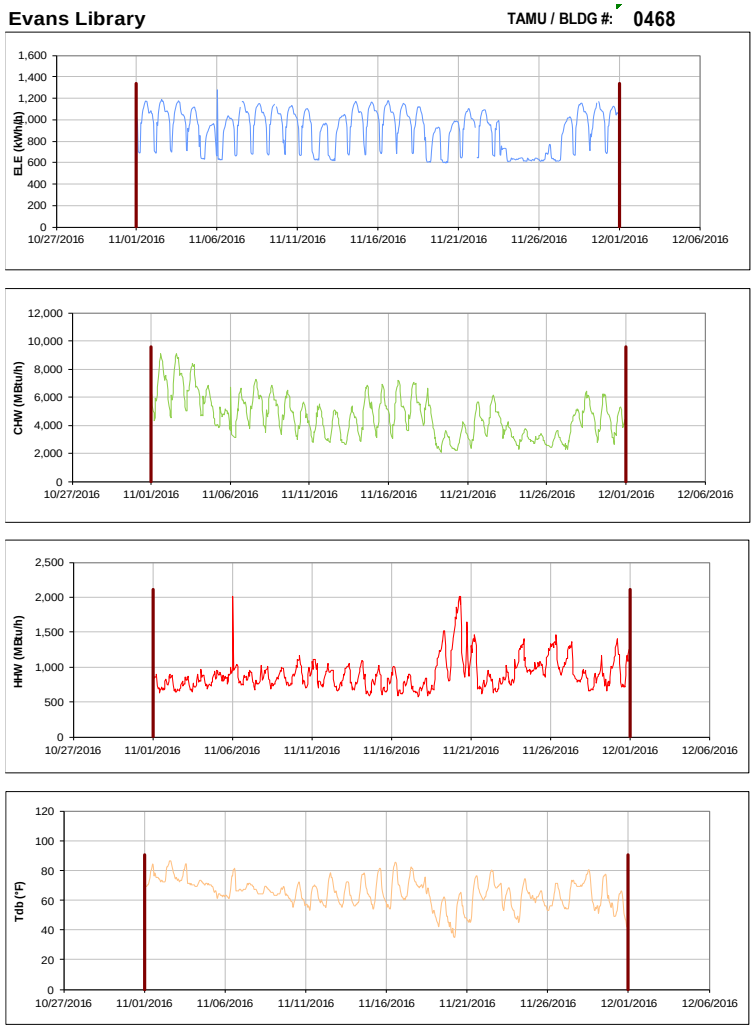


Figure III-82 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Evans Library during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

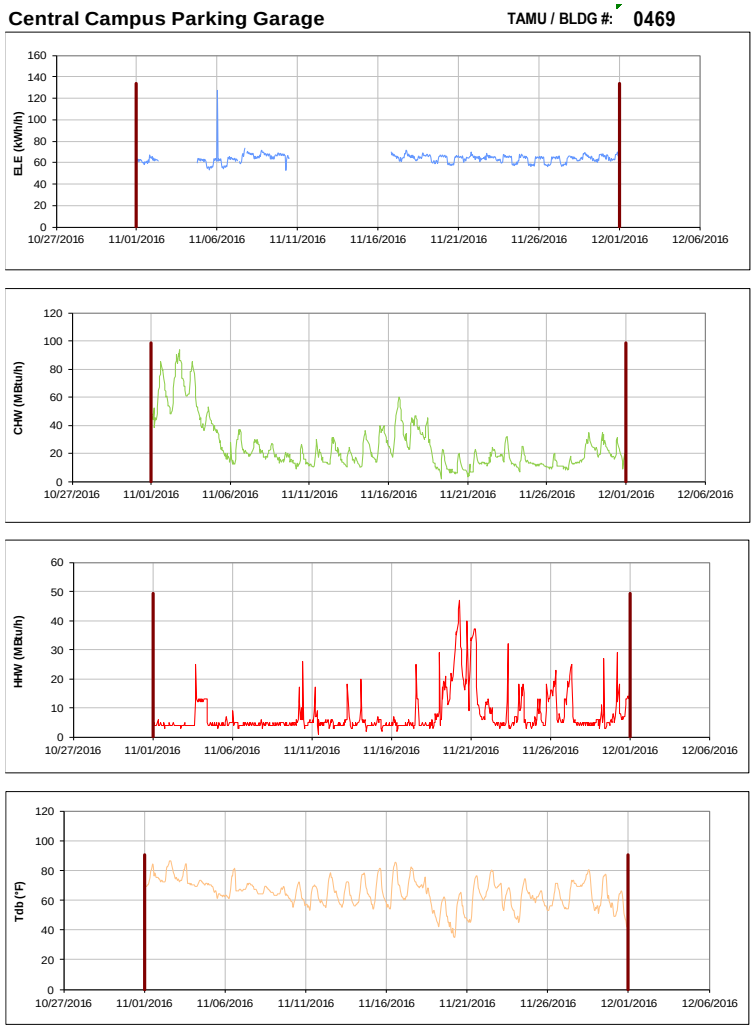


Figure III-83 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Central Campus Parking Garage during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-84 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Glasscock History Bldg during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

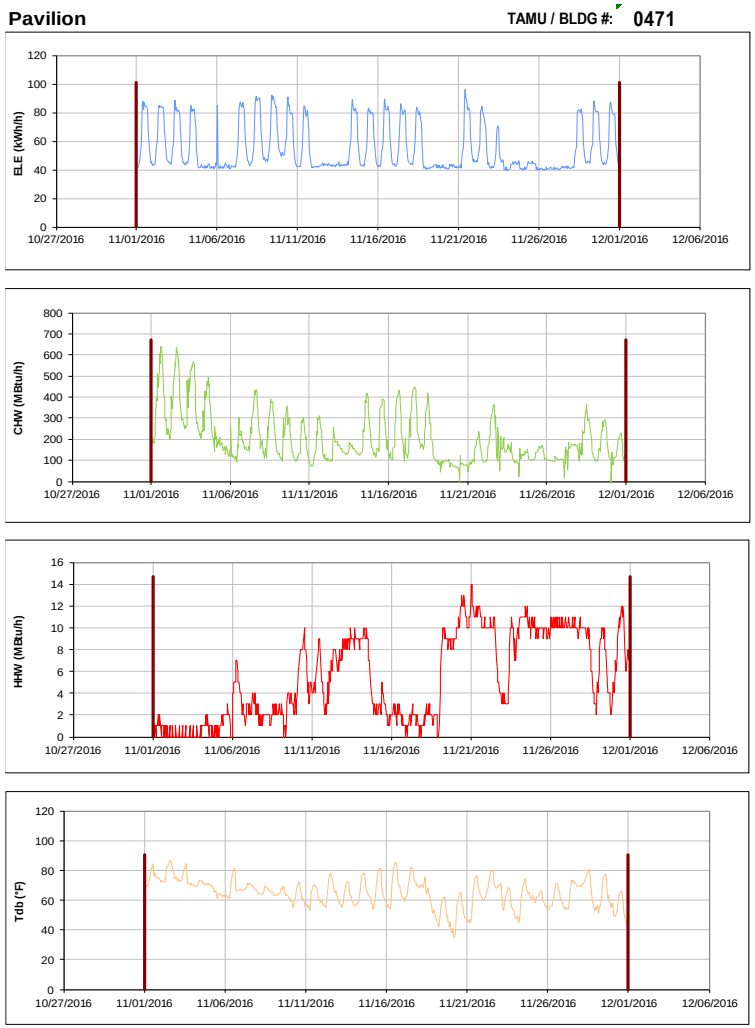


Figure III-85 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Pavilion during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

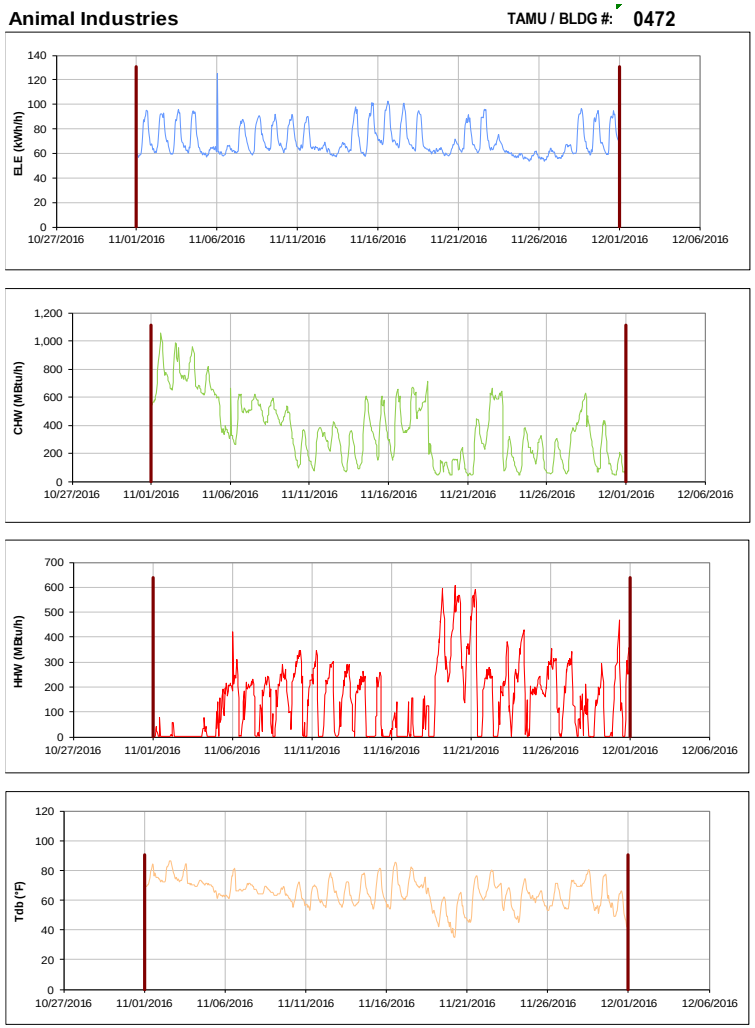


Figure III-86 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Animal Industries during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-87 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Williams Administration Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-88 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for YMCA Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-89 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Francis Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

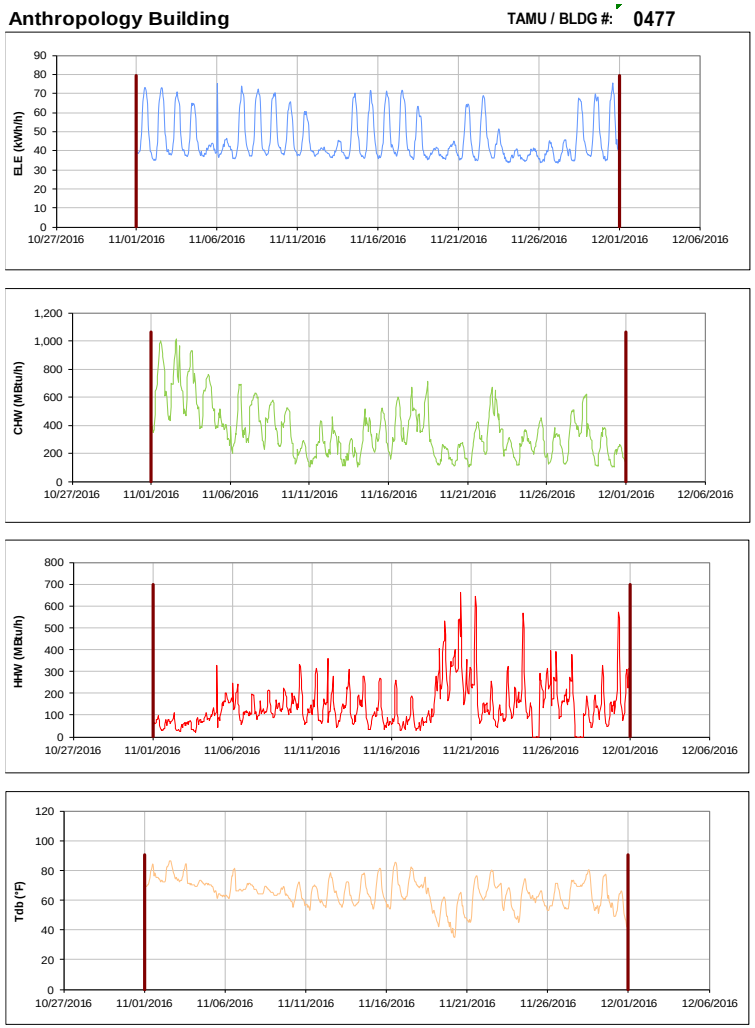


Figure III-90 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Anthropology Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-91 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Scoates Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-92 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Bolton Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

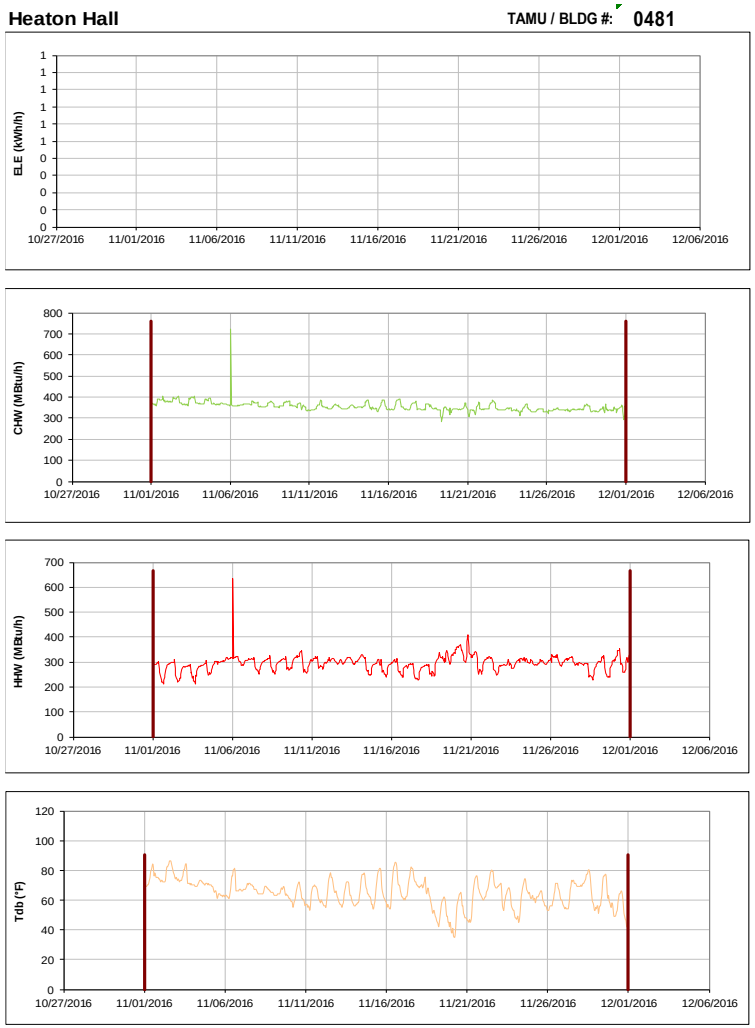


Figure III-93 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Heaton Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

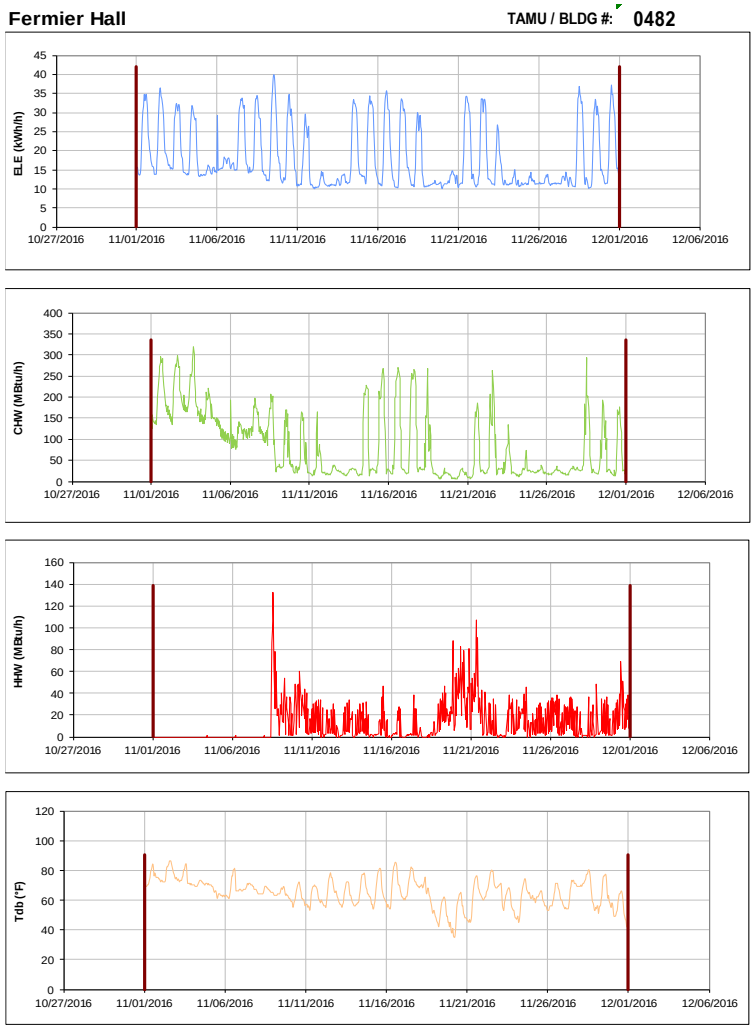


Figure III-94 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Fermier Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

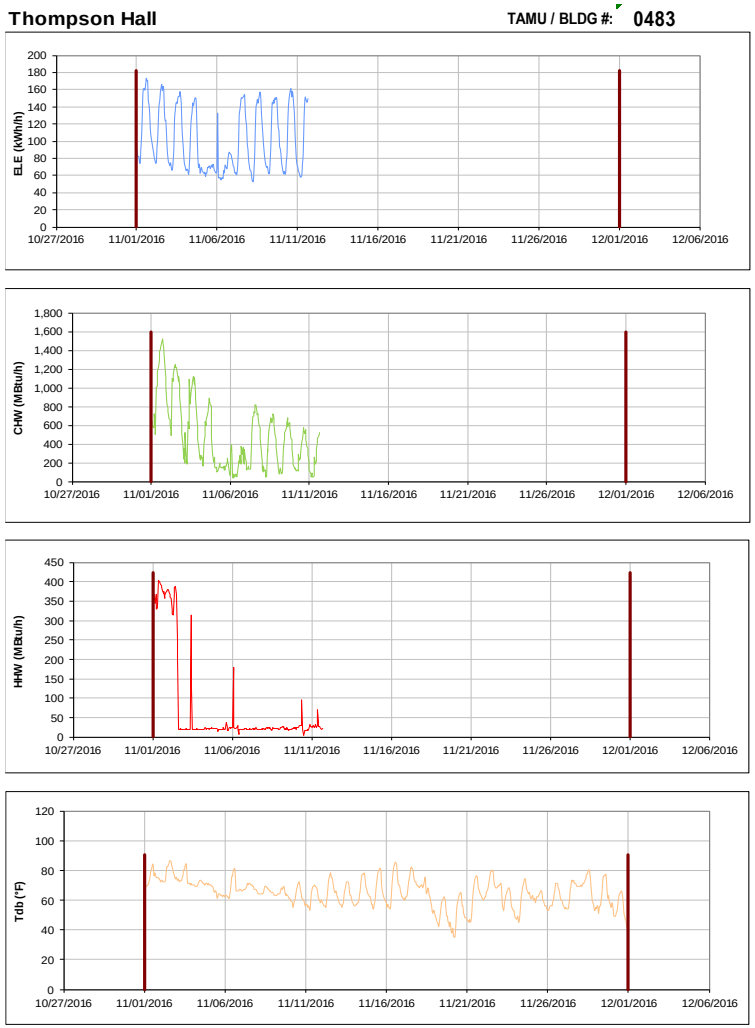


Figure III-95 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Thompson Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

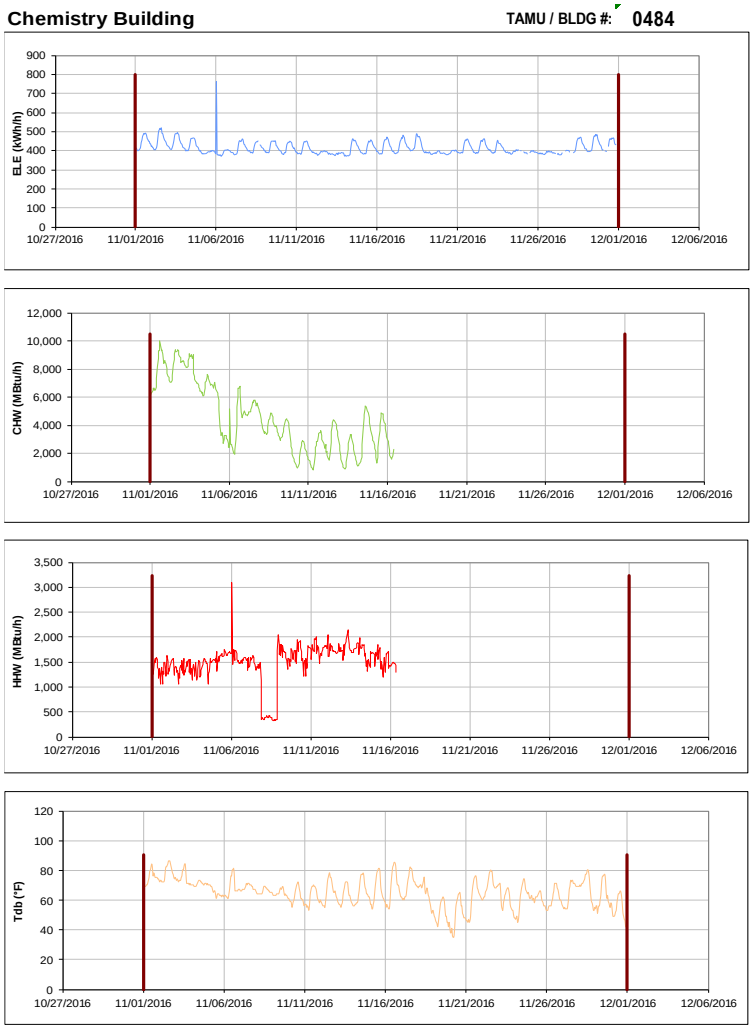


Figure III-96 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Chemistry Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-97 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Halbouty Geosciences Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

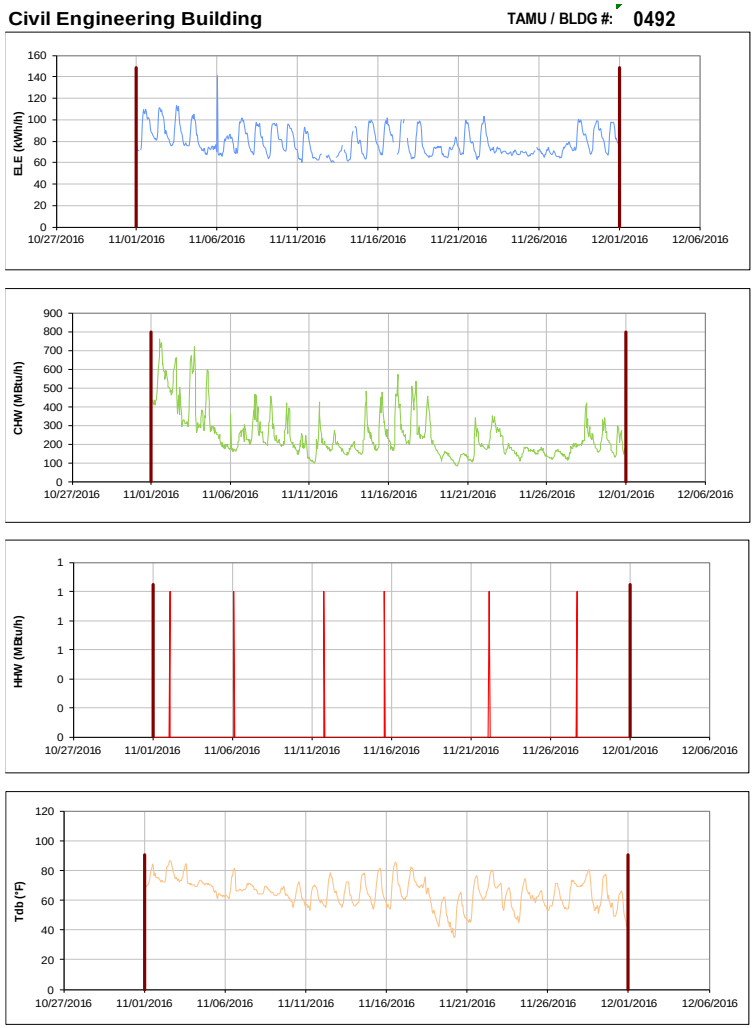


Figure III-98 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Civil Engineering Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

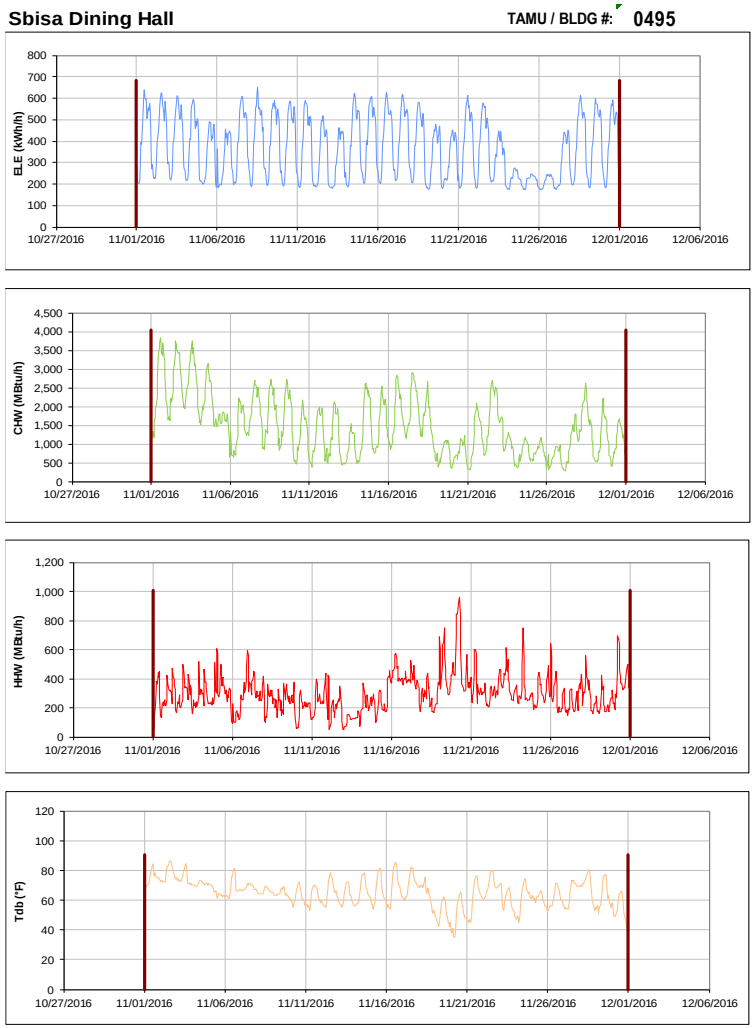


Figure III-99 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Sbisa Dining Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-100 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Utilities & Energy Services Central Office during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

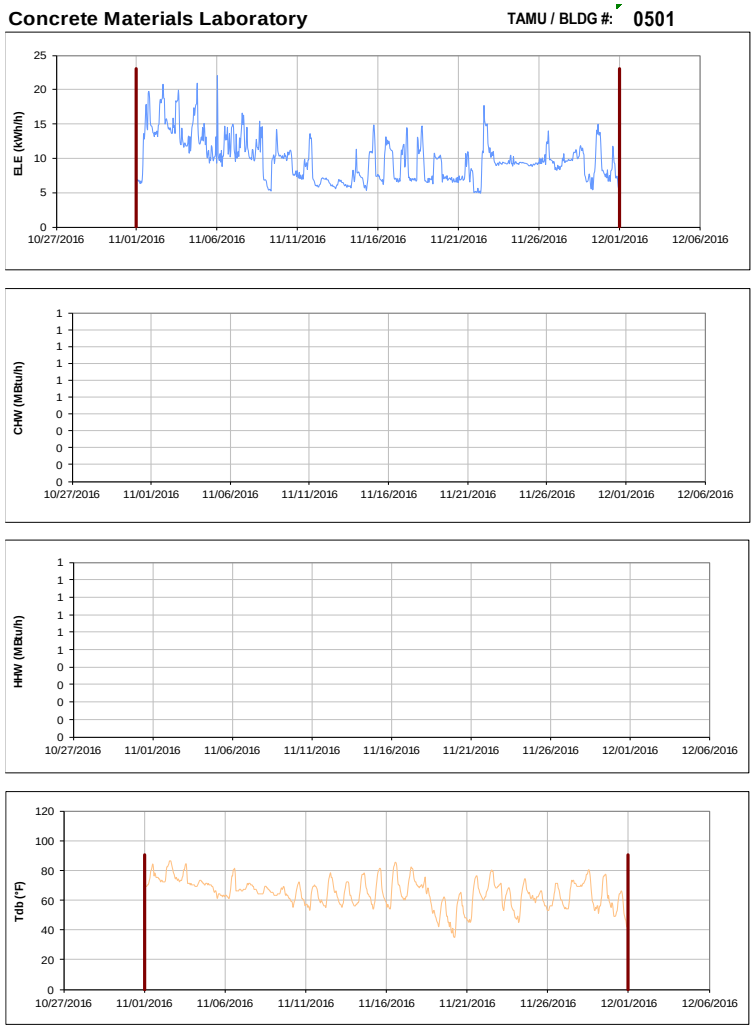


Figure III-101 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Concrete Materials Laboratory during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-102 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Nagle Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

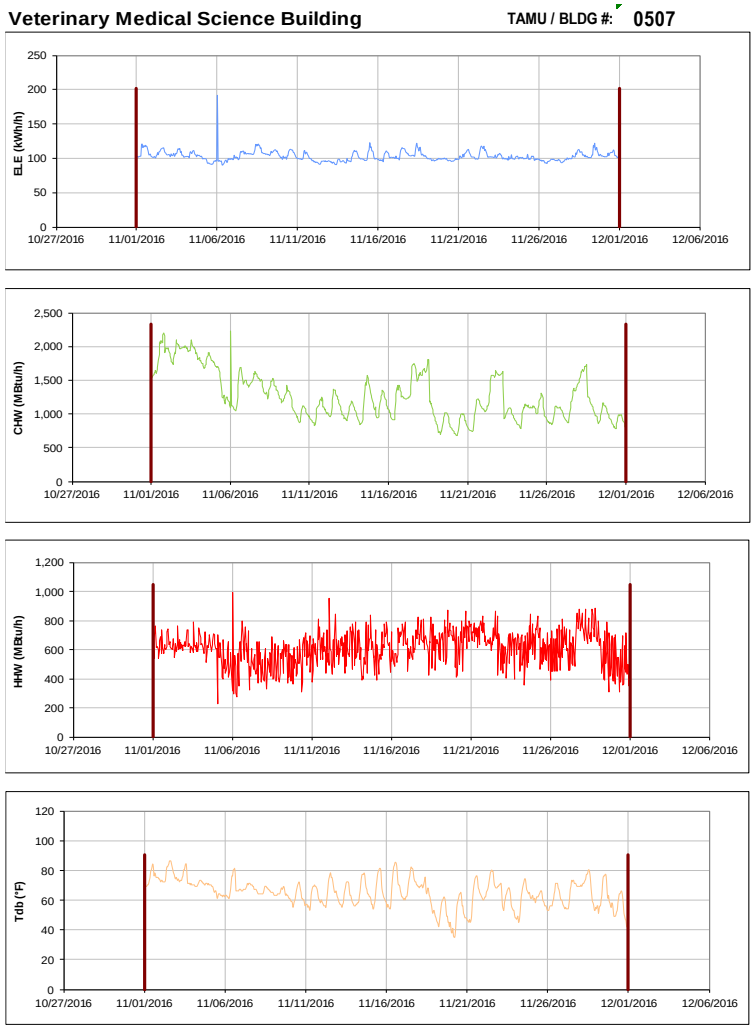


Figure III-103 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Medical Science Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

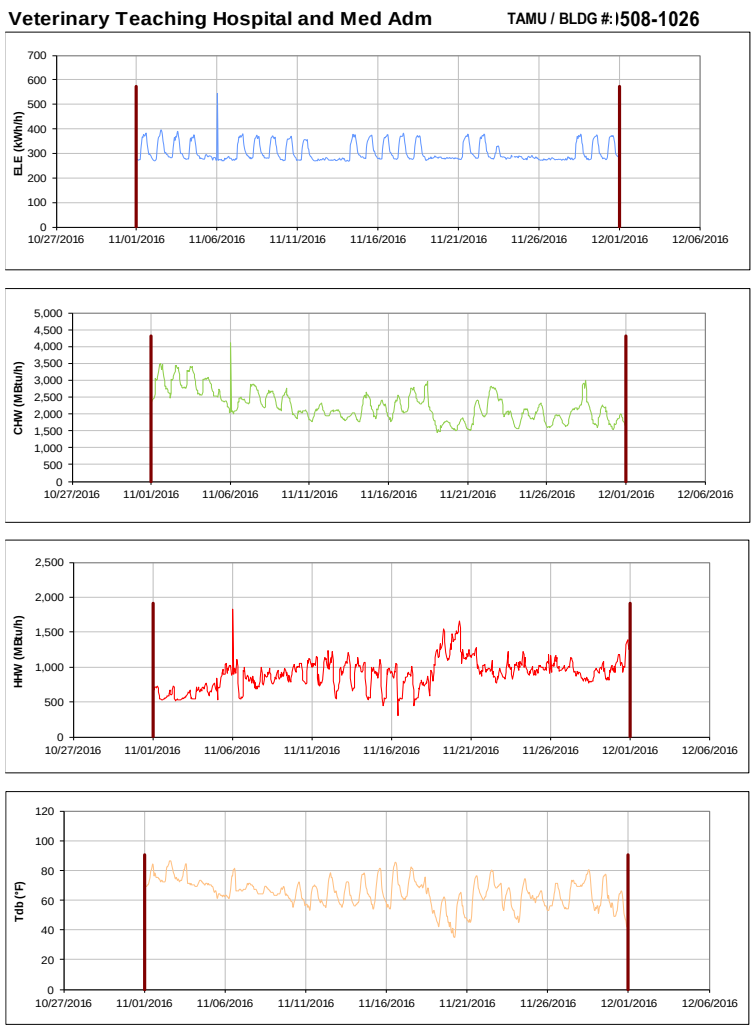


Figure III-104 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Teaching Hospital and Med Adm during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

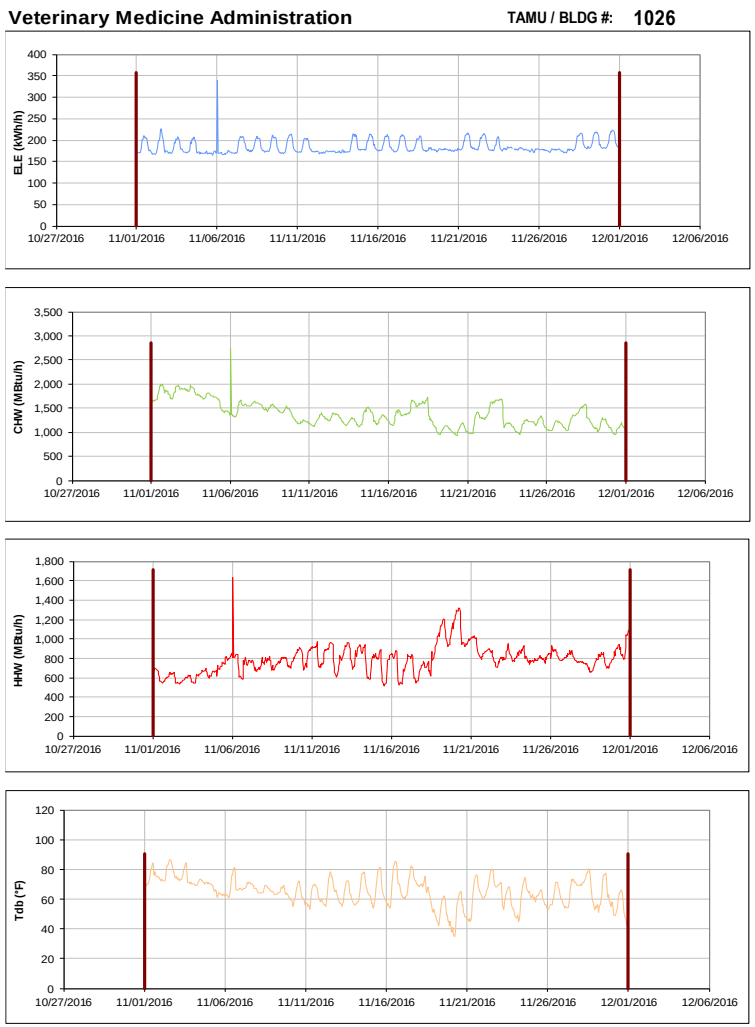


Figure III-105 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Medicine Administration during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-106 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Heep Laboratory Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

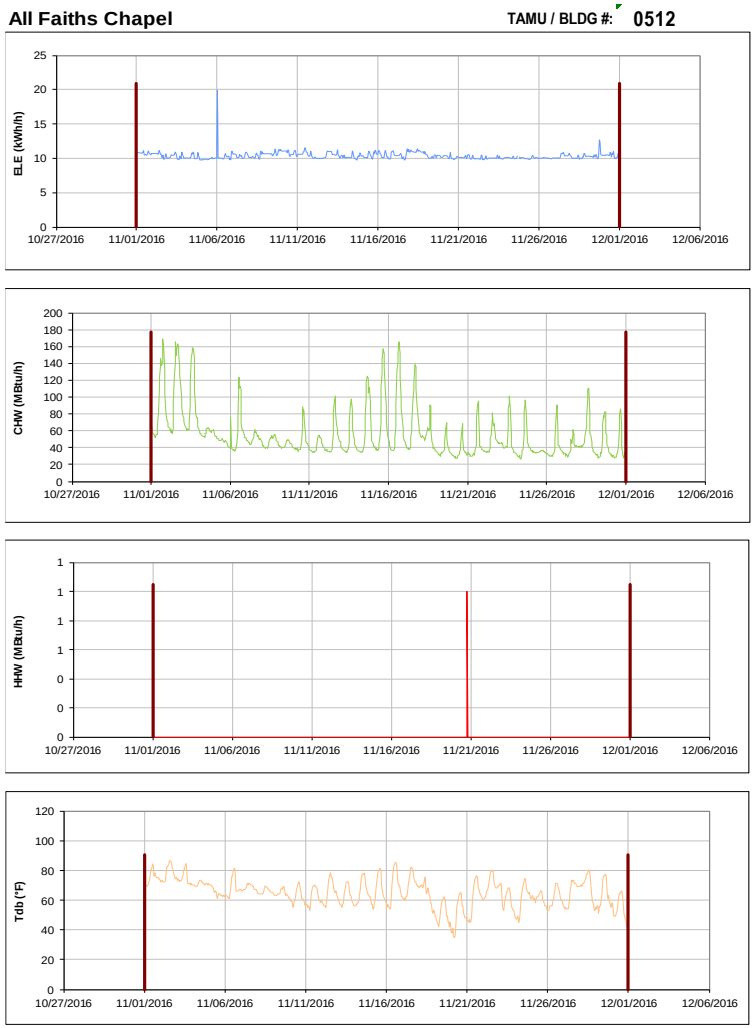


Figure III-107 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for All Faiths Chapel during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

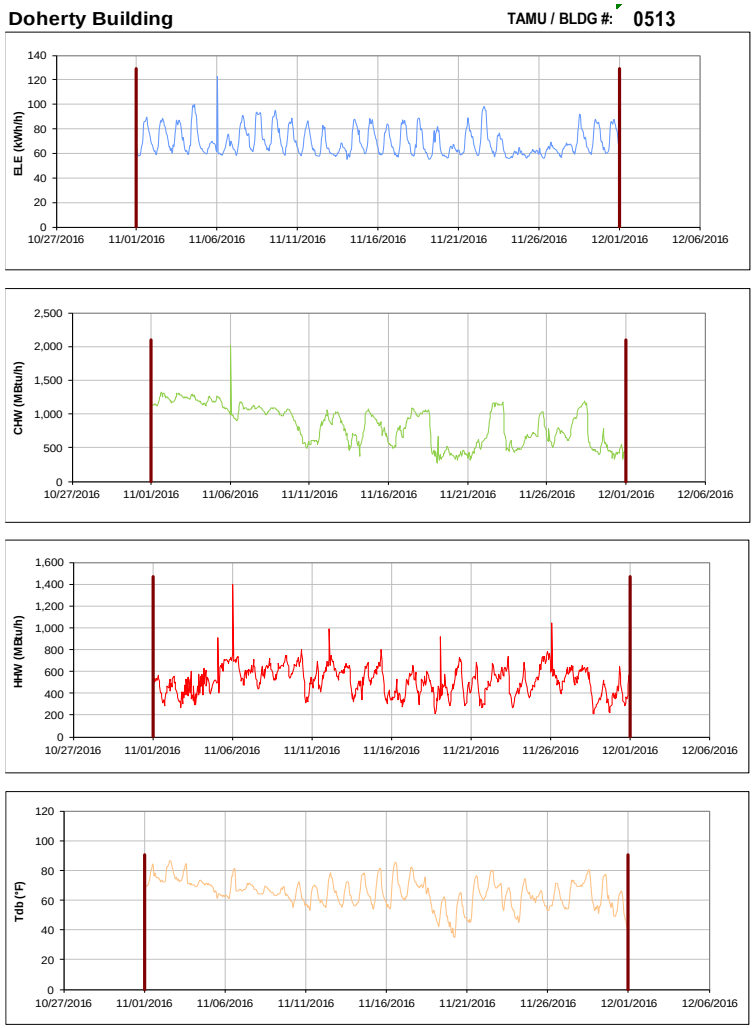


Figure III-108 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Doherty Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

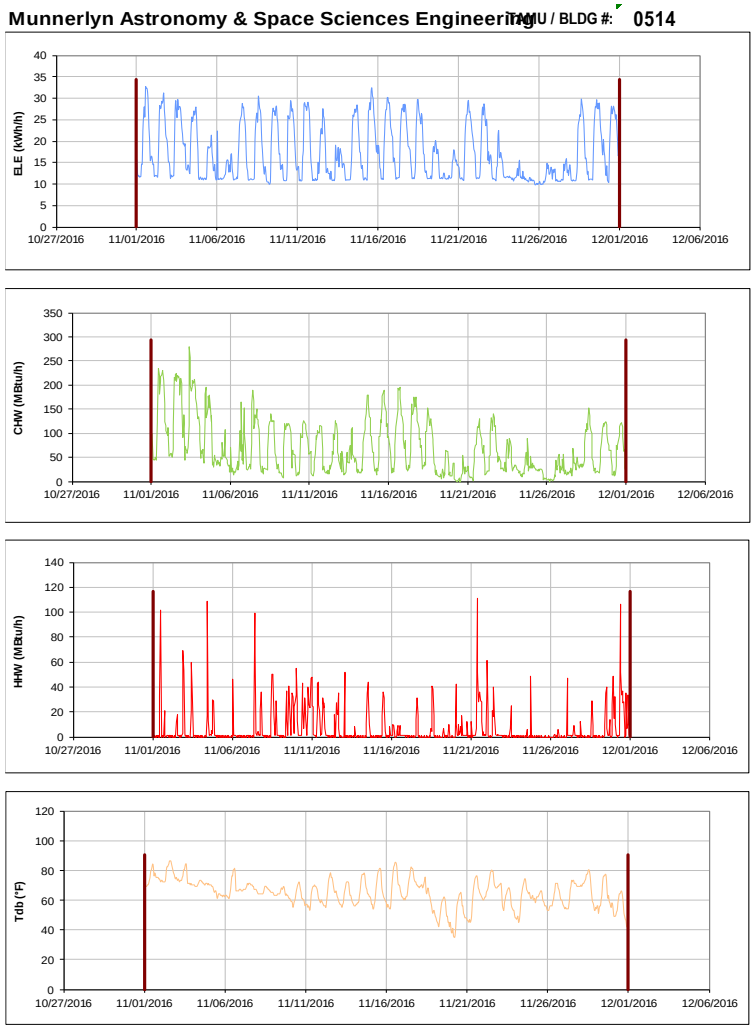


Figure III-109 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Munnerlyn Astronomy & Space Sciences Engineering during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

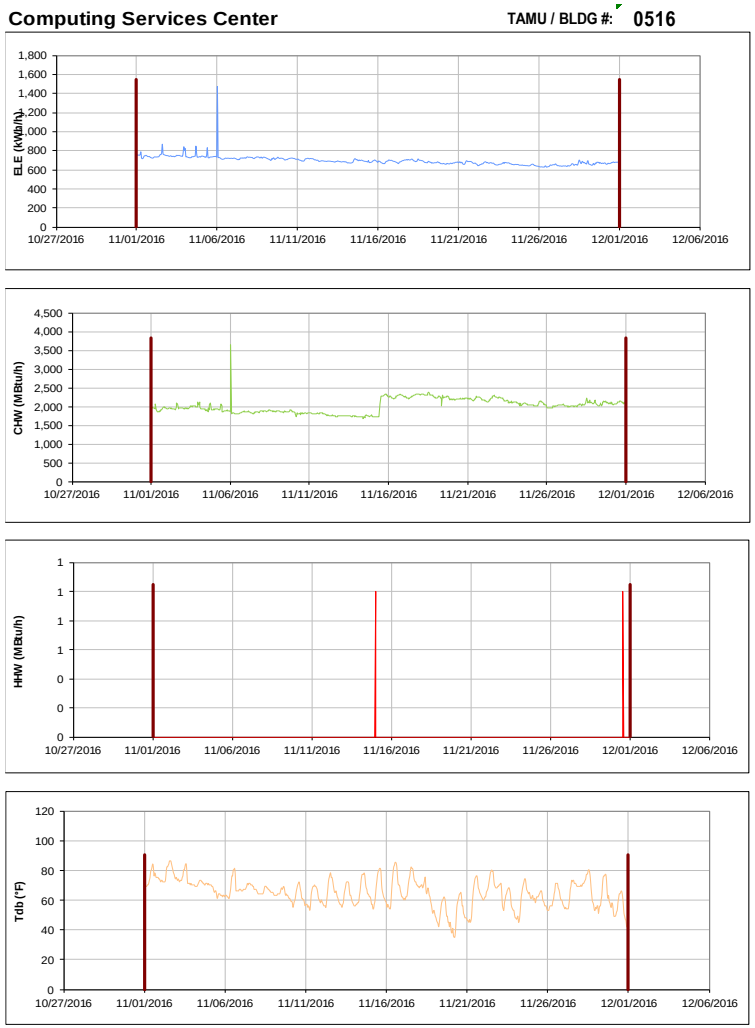


Figure III-110 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Computing Services Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-111 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Beutel Health Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

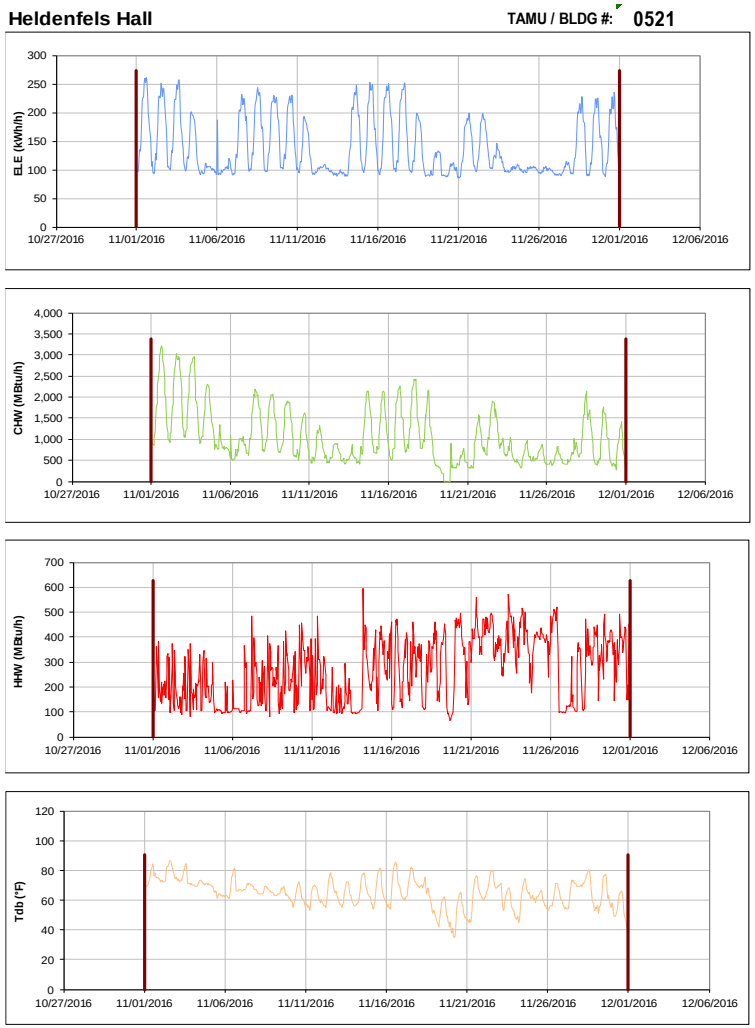


Figure III-112 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Heldenfels Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-113 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Blocker building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

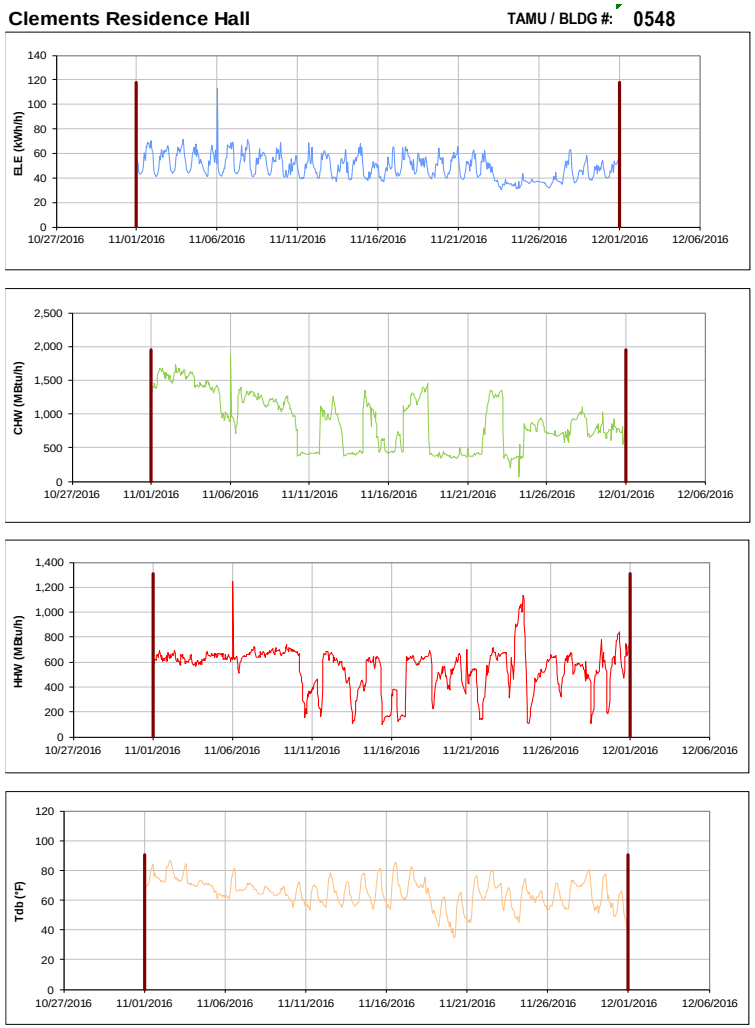


Figure III-114 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Clements Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

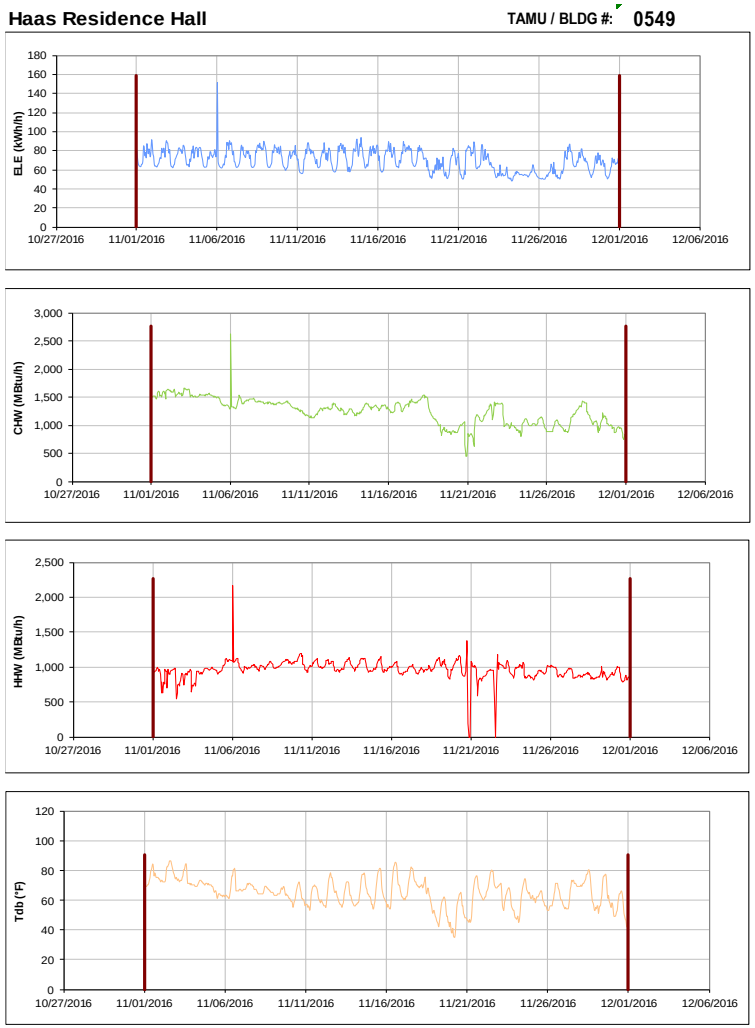


Figure III-115 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Haas Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

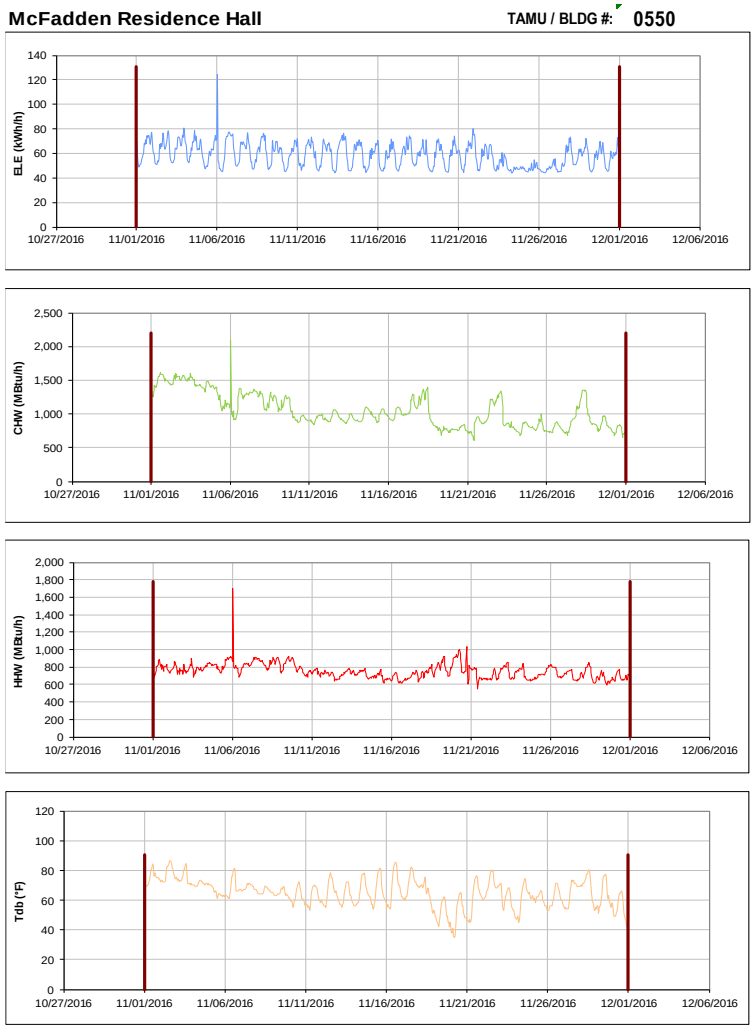


Figure III-116 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for McFadden Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

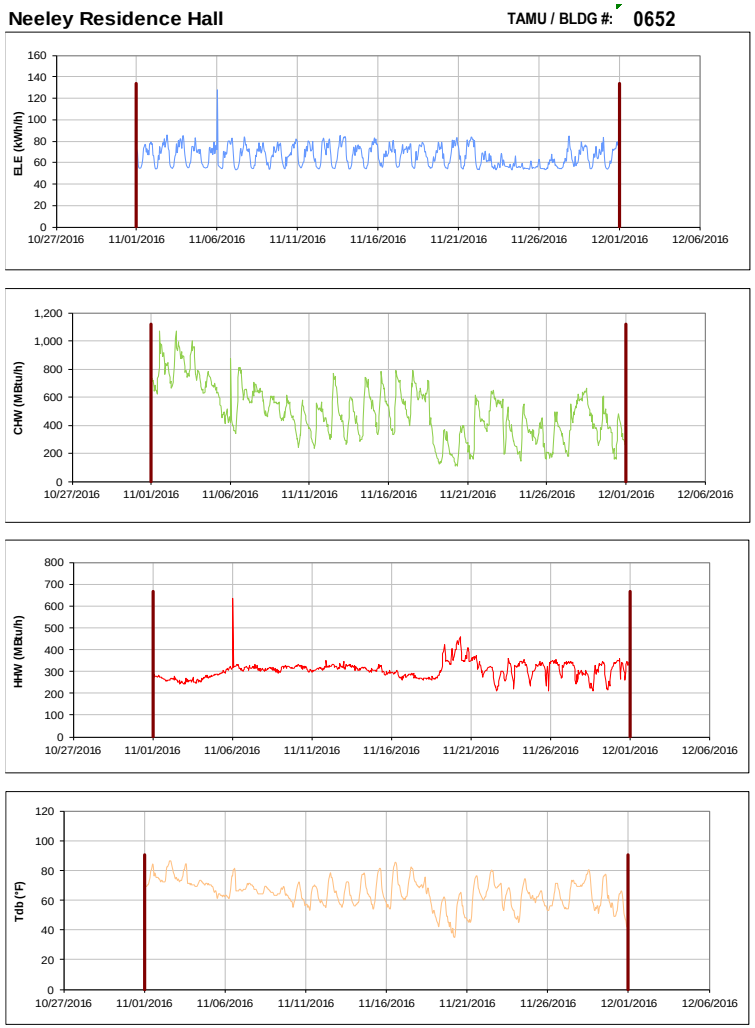


Figure III-117 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Neeley Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

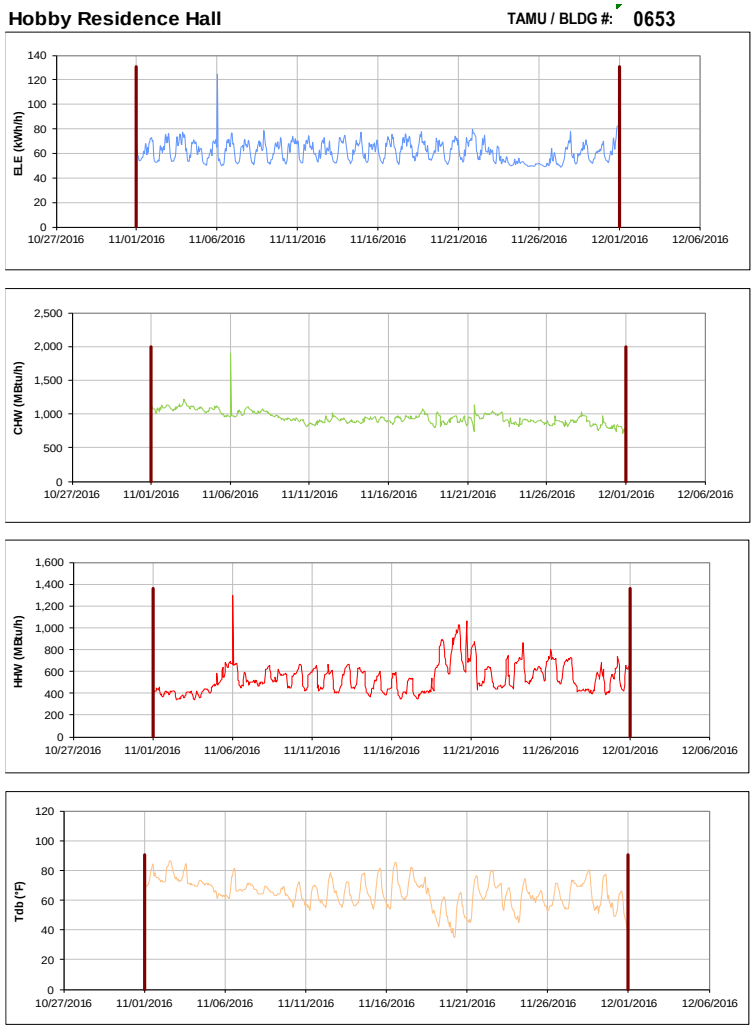


Figure III-118 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Hobby Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-119 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Wisenbaker Engineering Research Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

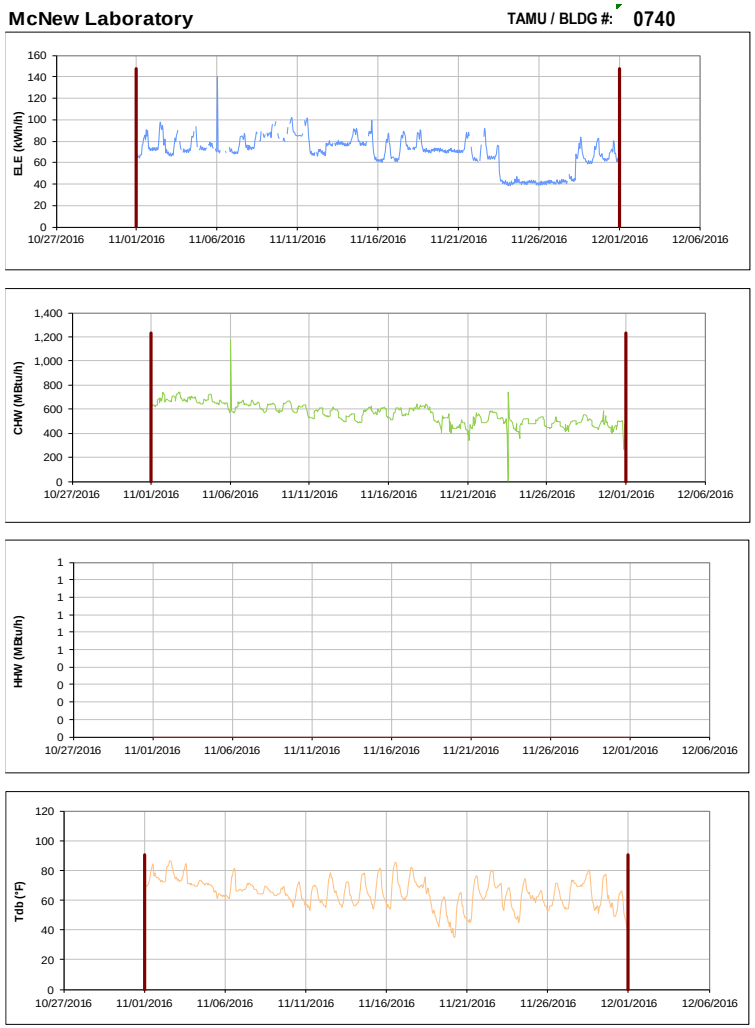


Figure III-120 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for McNew Laboratory during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

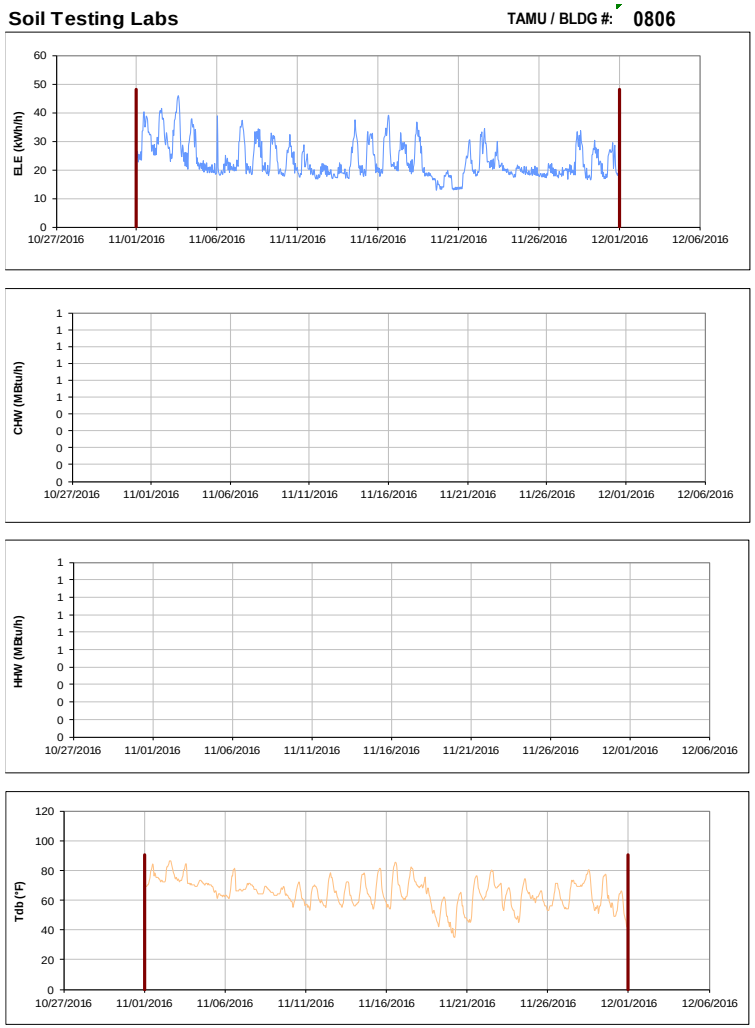


Figure III-121 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Soil Testing Labs during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

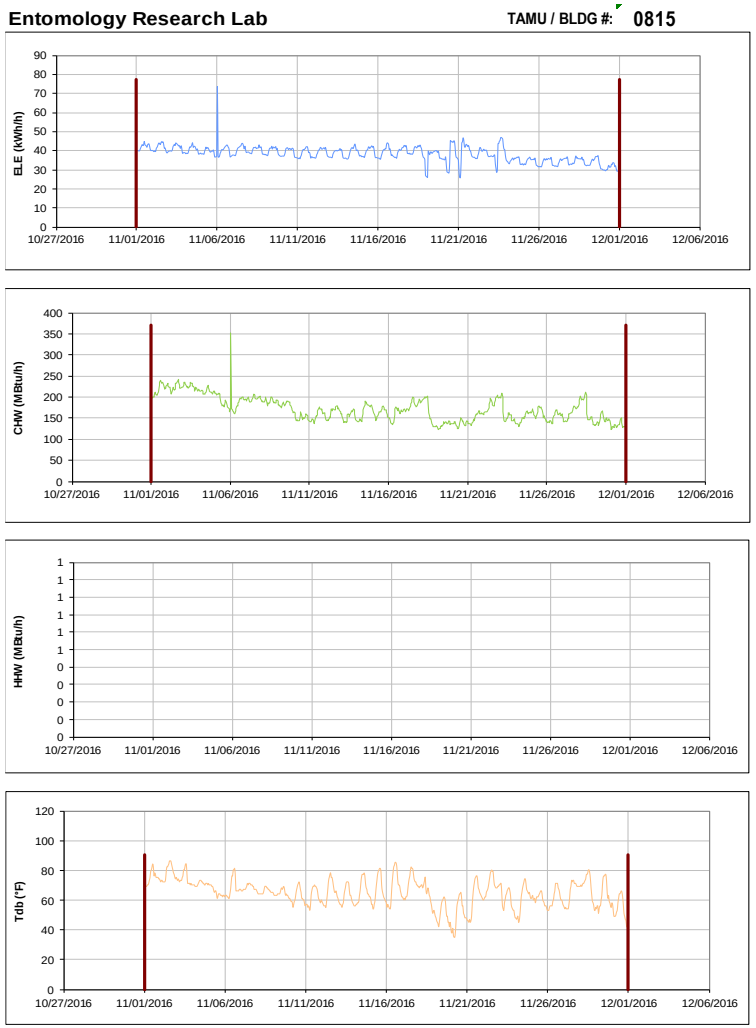


Figure III-122 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Entomology Research Lab during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-123 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for TVMC-Small Animal Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-124 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Laboratory Animal Care Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

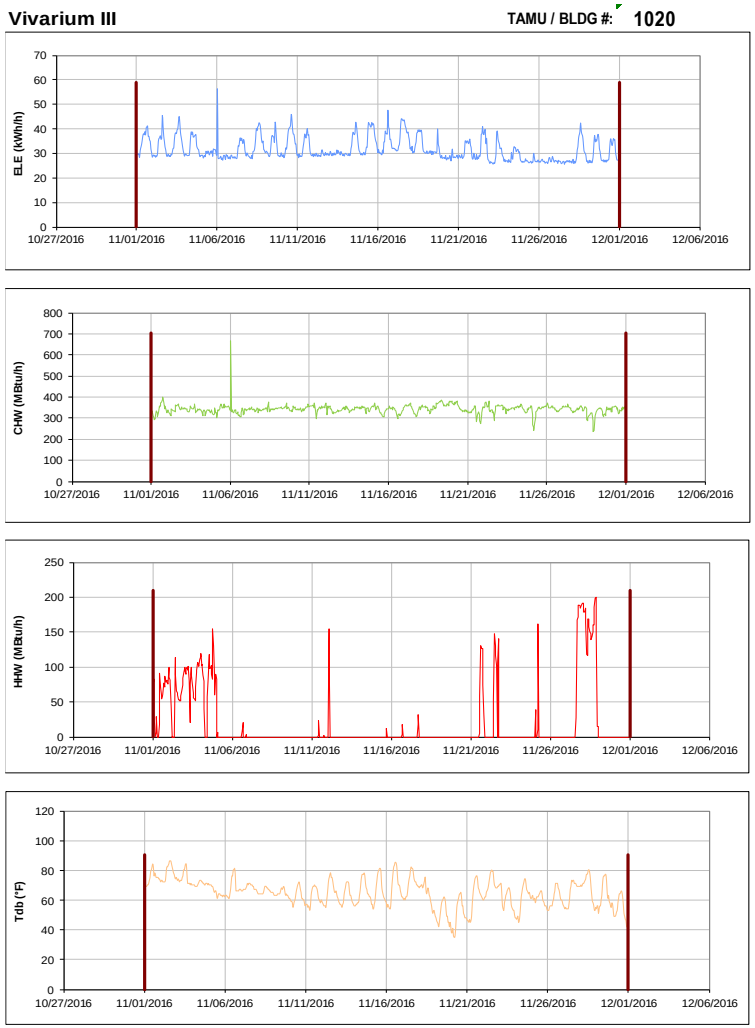


Figure III-125 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Vivarium III during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

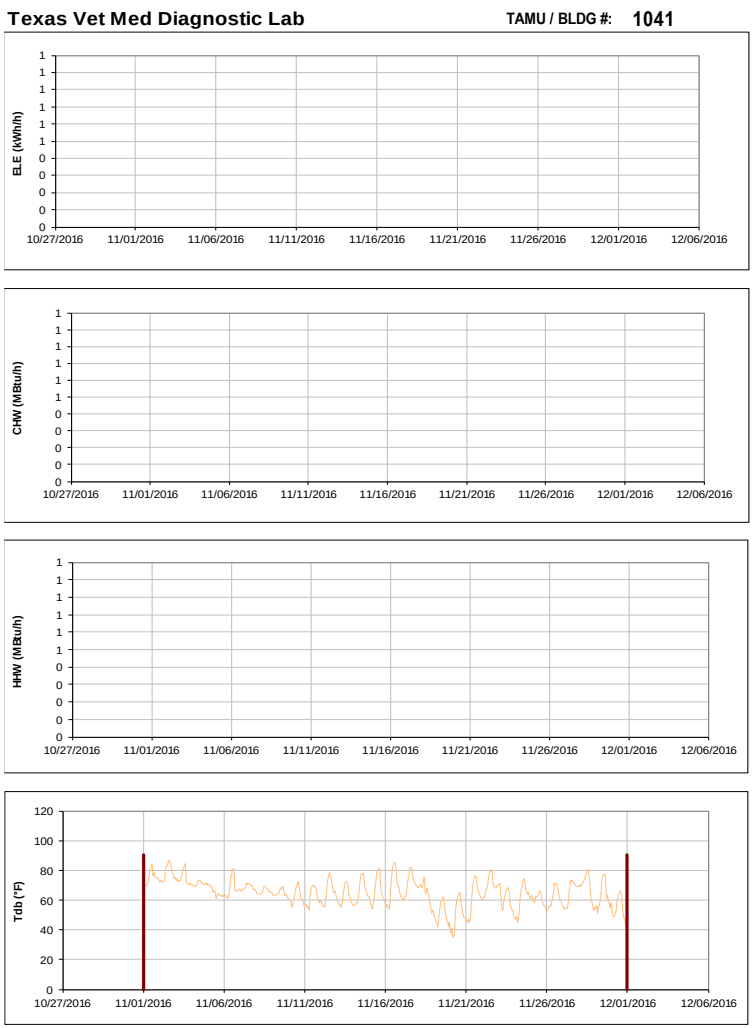


Figure III-126 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Texas Vet Med Diagnostic Lab during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

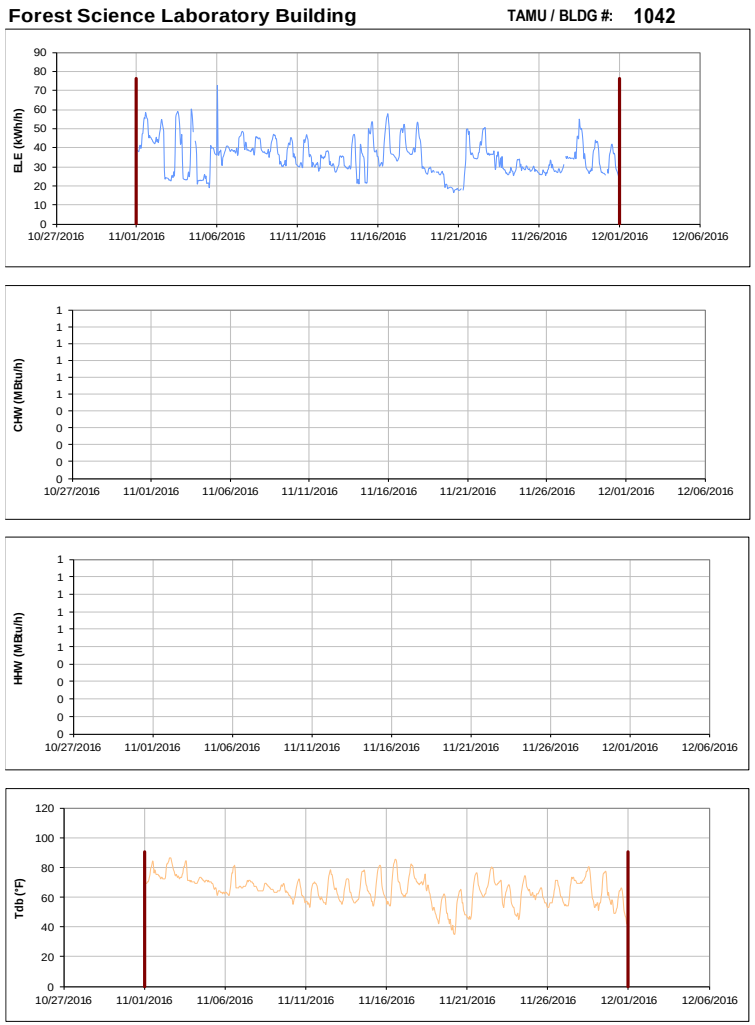


Figure III-127 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Forest Science Laboratory Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-128 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Small Animal Hospital during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

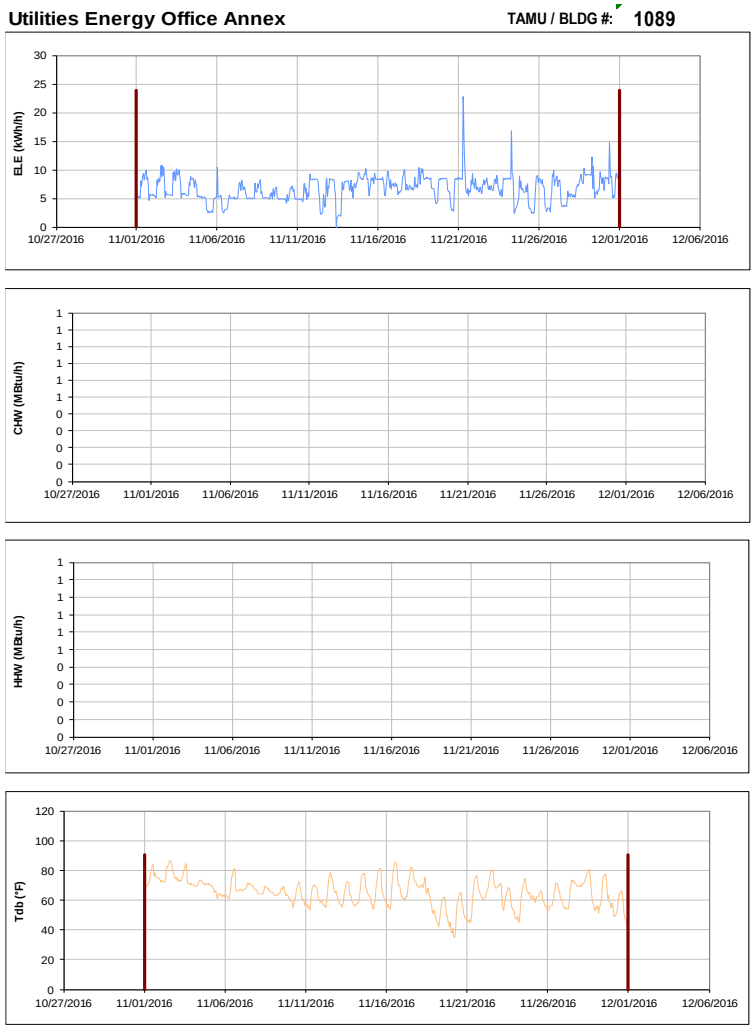


Figure III-129 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Utilities Energy Office Annex during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-130 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Biological Control Facility during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-131 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Physical Plant Administration & Shops during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

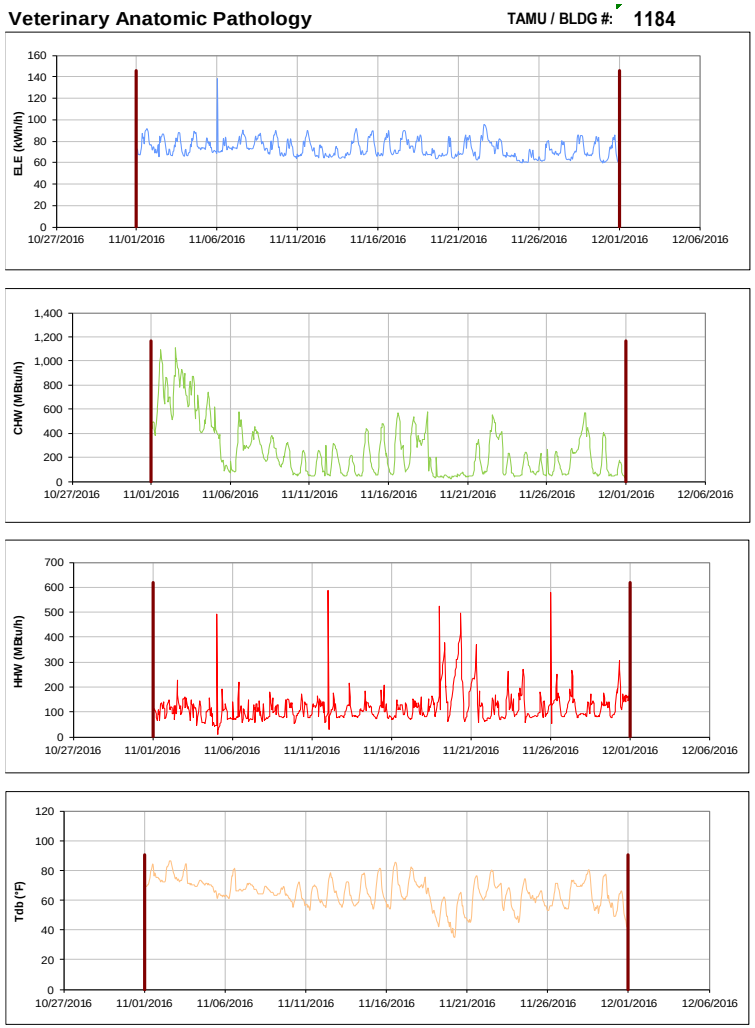


Figure III-132 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Anatomic Pathology during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-133 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Large Animal Hospital during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-134 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Research Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

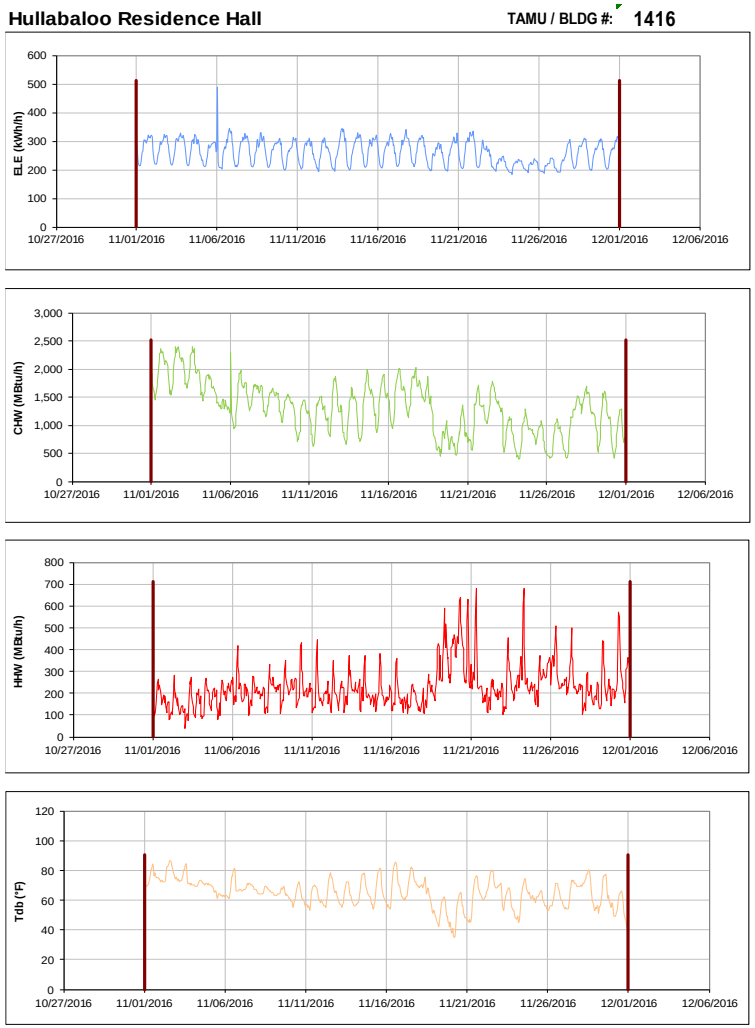


Figure III-135 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Hullabaloo Residence Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

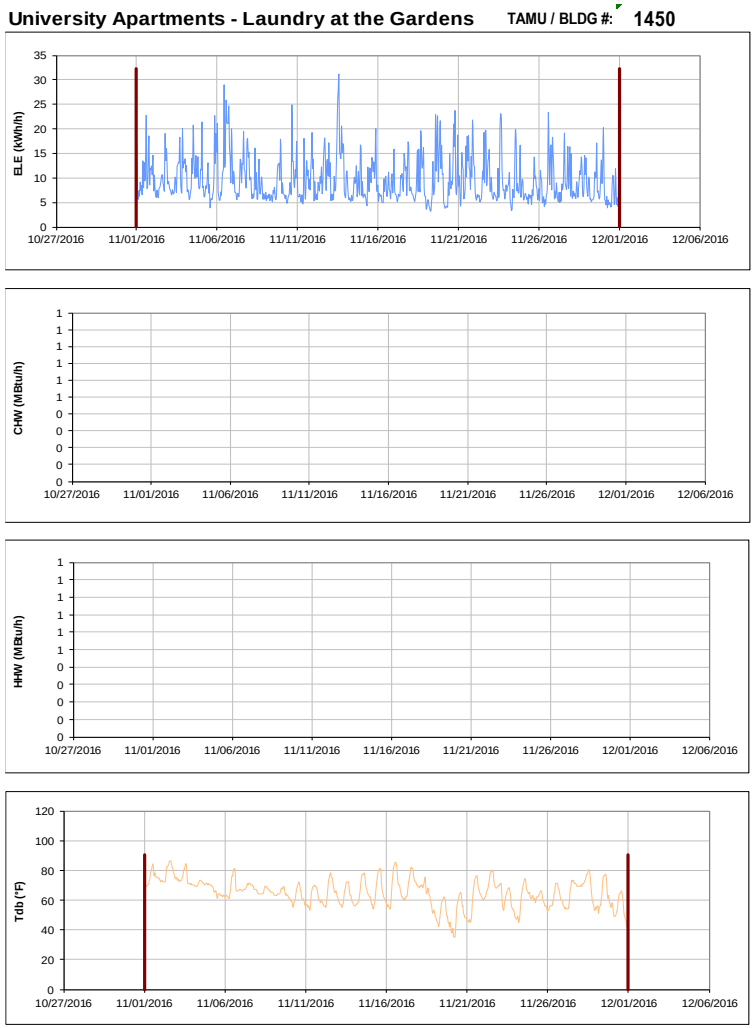


Figure III-136 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - Laundry at the Gardens during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

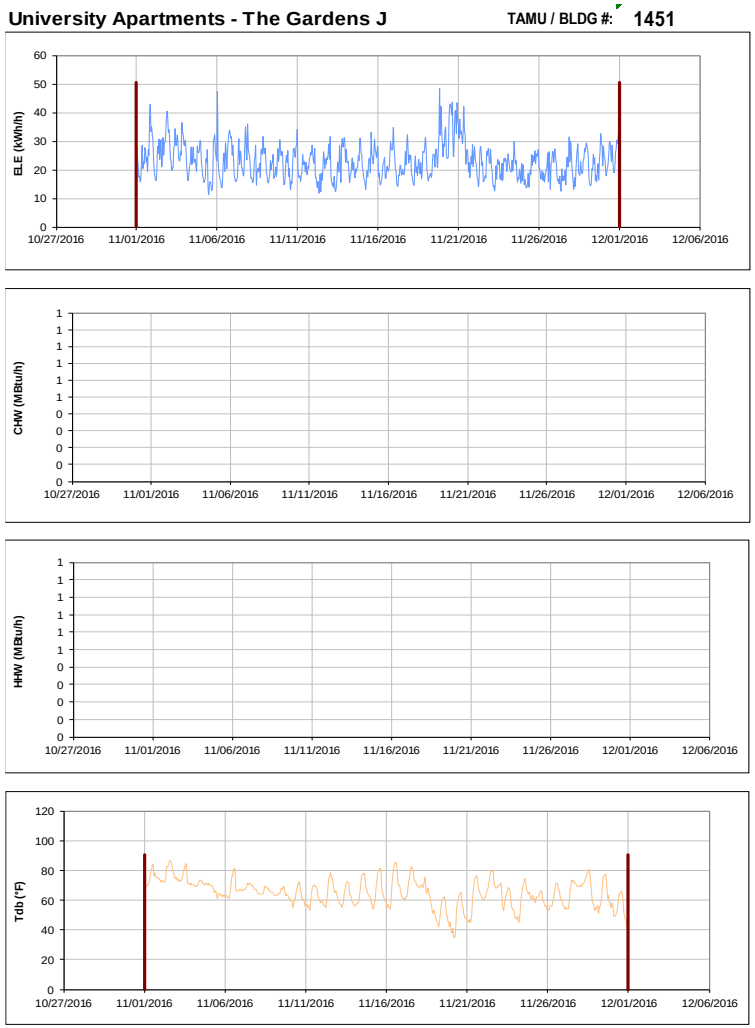


Figure III-137 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens J during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

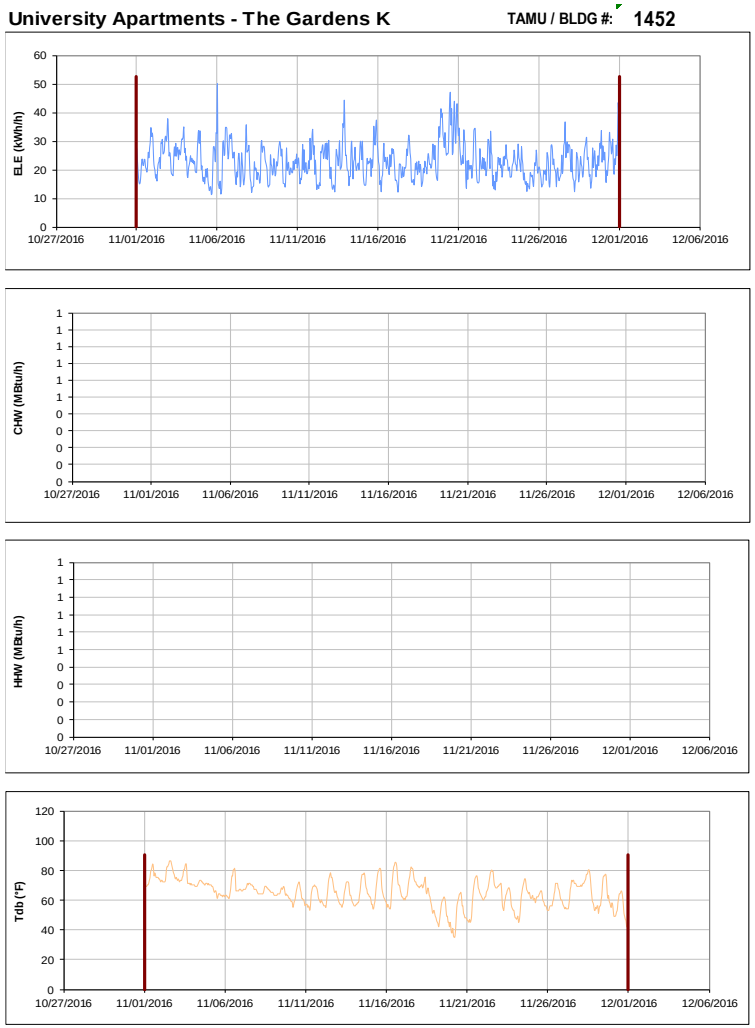


Figure III-138 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens K during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

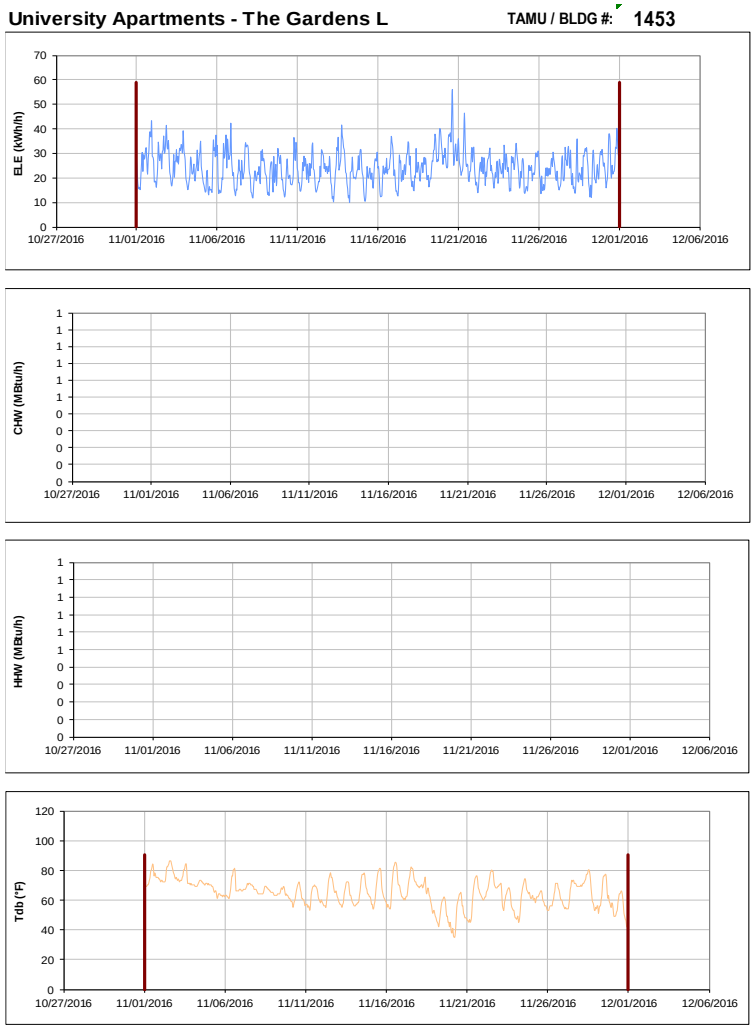


Figure III-139 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens L during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

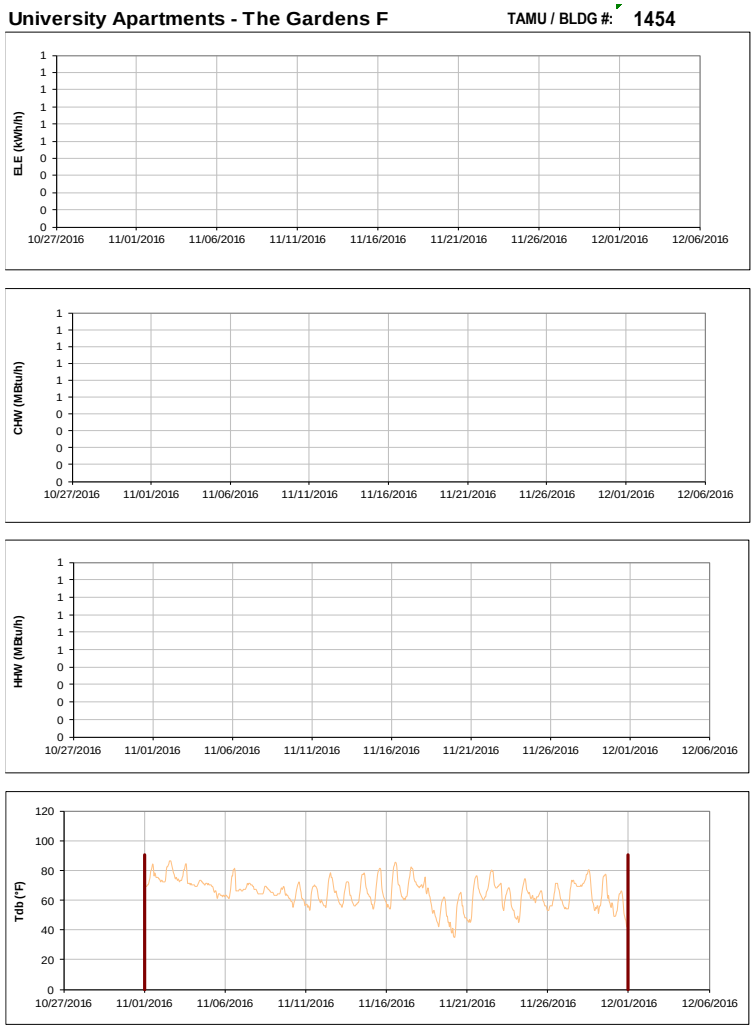


Figure III-140 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens F during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

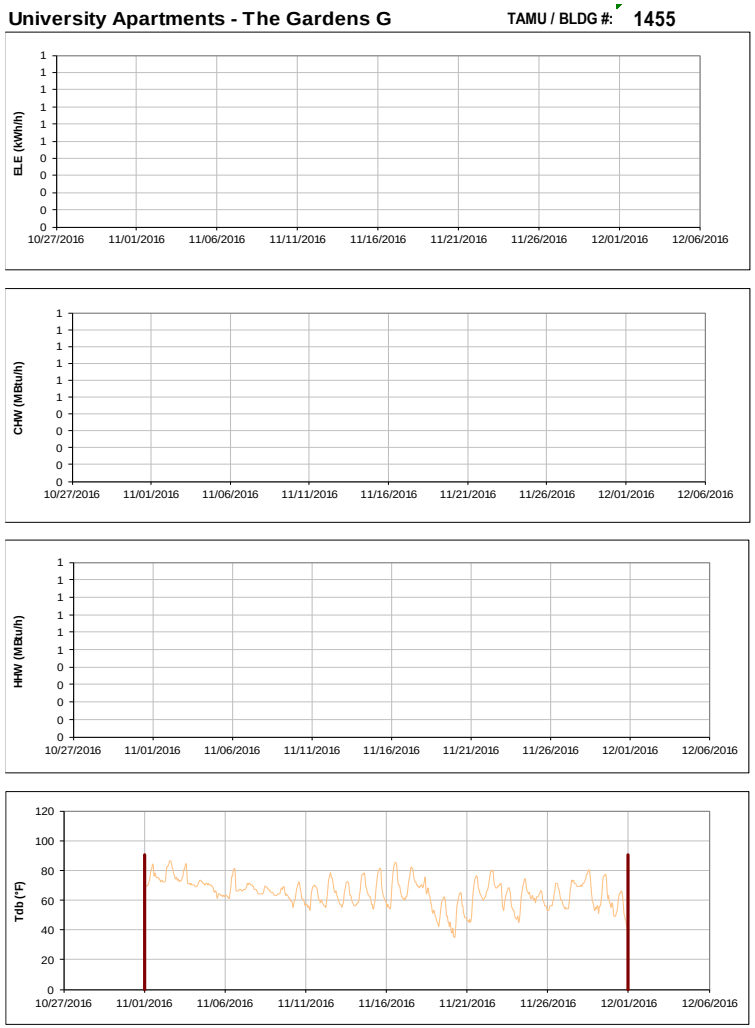


Figure III-141 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens G during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

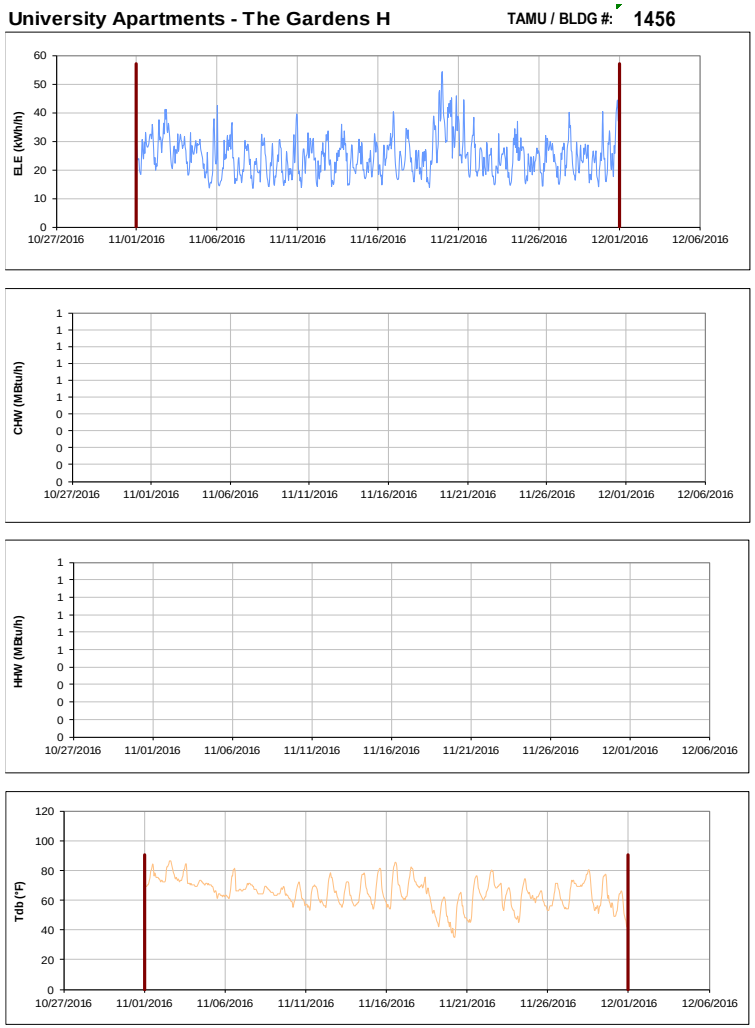


Figure III-142 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens H during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

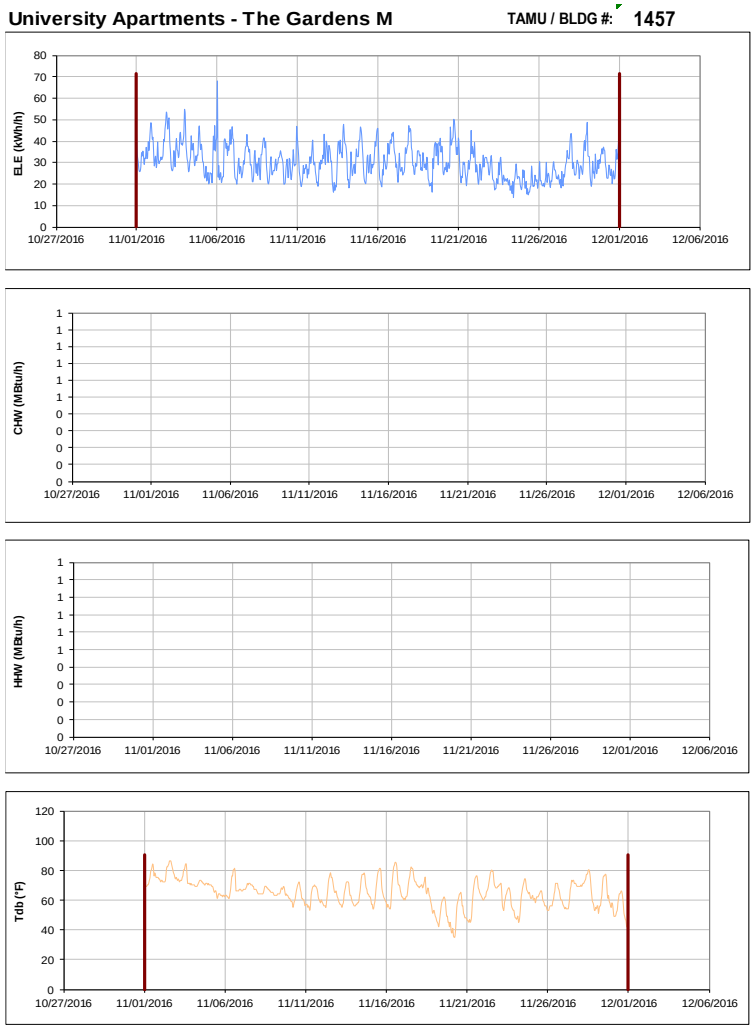


Figure III-143 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens M during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

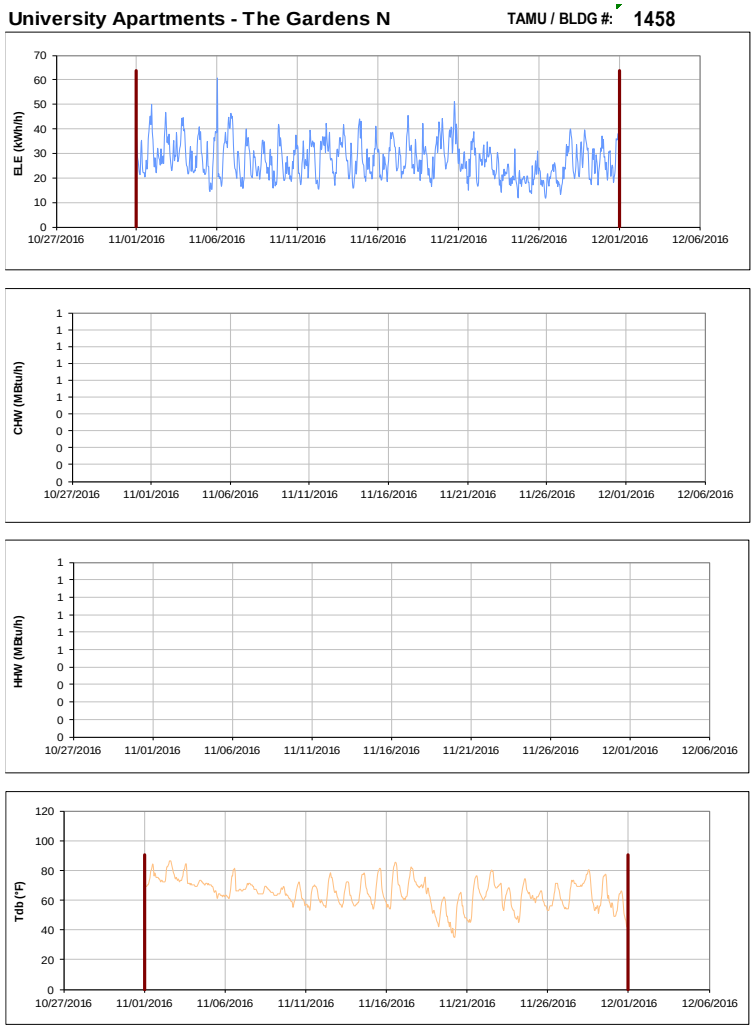


Figure III-144 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens N during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

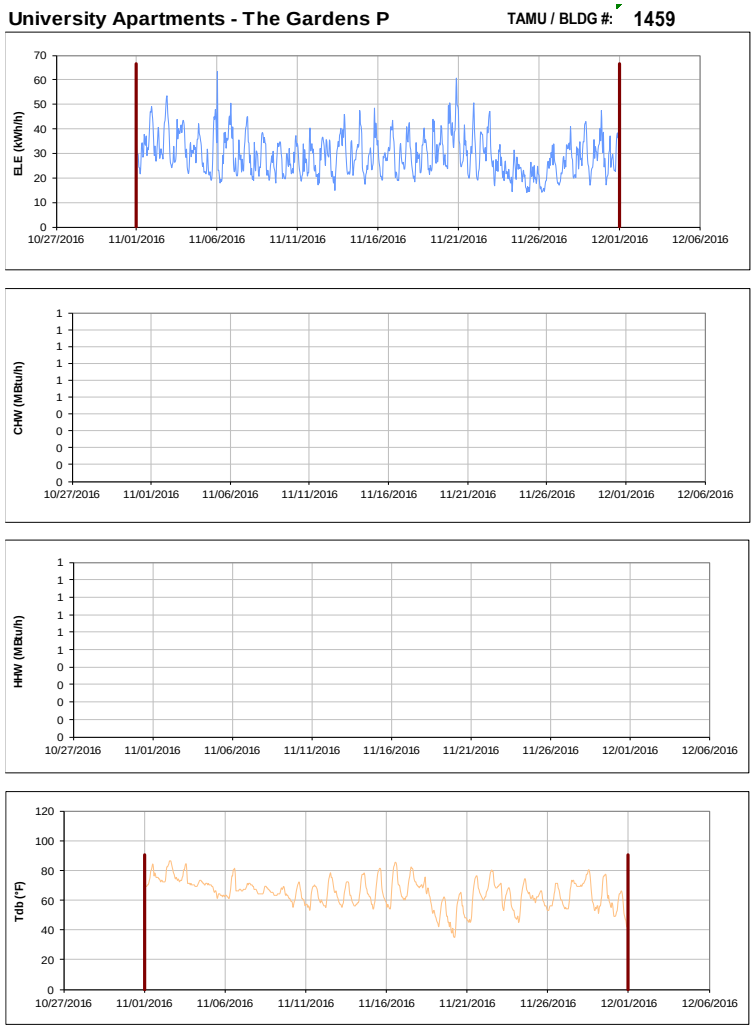


Figure III-145 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens P during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

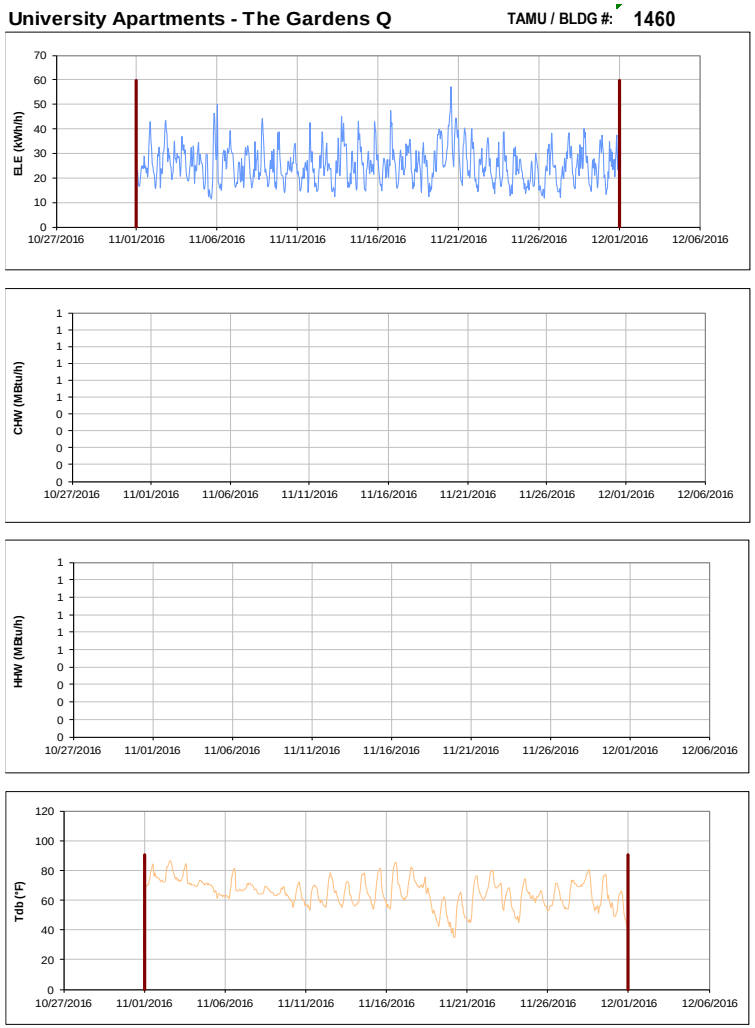


Figure III-146 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens Q during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

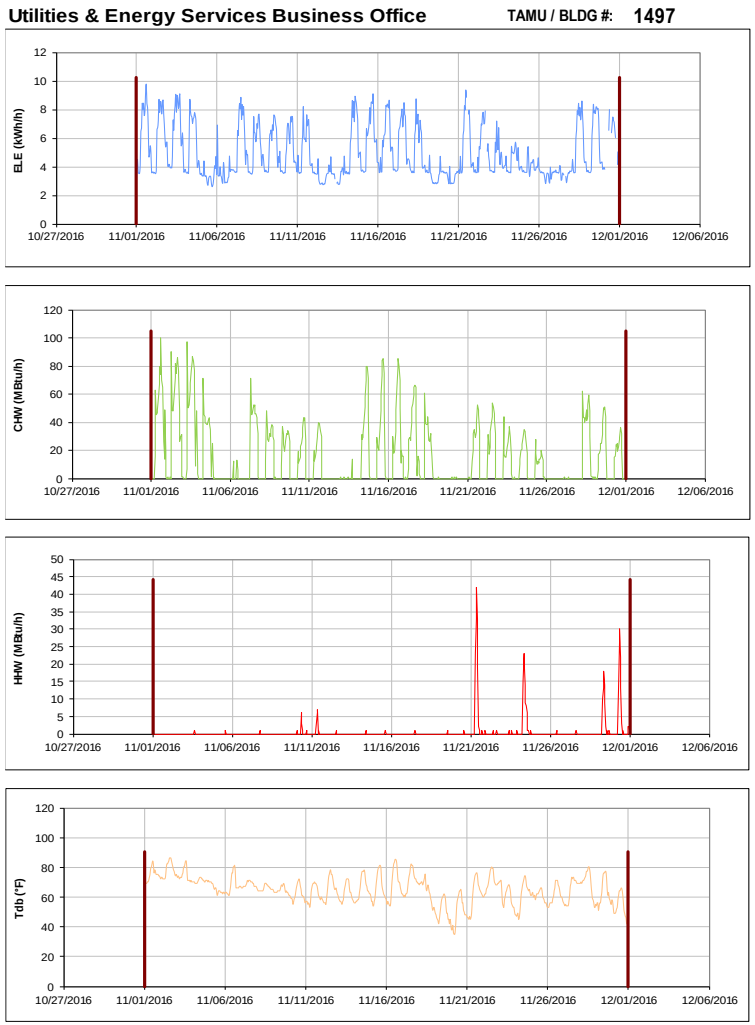


Figure III-147 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Utilities & Energy Services Business Office during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

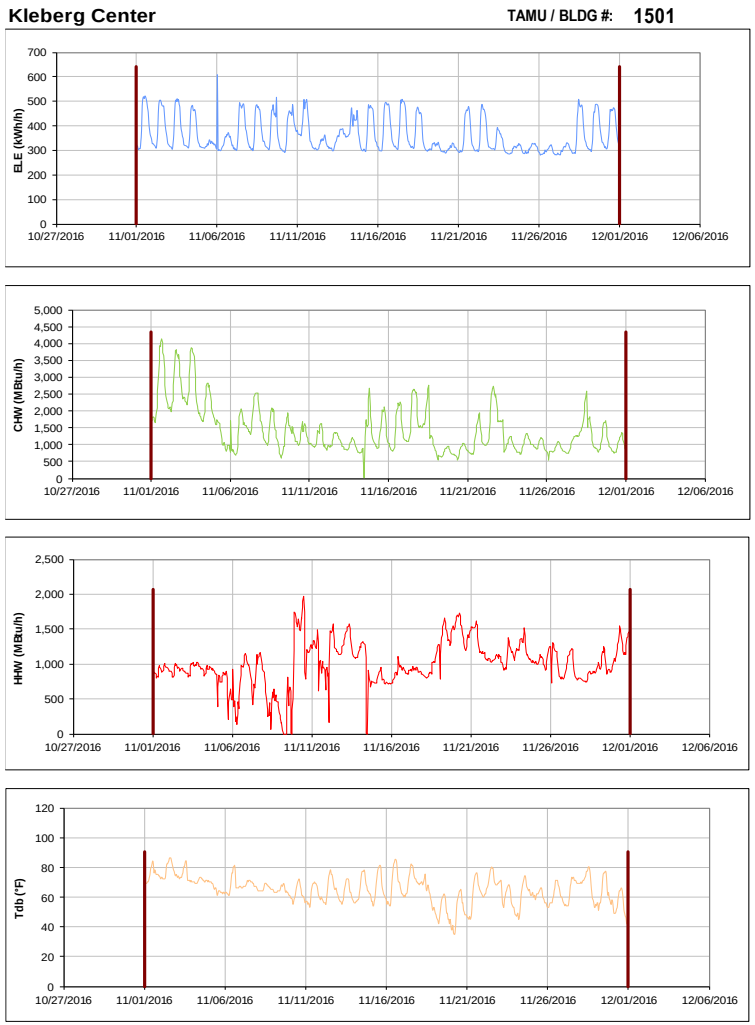


Figure III-148 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Kleberg Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-149 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Heep Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-150 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Cater-Mattil Hall during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

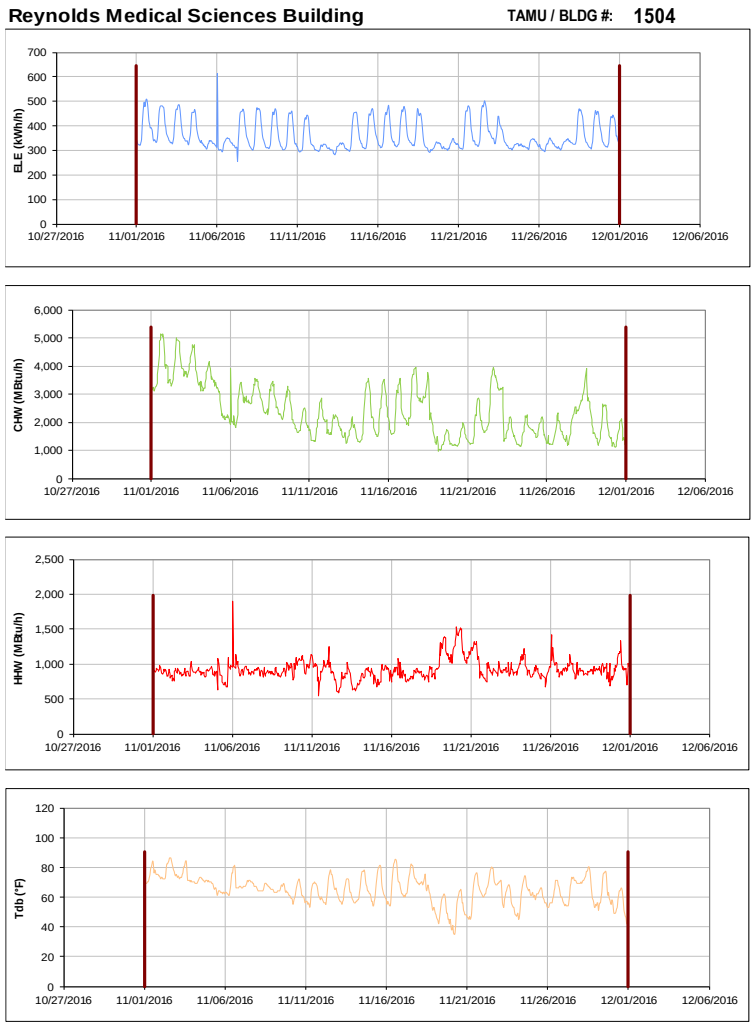


Figure III-151 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Reynolds Medical Sciences Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-152 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Rosenthal Meat Science & Technology Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-153 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Horticulture-Forest Science Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-154 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Biochemistry-Biophysics Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

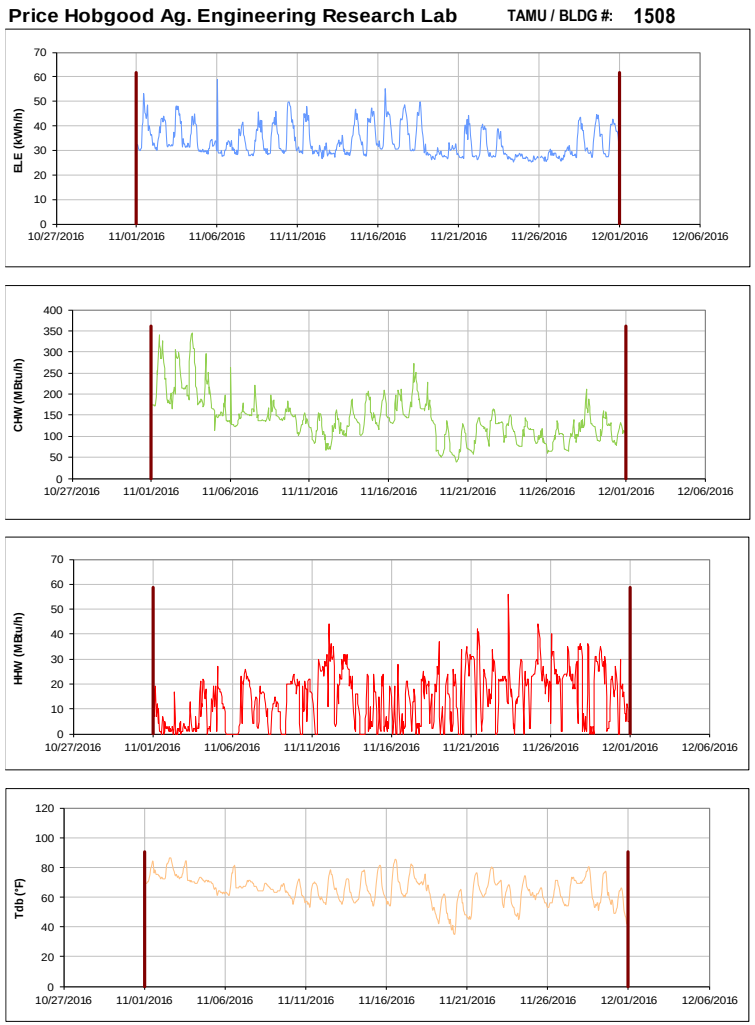


Figure III-155 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Price Hobgood Ag. Engineering Research Lab during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-156 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Medical Sciences Library during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

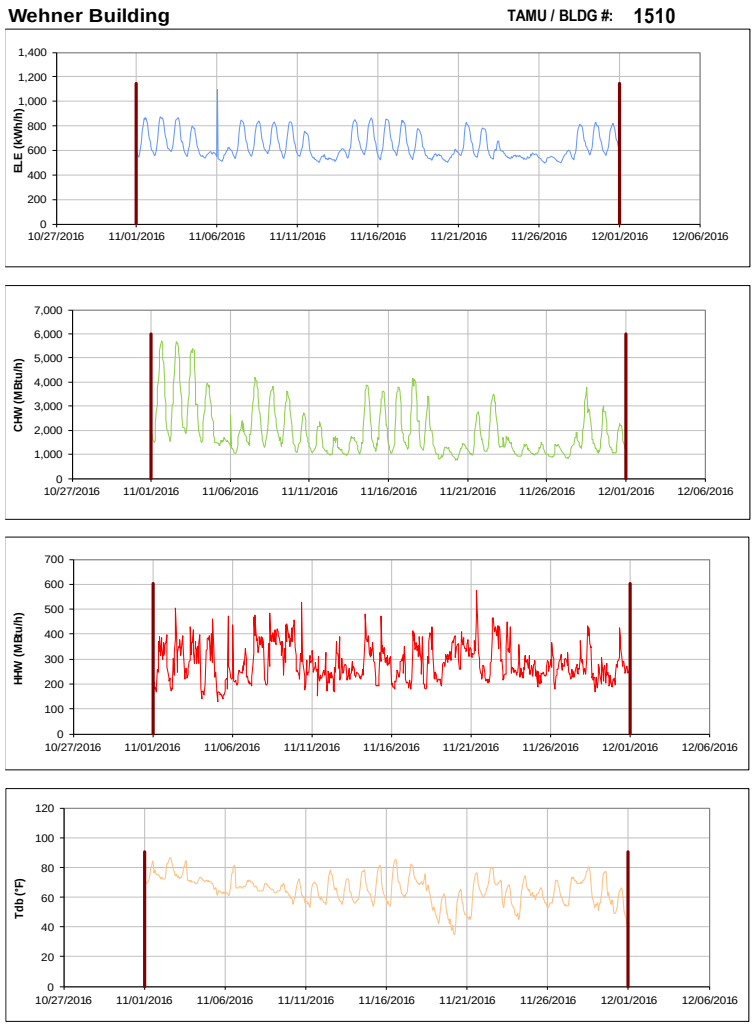


Figure III-157 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Wehner Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-158 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for West Campus Library Facility during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

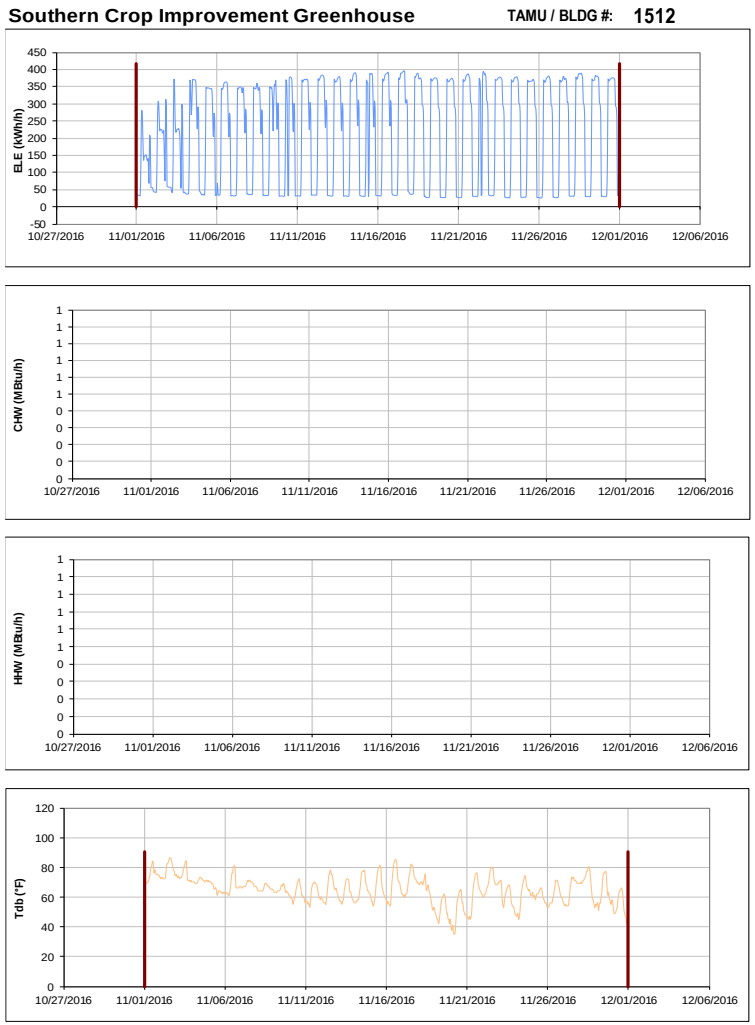


Figure III-159 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Southern Crop Improvement Greenhouse during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-160 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Borlaug Center for Southern Crop Improvement during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-161 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for TX School of Rural Public Health during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

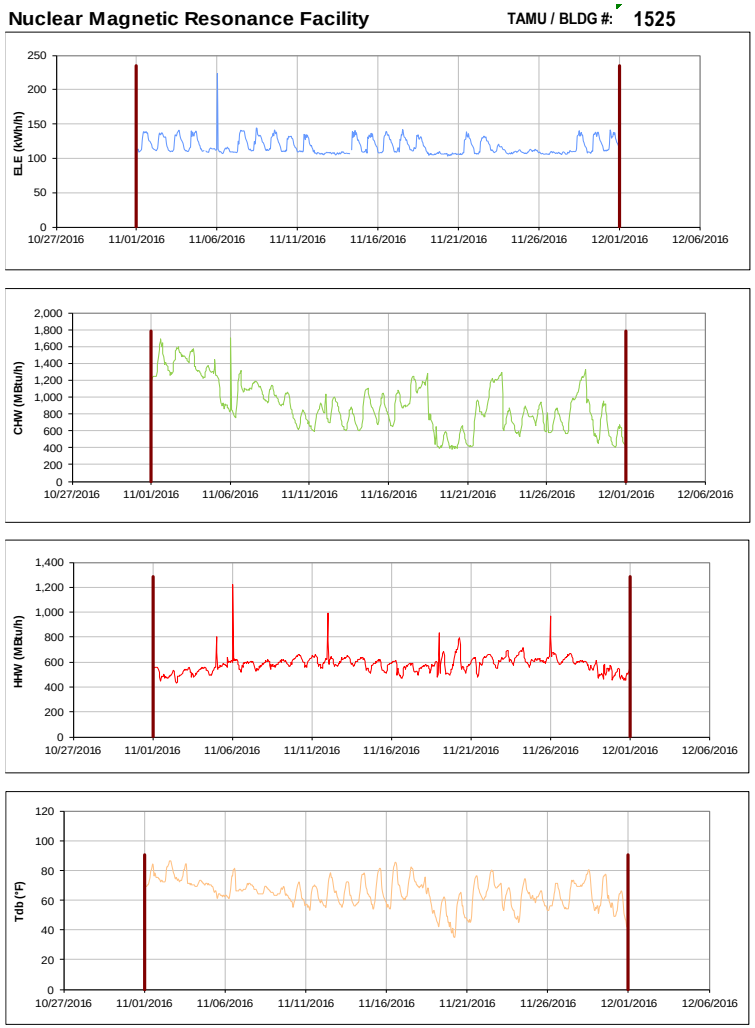


Figure III-162 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Nuclear Magnetic Resonance Facility during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-163 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Interdisciplinary Life Sciences Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

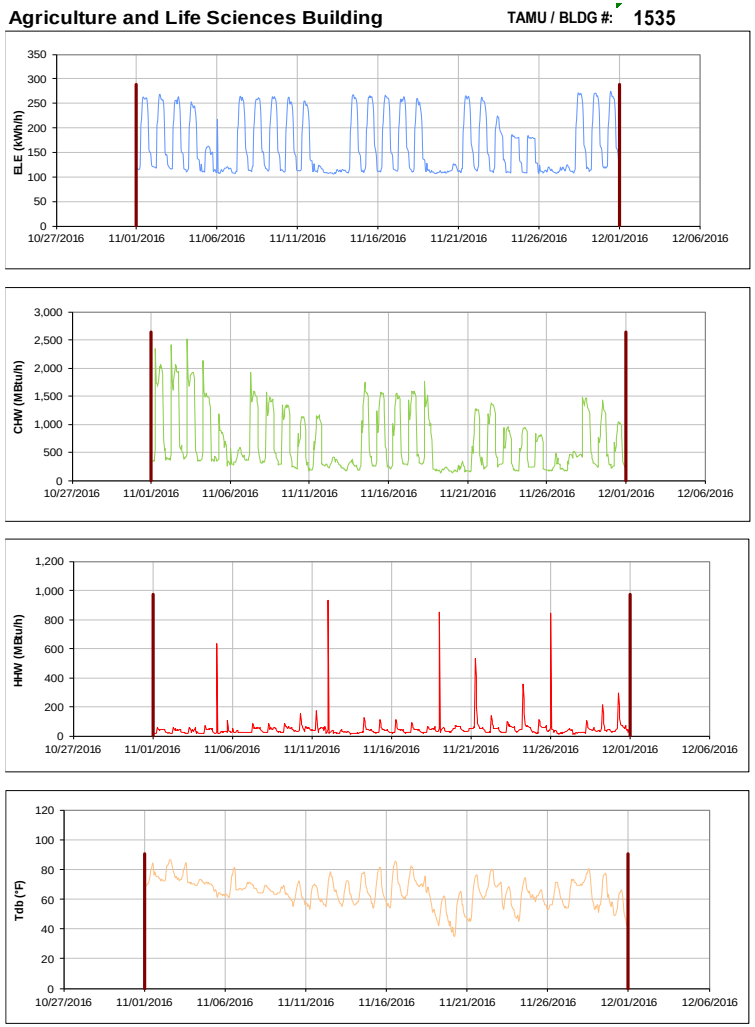


Figure III-164 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Agriculture and Life Sciences Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-165 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for AgriLife Services Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-166 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Agriculture Program Visitors Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

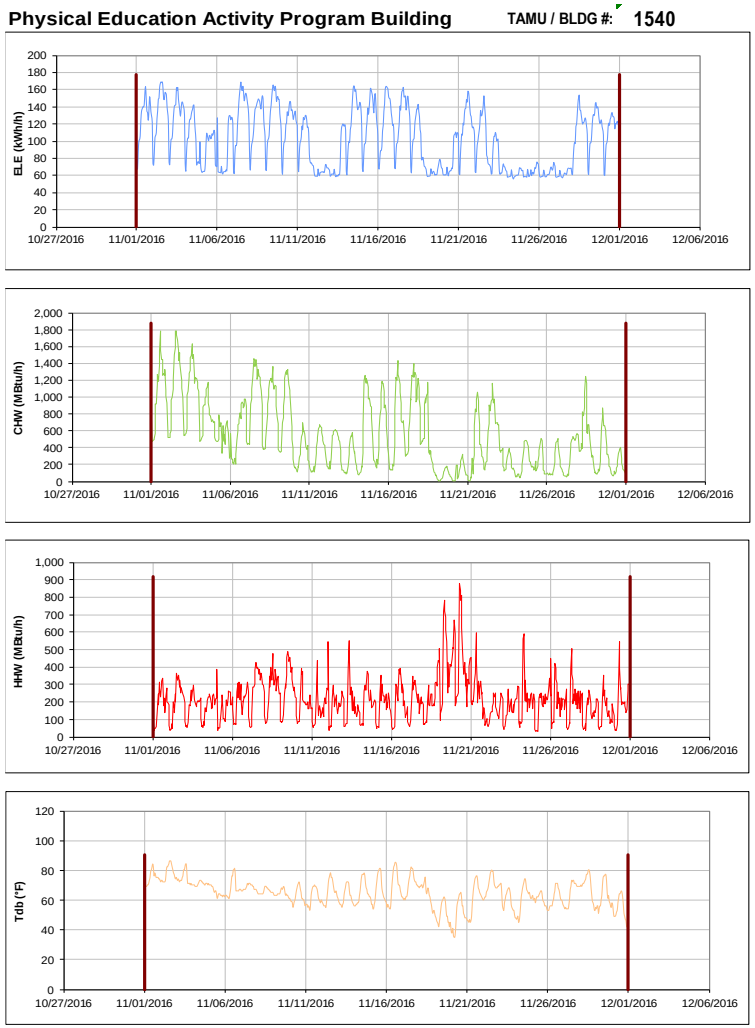


Figure III-167 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Physical Education Activity Program Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

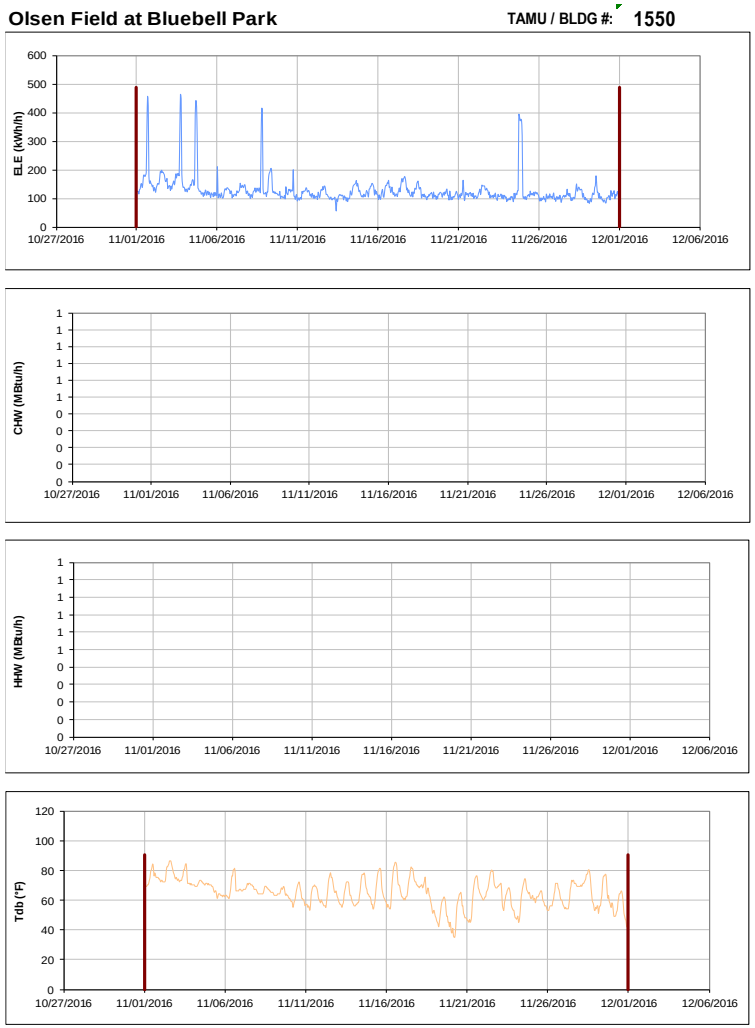


Figure III-168 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Olsen Field at Bluebell Park during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-169 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Reed Arena and Cox-McFerrin Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-170 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Cox-McFerrin Center for Aggie Basketball during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

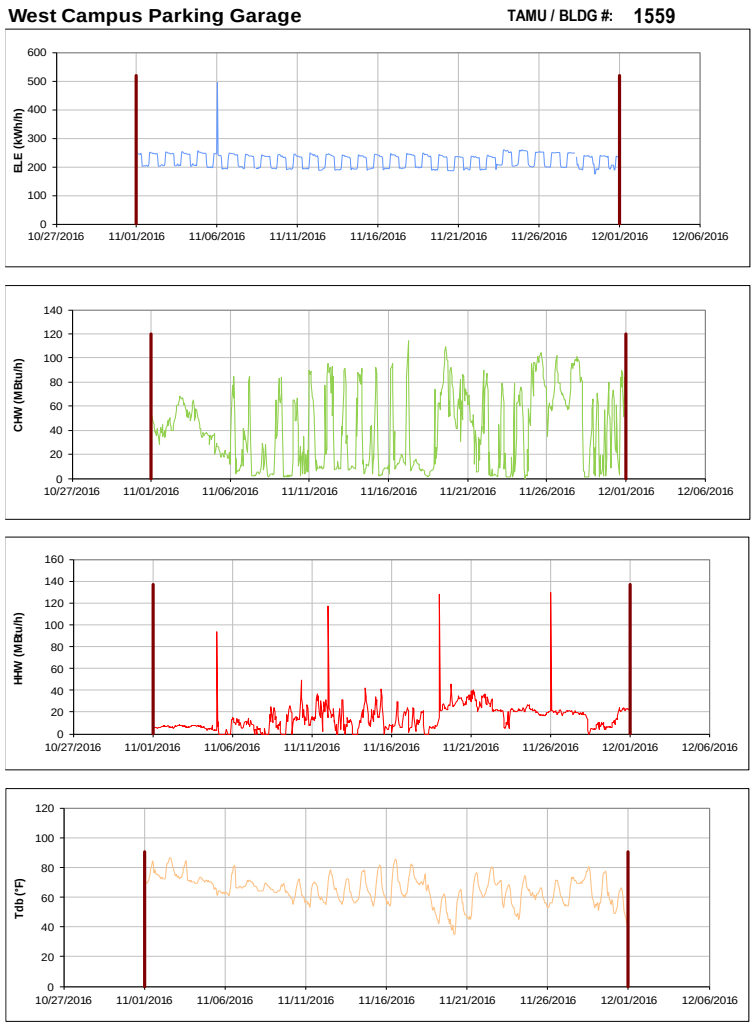


Figure III-171 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for West Campus Parking Garage during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

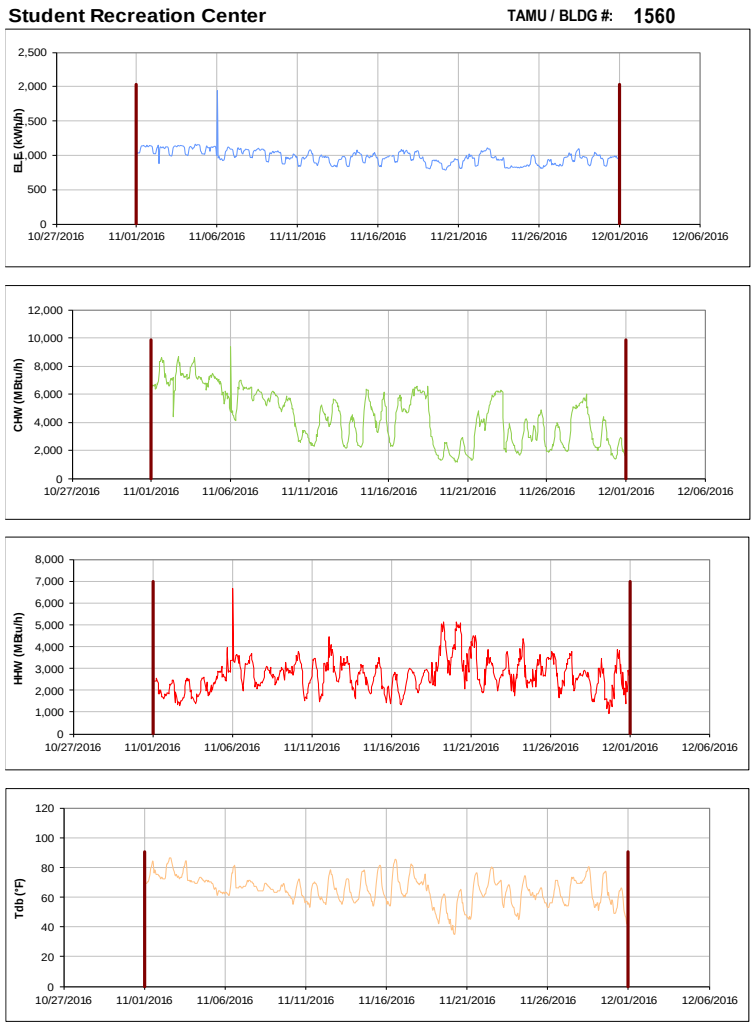


Figure III-172 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Student Recreation Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

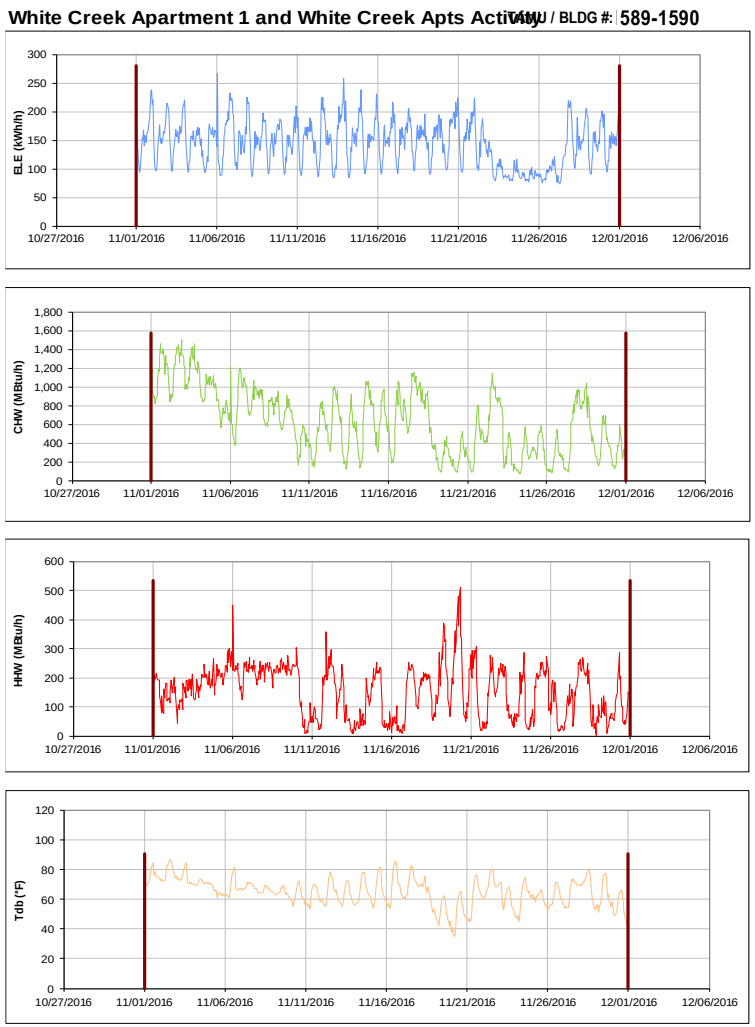


Figure III-173 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for White Creek Apartment 1 and White Creek Apts Activity Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station,

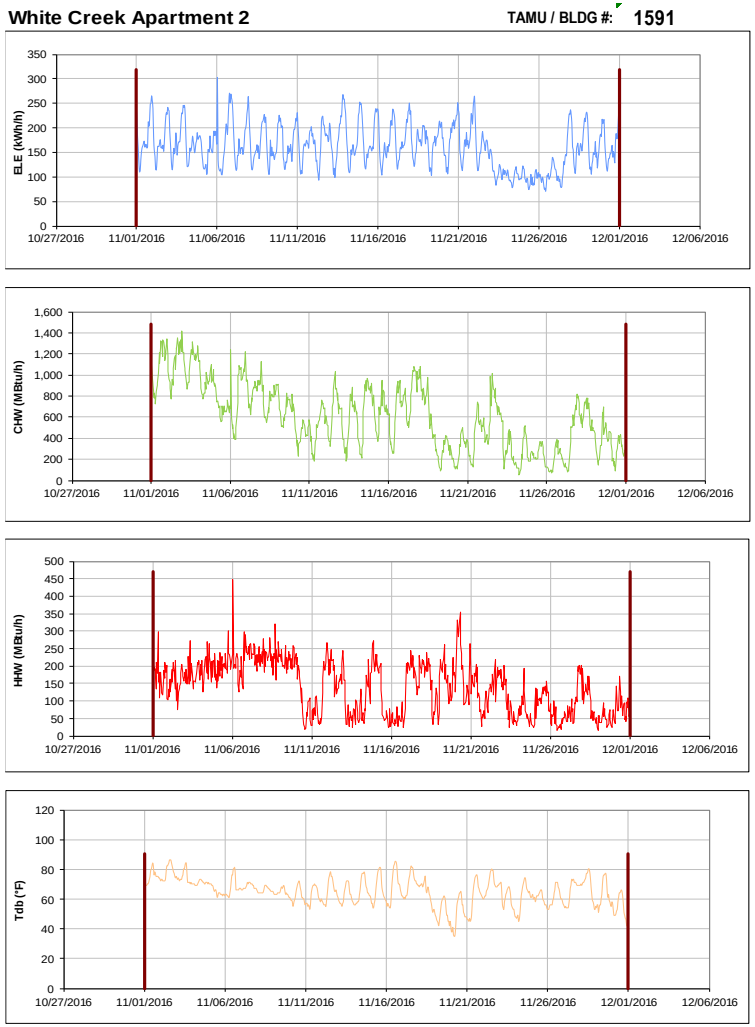


Figure III-174 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for White Creek Apartment 2 during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

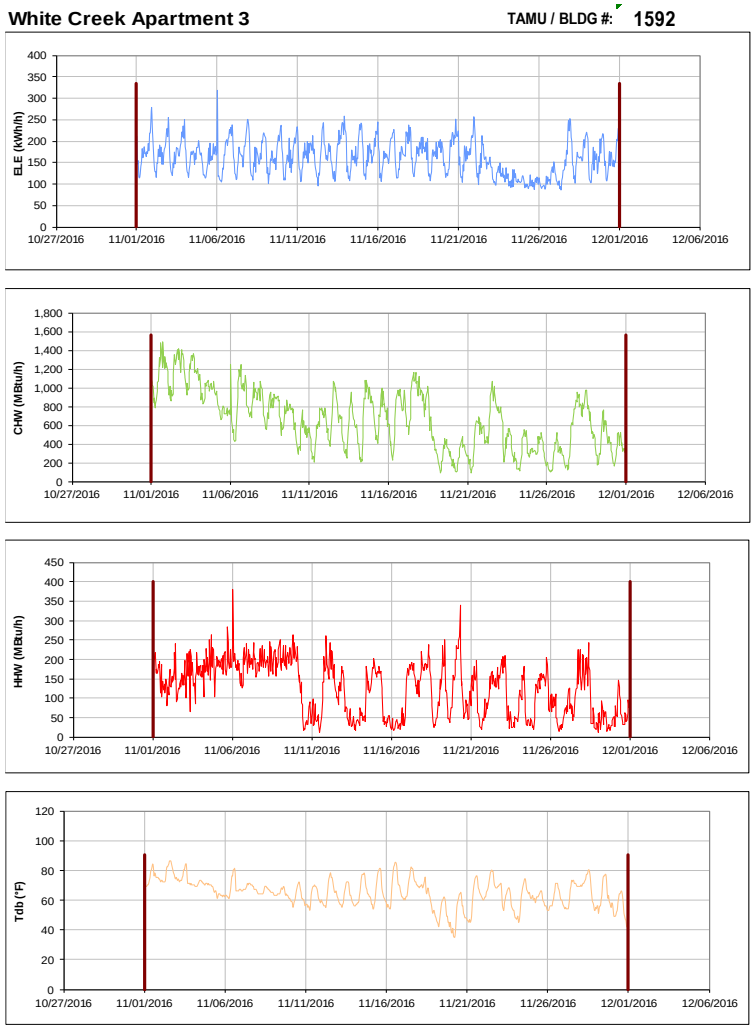


Figure III-175 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for White Creek Apartment 3 during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-176 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Gilchrist TTI Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

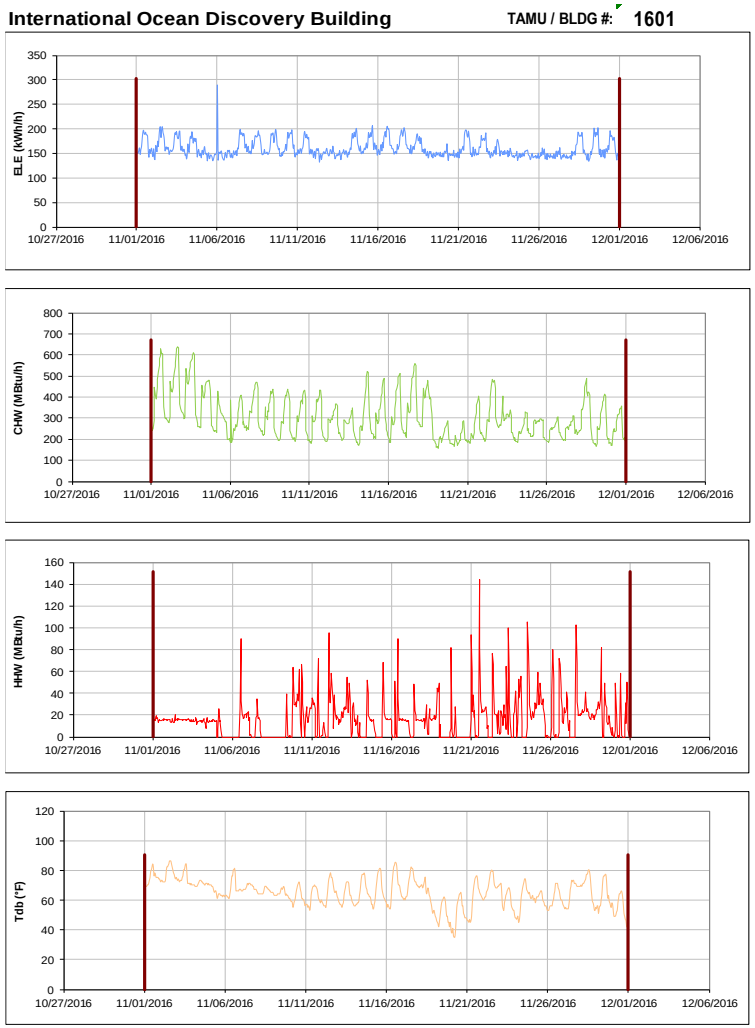


Figure III-177 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for International Ocean Discovery Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

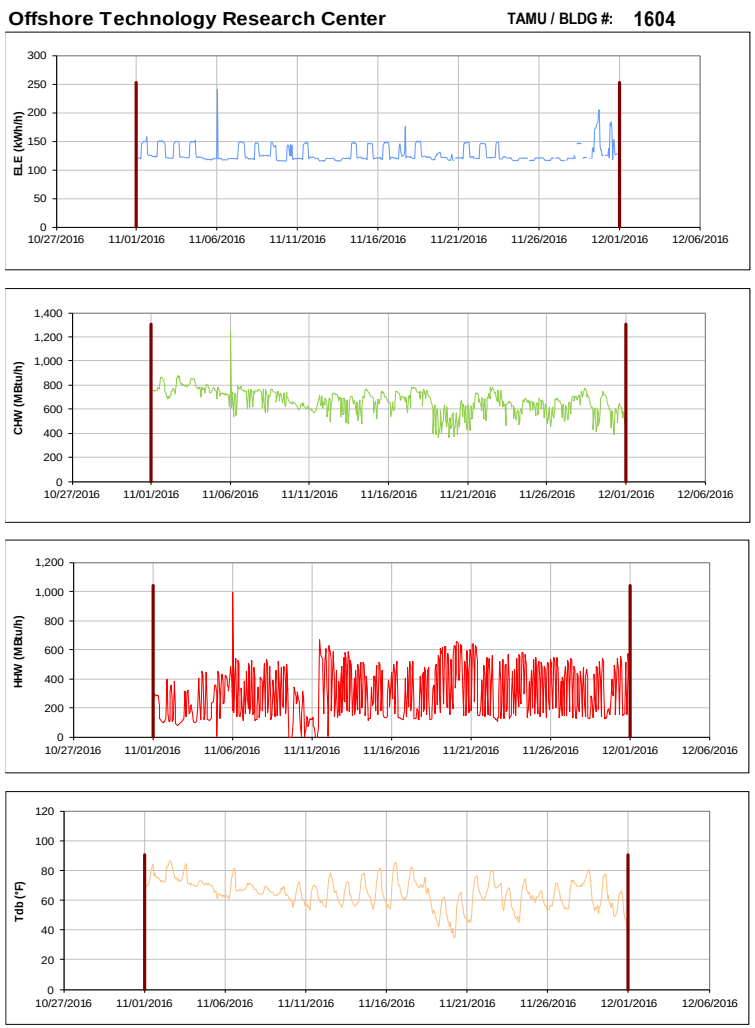


Figure III-178 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Offshore Technology Research Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

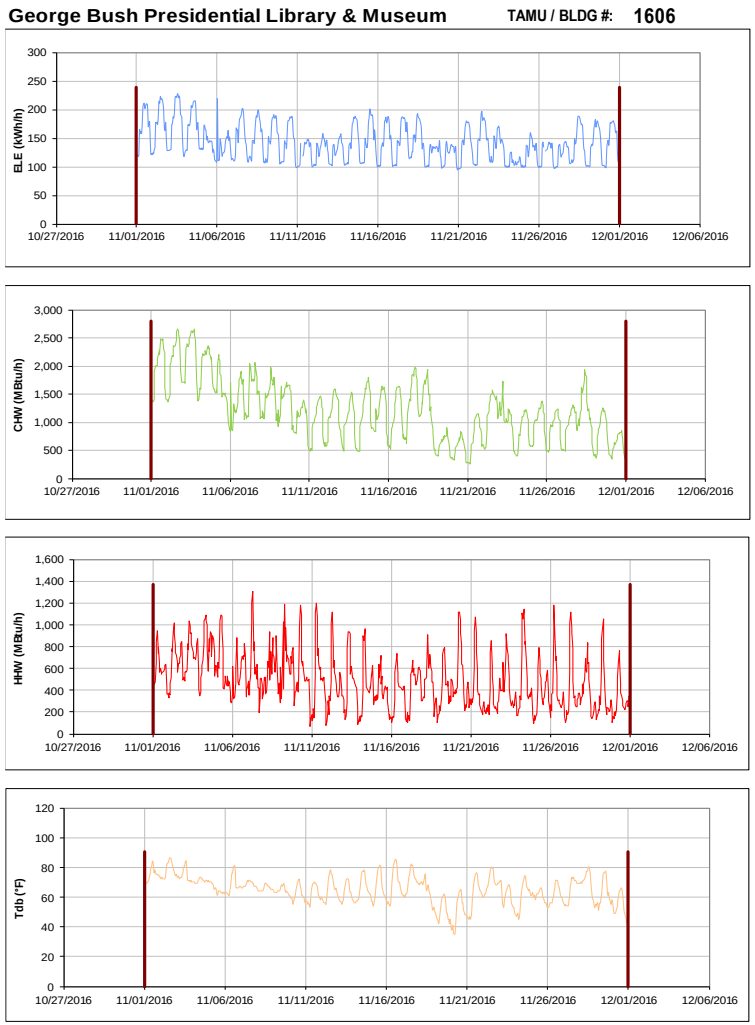


Figure III-179 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for George Bush Presidential Library & Museum during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-180 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Allen Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

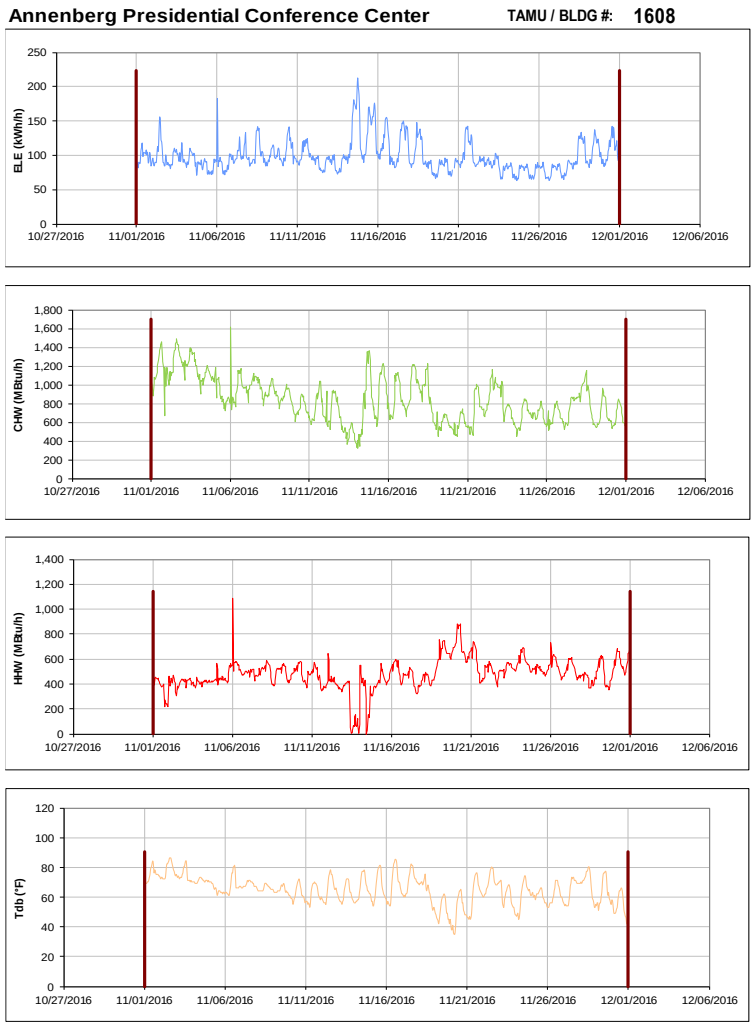


Figure III-181 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Annenberg Presidential Conference Center during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-182 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for TTI Headquarters during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-183 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Engineering Research Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-184 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for General Services Complex during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

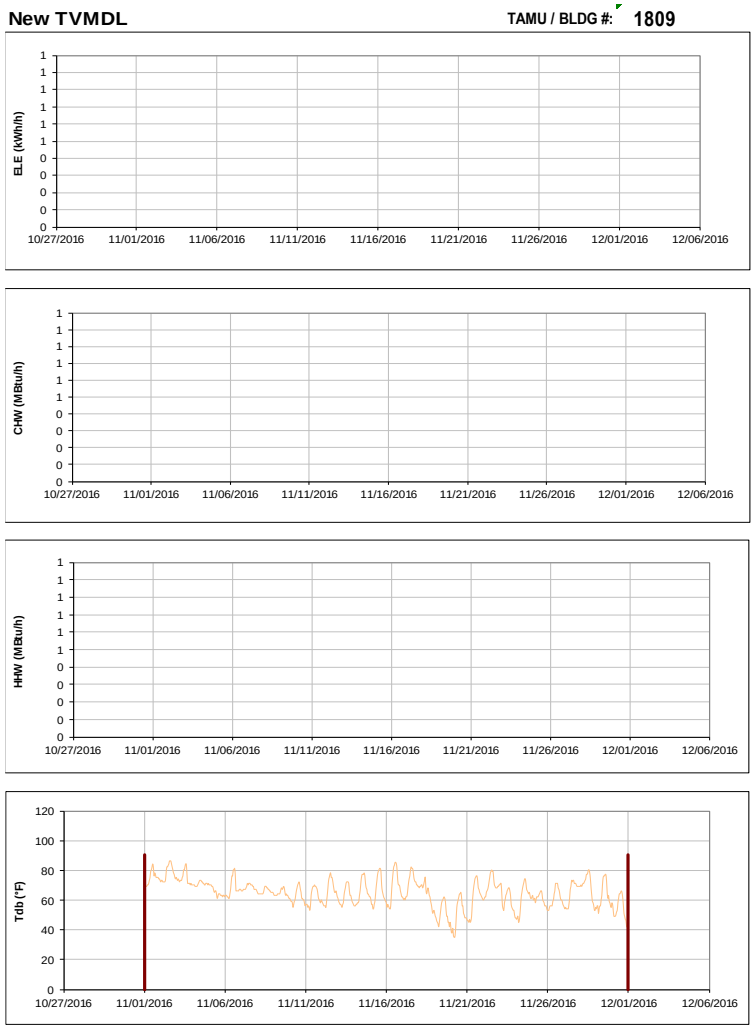


Figure III-185 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for New TVMDL during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

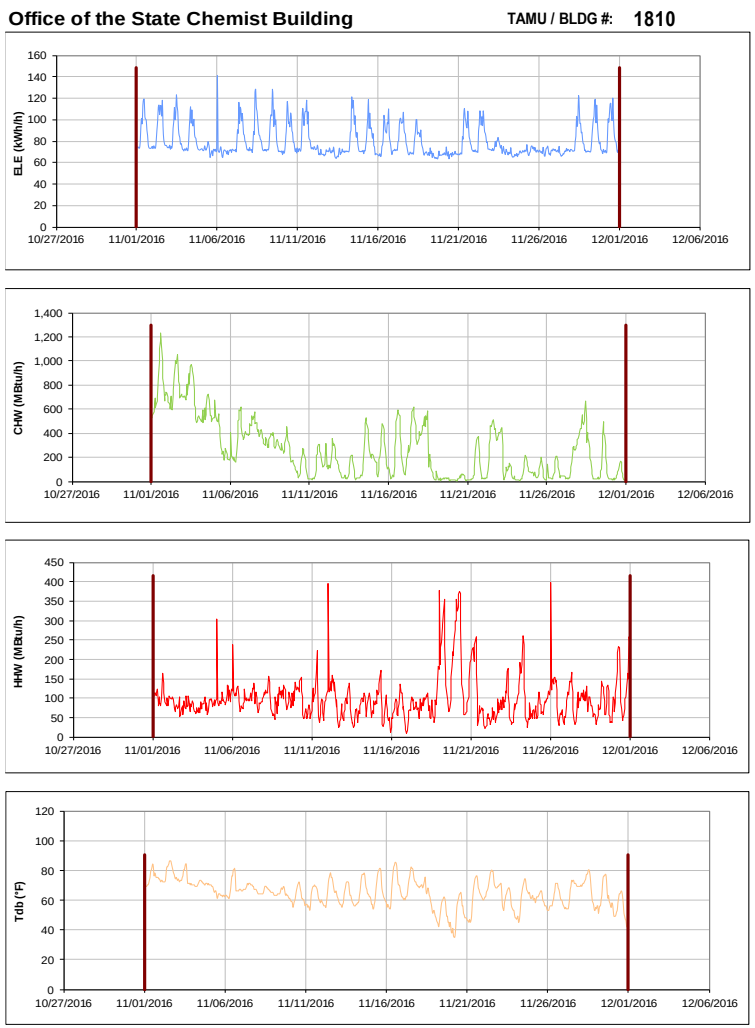


Figure III-186 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Office of the State Chemist Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

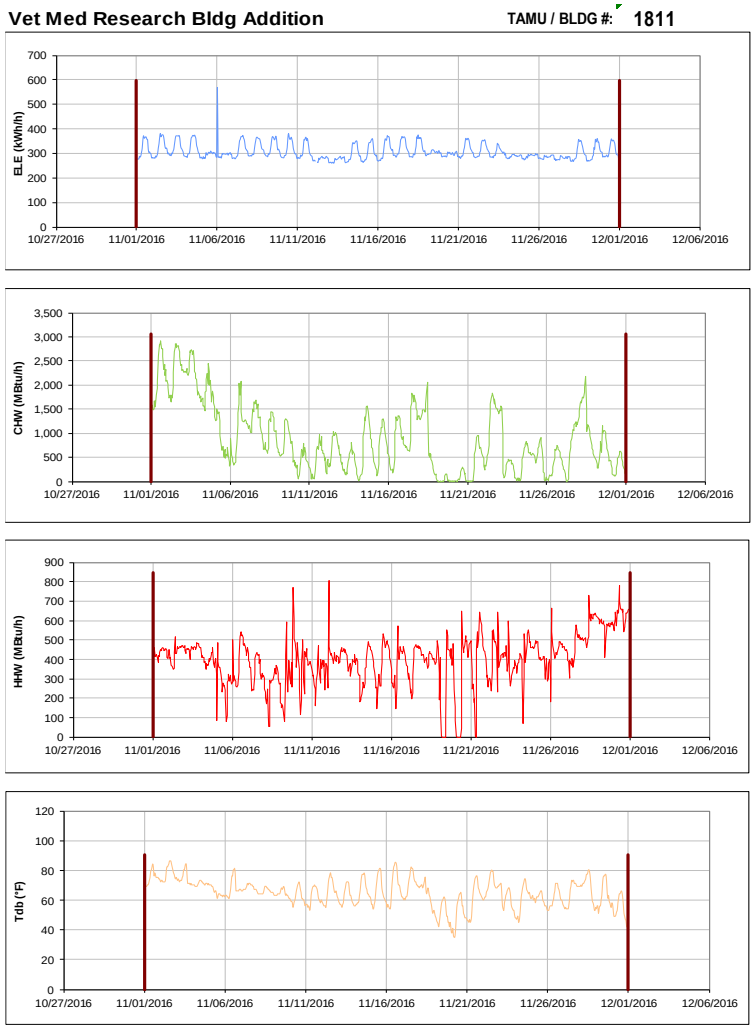


Figure III-187 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Vet Med Research Bldg Addition during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-188 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Medicine Building 1, 2, and 3 during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-189 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Texas Institute for Genomic Medicine during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-190 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Texas A&M Institute for Preclinical Studies A during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-191 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for National Center for Therapeutics Manufacturing during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

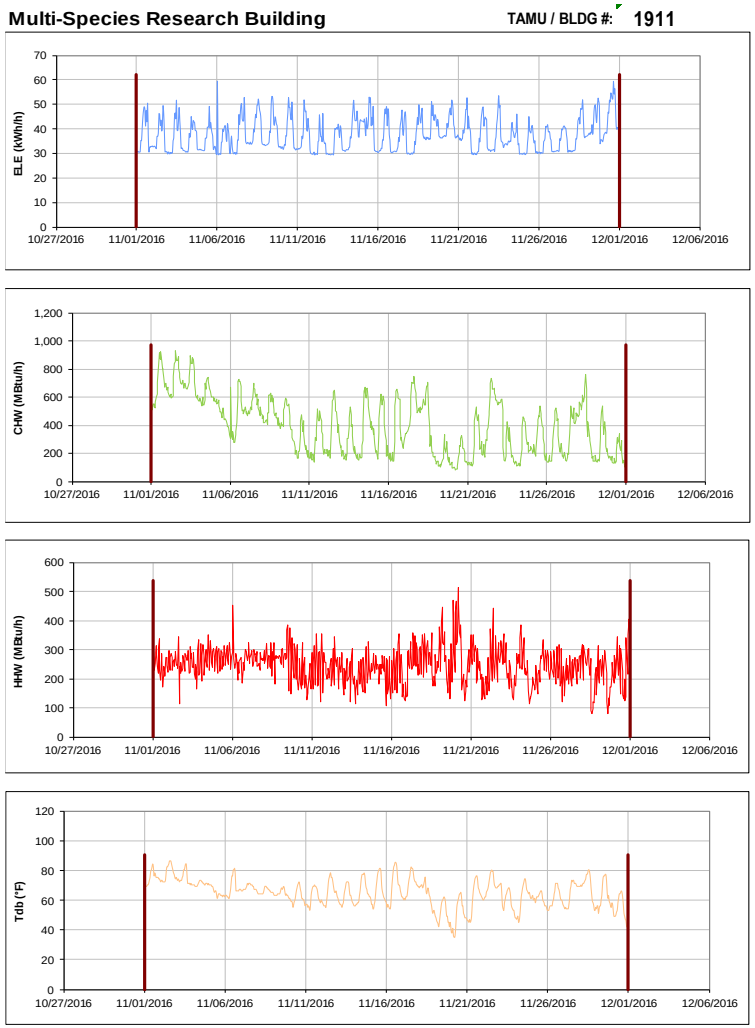


Figure III-192 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Multi-Species Research Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-193 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for NCTM Manufacturing Building during the Month of November 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

IV. Energy Balance Plots for November 2016 Consumption

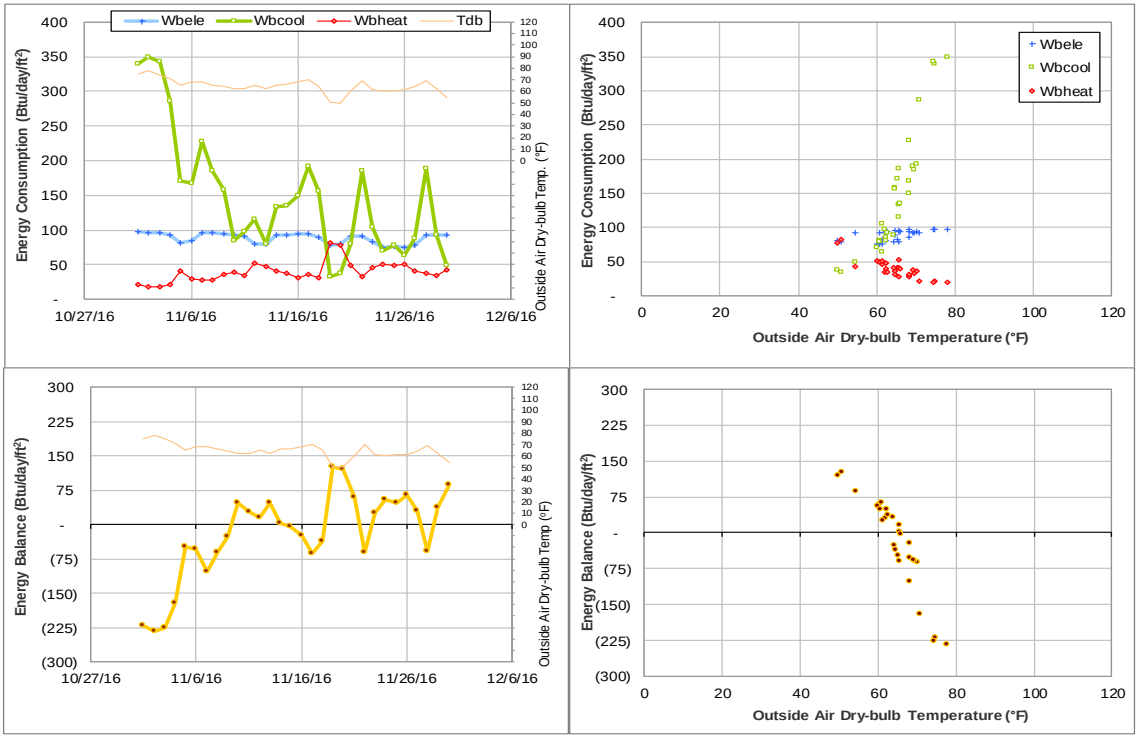


Figure IV-1 Emerging Technologies Building TAMU BLDG # 270 Energy Balance Plot during November 2016

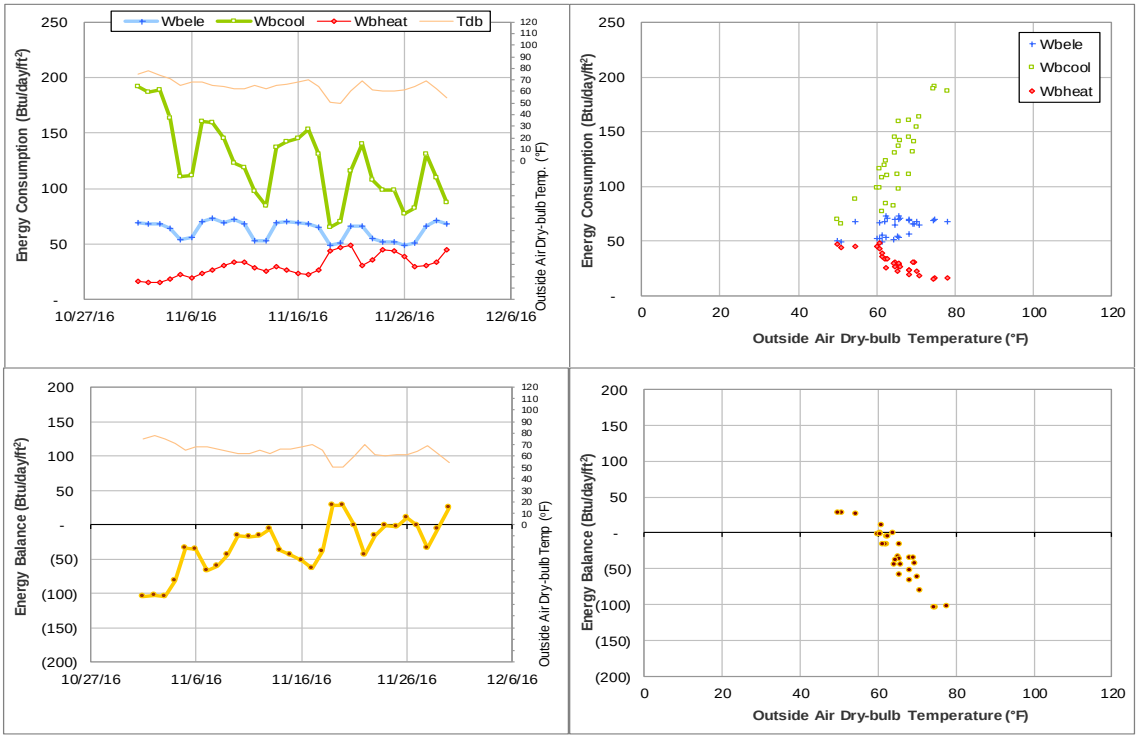


Figure IV-2 Liberal Arts and Arts & Humanities Building TAMU BLDG # 275 Energy Balance Plot during November 2016

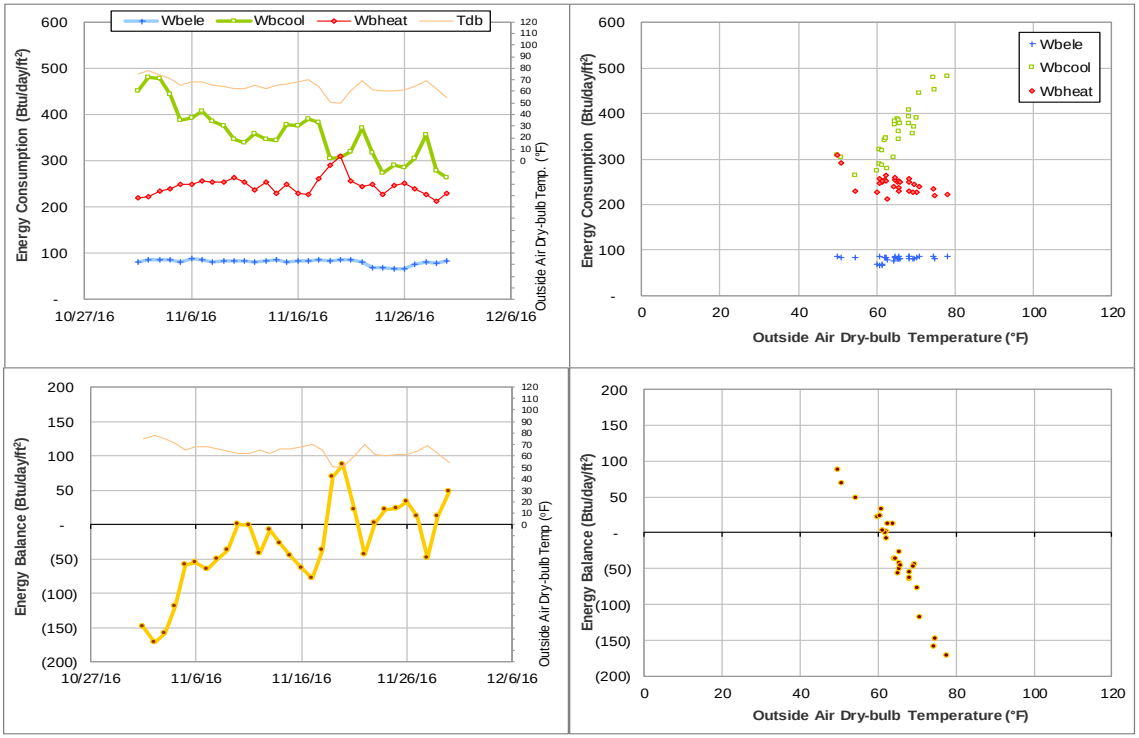


Figure IV-3 Wells Residence Hall TAMU BLDG # 290 Energy Balance Plot during November 2016

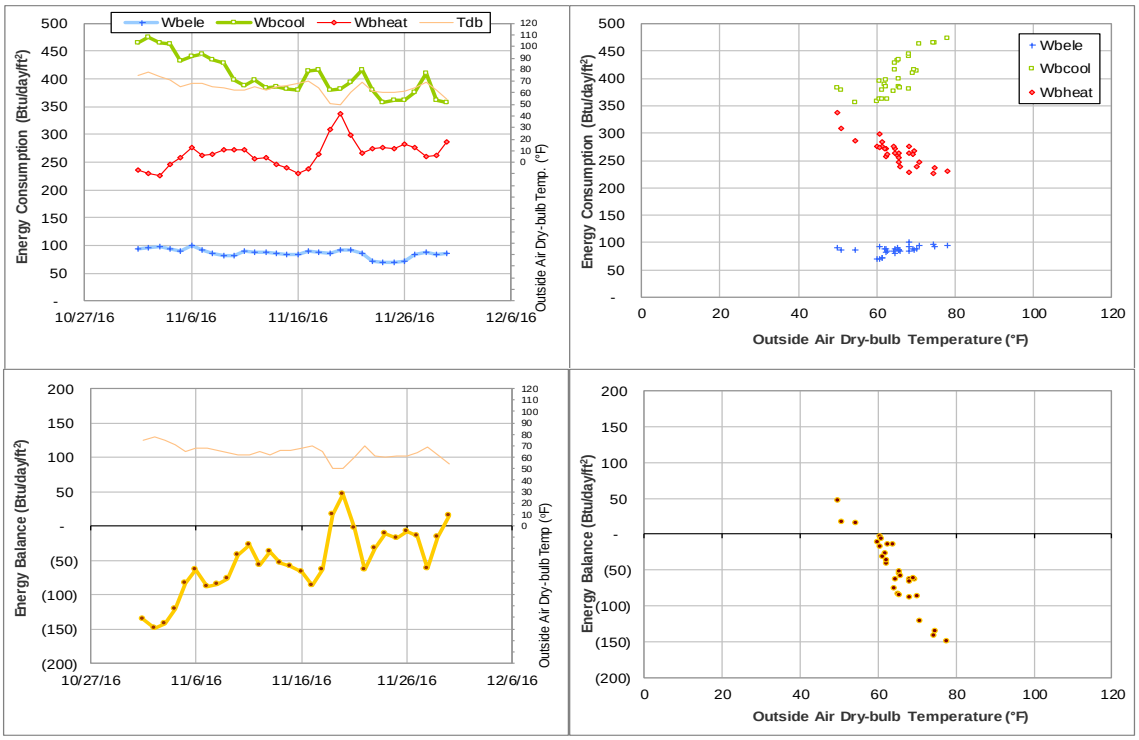


Figure IV-4 Rudder Residence Hall TAMU BLDG # 291 Energy Balance Plot during November 2016

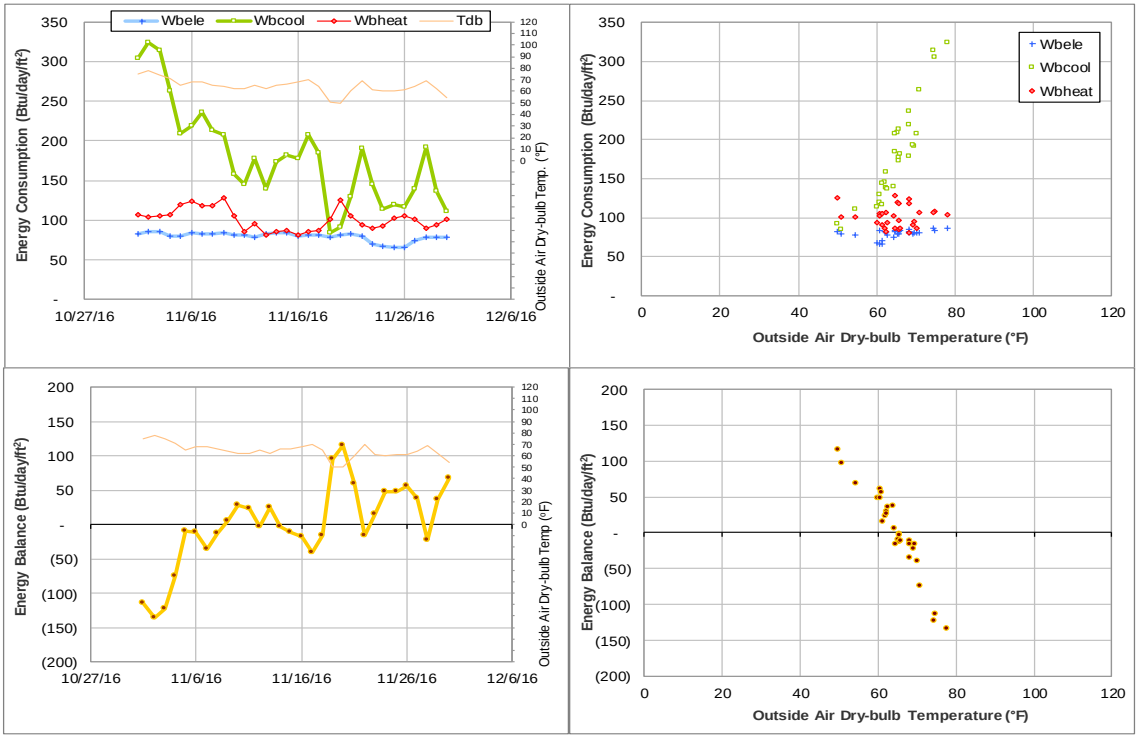


Figure IV-5 Eppright Residence Hall TAMU BLDG # 292 Energy Balance Plot during November 2016

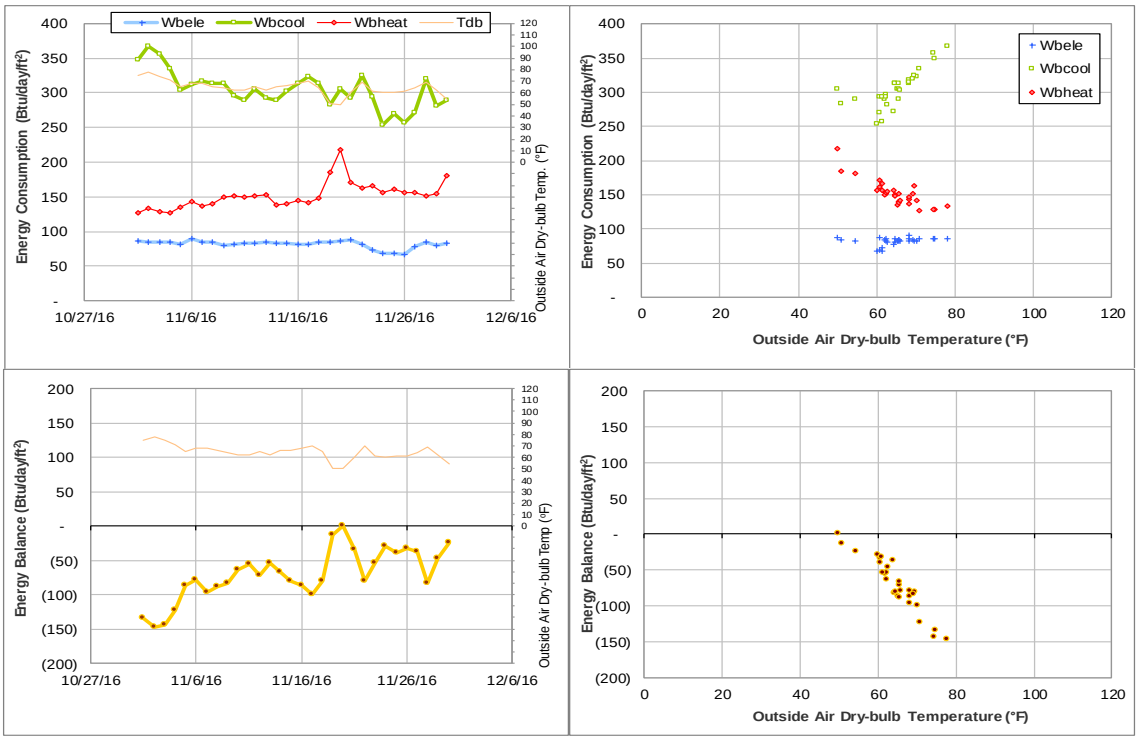


Figure IV-6 Appelt Residence Hall TAMU BLDG # 293 Energy Balance Plot during November 2016

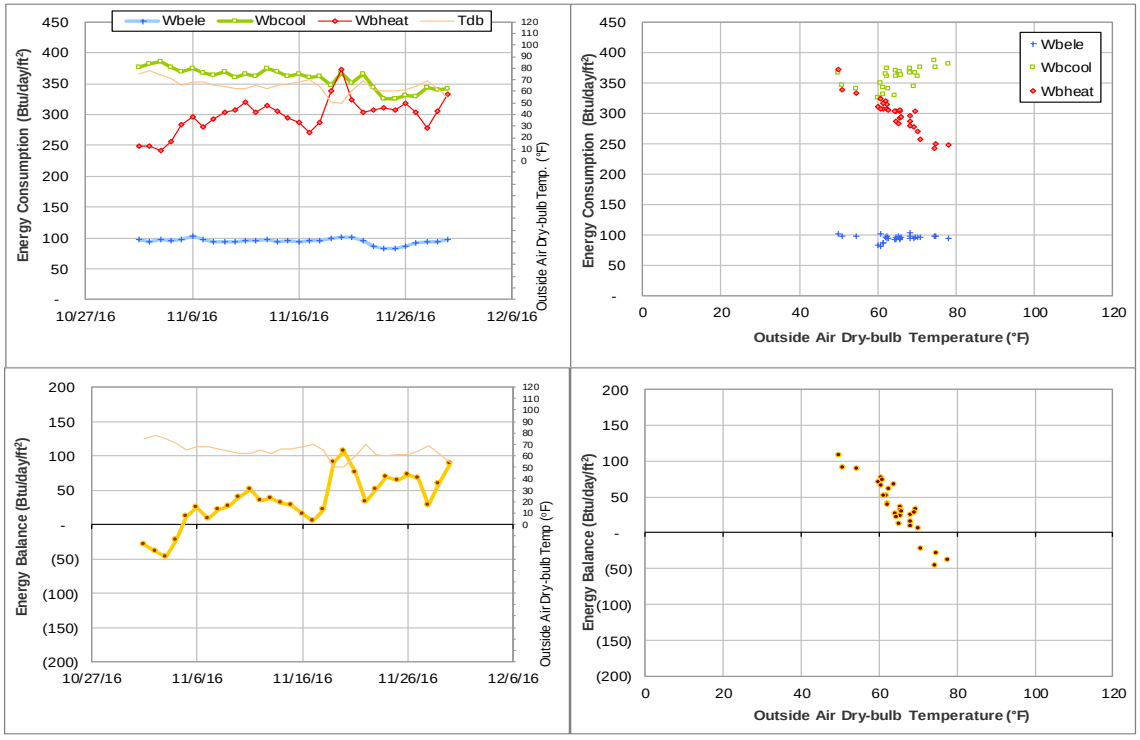


Figure IV-7 Lechner Residence Hall TAMU BLDG # 294 Energy Balance Plot during November 2016

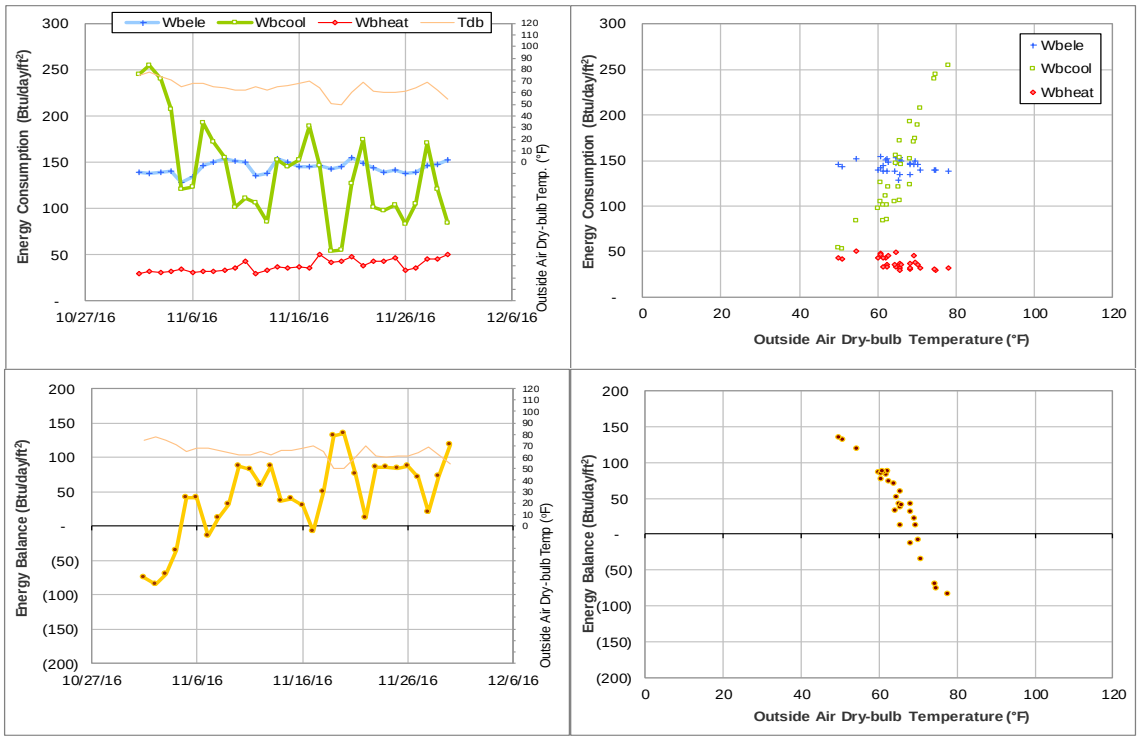


Figure IV-8 Mitchell Inst. for Fundamental Phys & Astronomy TAMU BLDG # 296 Energy Balance Plot during November 2016

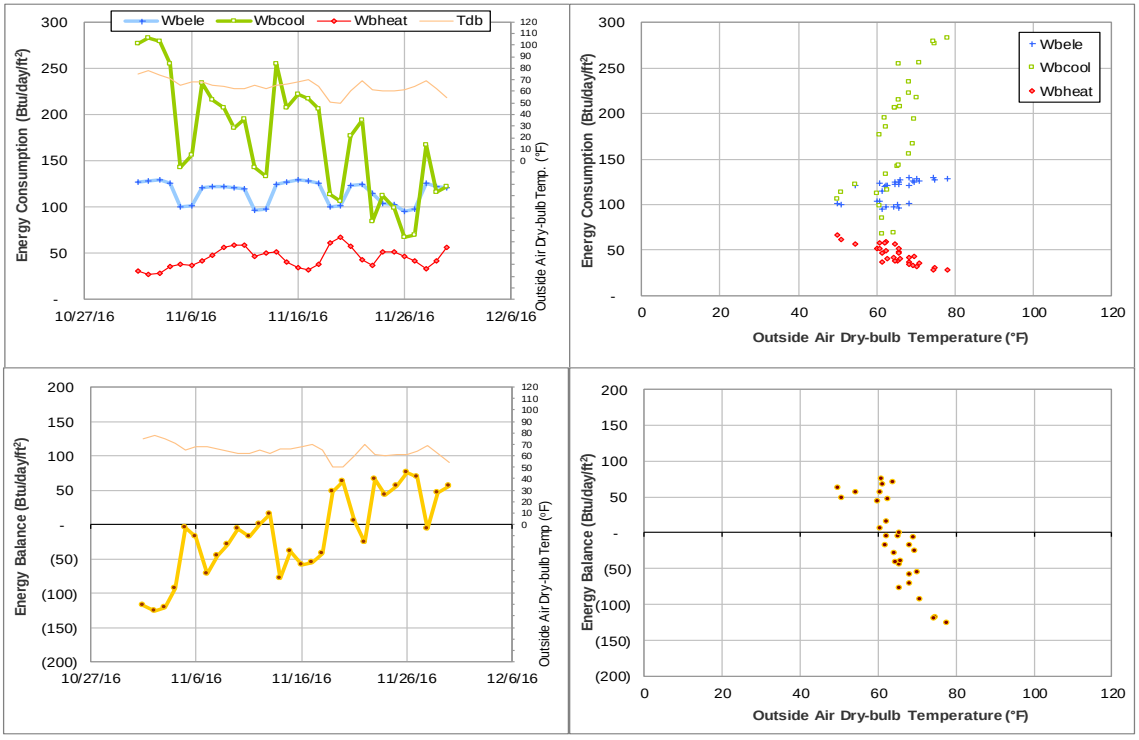


Figure IV-9 CE TTI Office & Lab Building TAMU BLDG # 325 Energy Balance Plot during November 2016

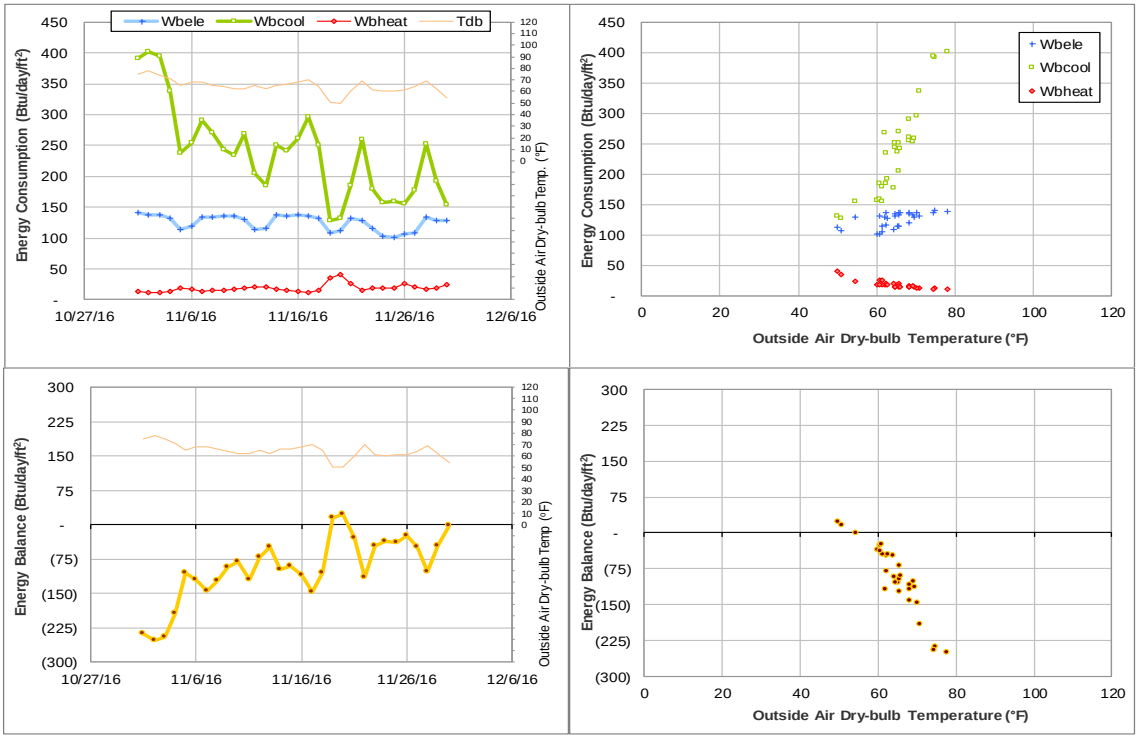


Figure IV-10 Bright Aerospace Building TAMU BLDG # 353 Energy Balance Plot during November 2016

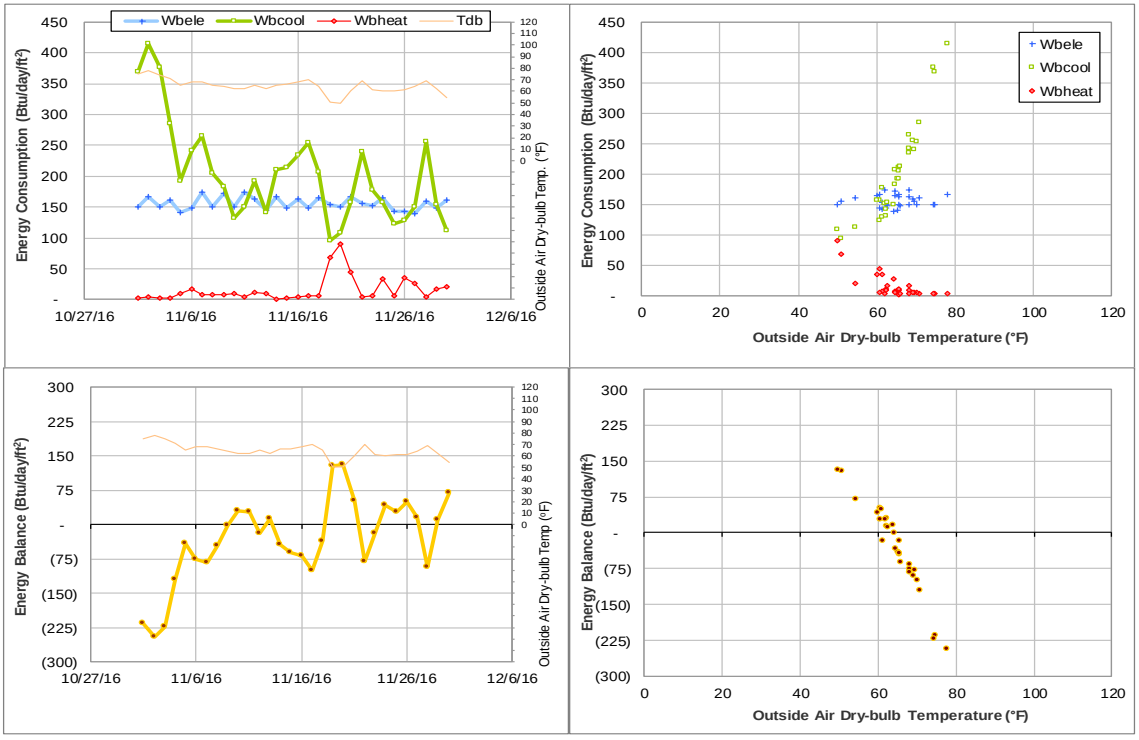


Figure IV-11 Davis Football Player Development Center TAMU BLDG # 358 Energy Balance Plot during November 2016

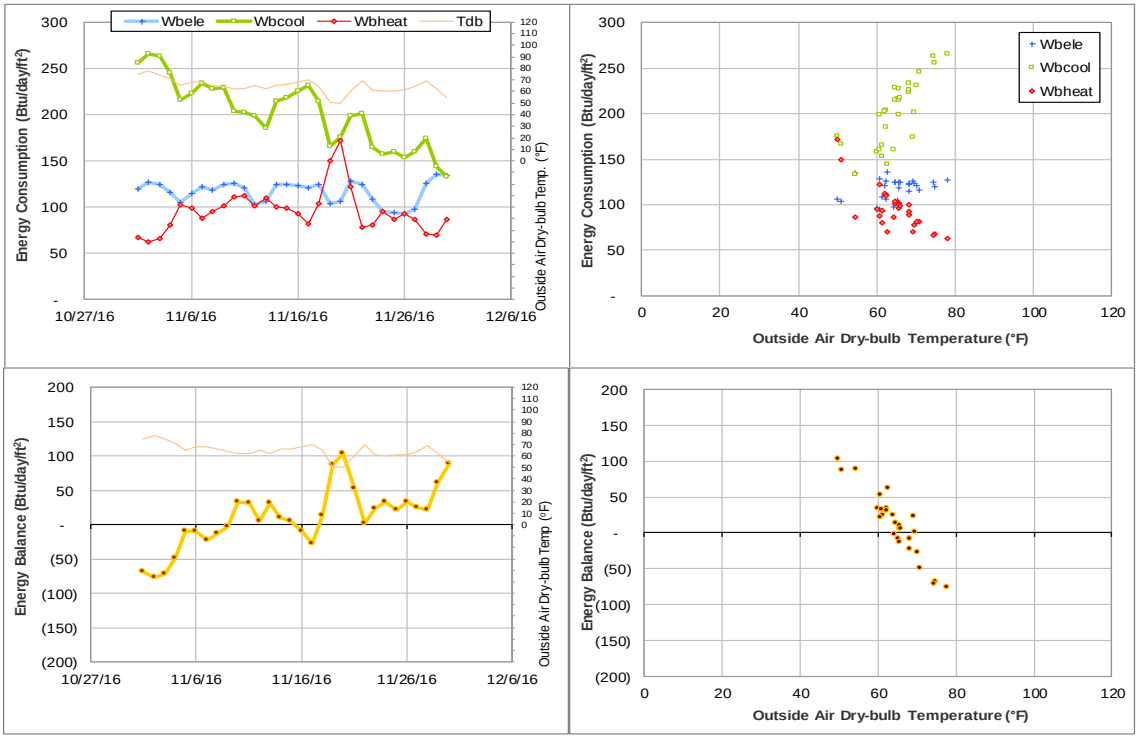


Figure IV-12 Architecture Building B&C TAMU BLDG # 359 and 432 Energy Balance Plot during November 2016

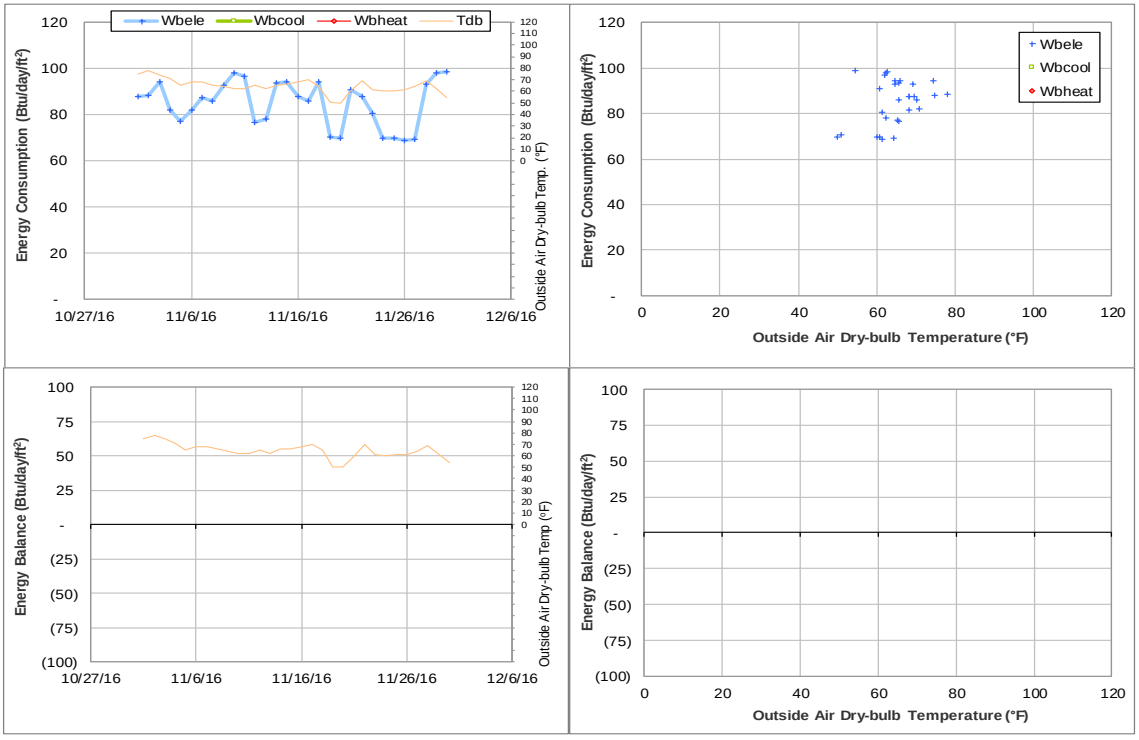


Figure IV-13 Architecture Building B TAMU BLDG # 359 Energy Balance Plot during November 2016

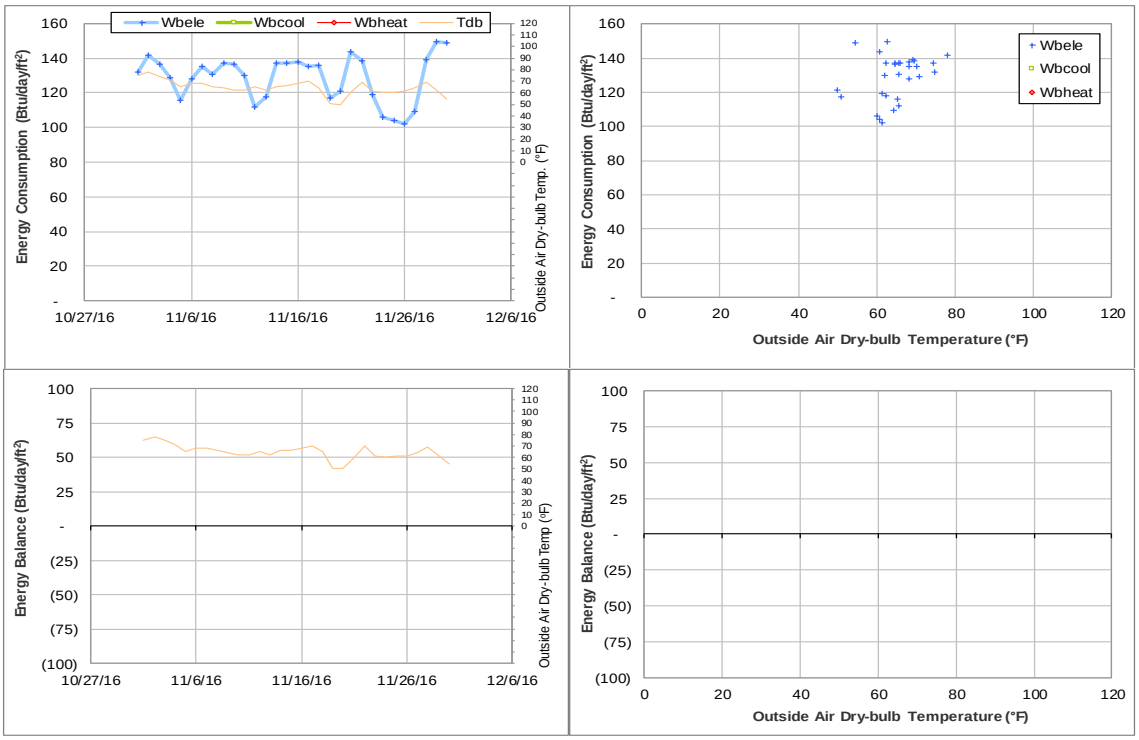


Figure IV-14 Architecture Building C TAMU BLDG # 432 Energy Balance Plot during November 2016

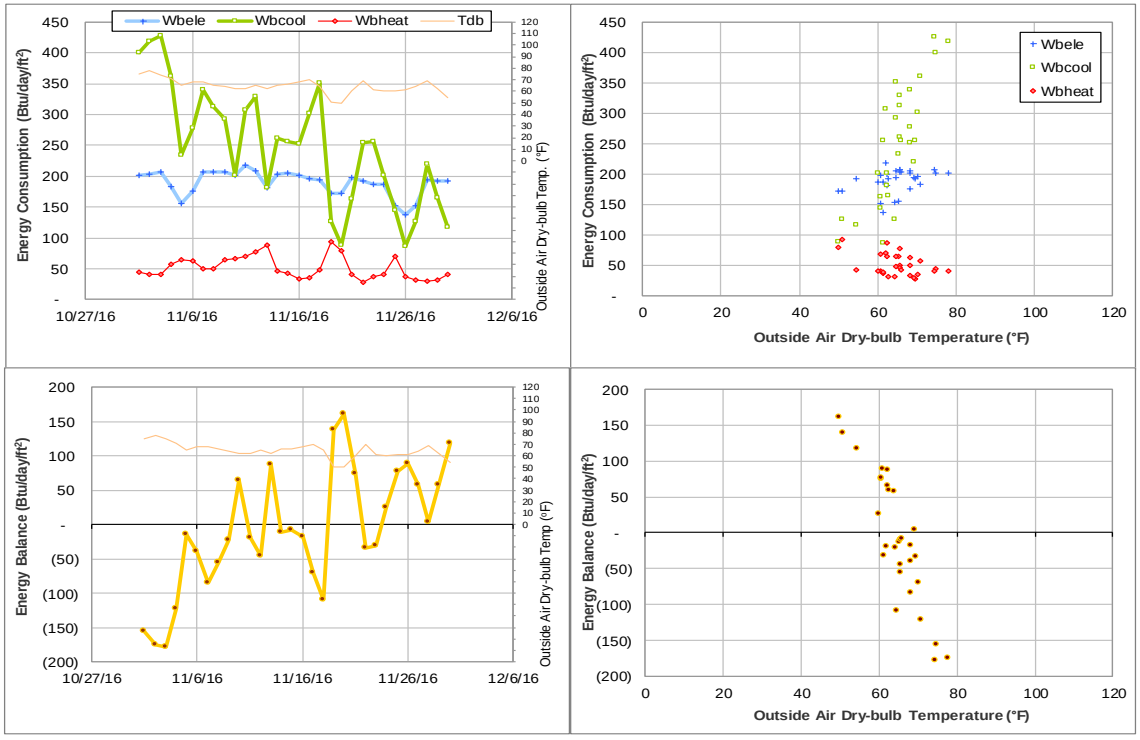


Figure IV-15 Bright Football Complex TAMU BLDG # 361 Energy Balance Plot during November 2016

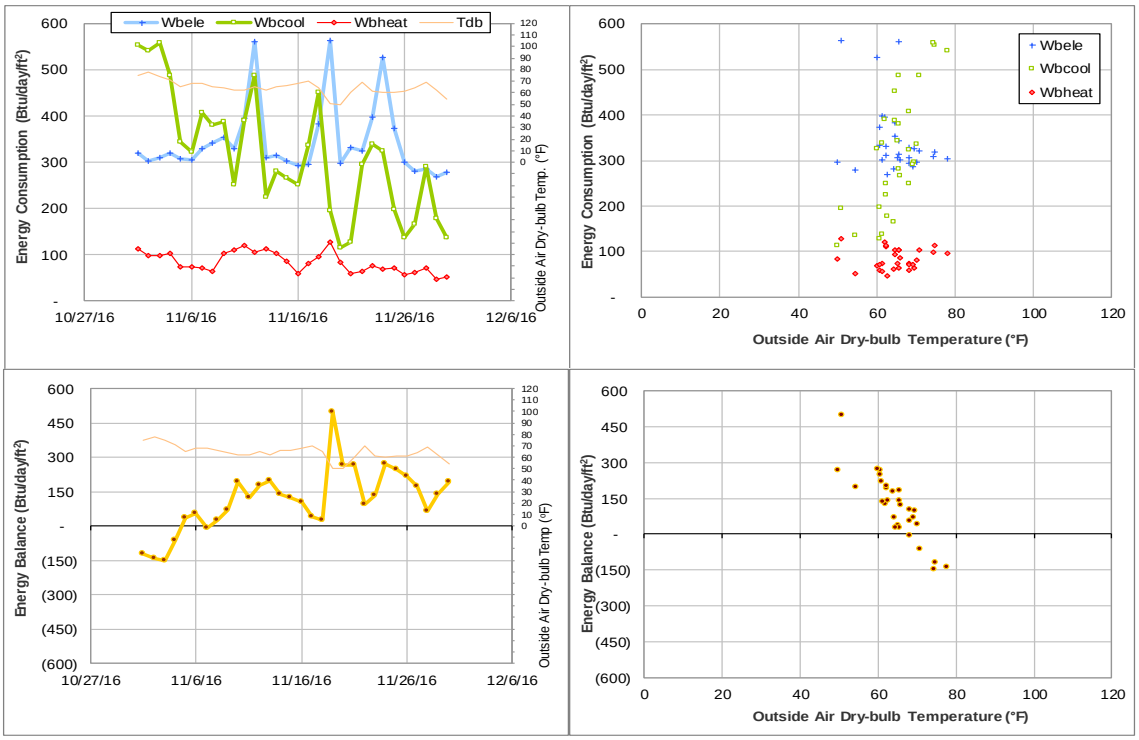


Figure IV-16 Kyle Field TAMU BLDG # 367 Energy Balance Plot during November 2016

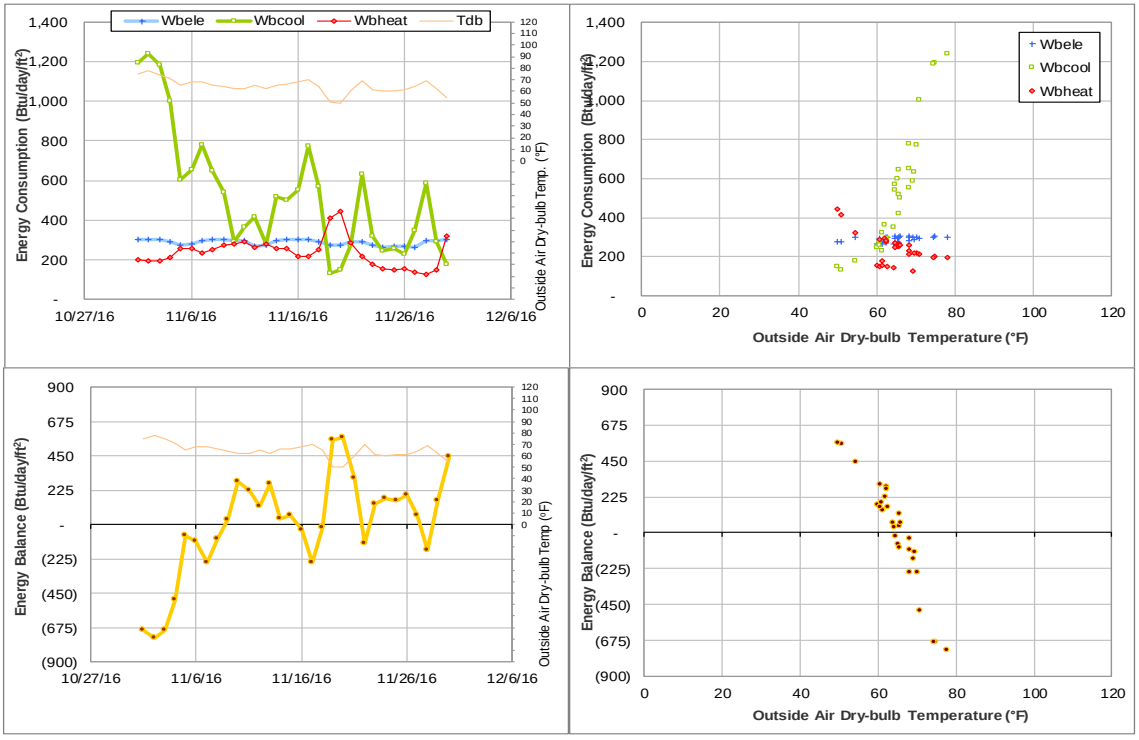


Figure IV-17 Chemistry Building Addition TAMU BLDG # 376 Energy Balance Plot during November 2016

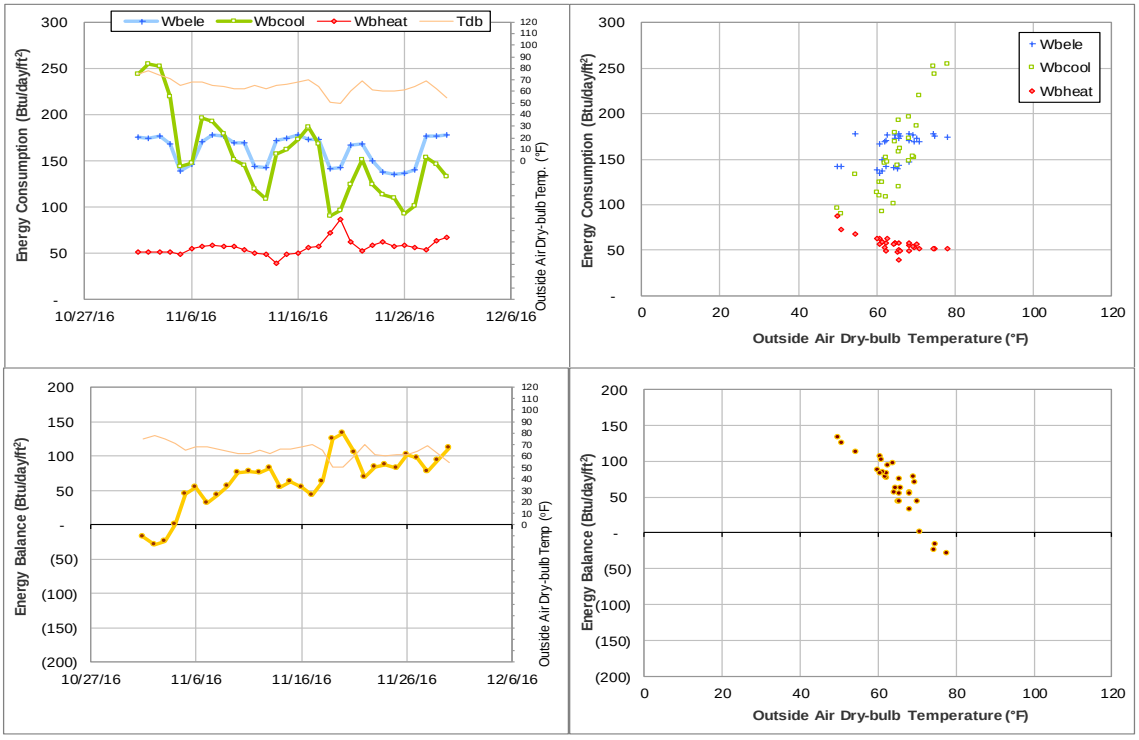


Figure IV-18 Koldus Building TAMU BLDG # 383 Energy Balance Plot during November 2016

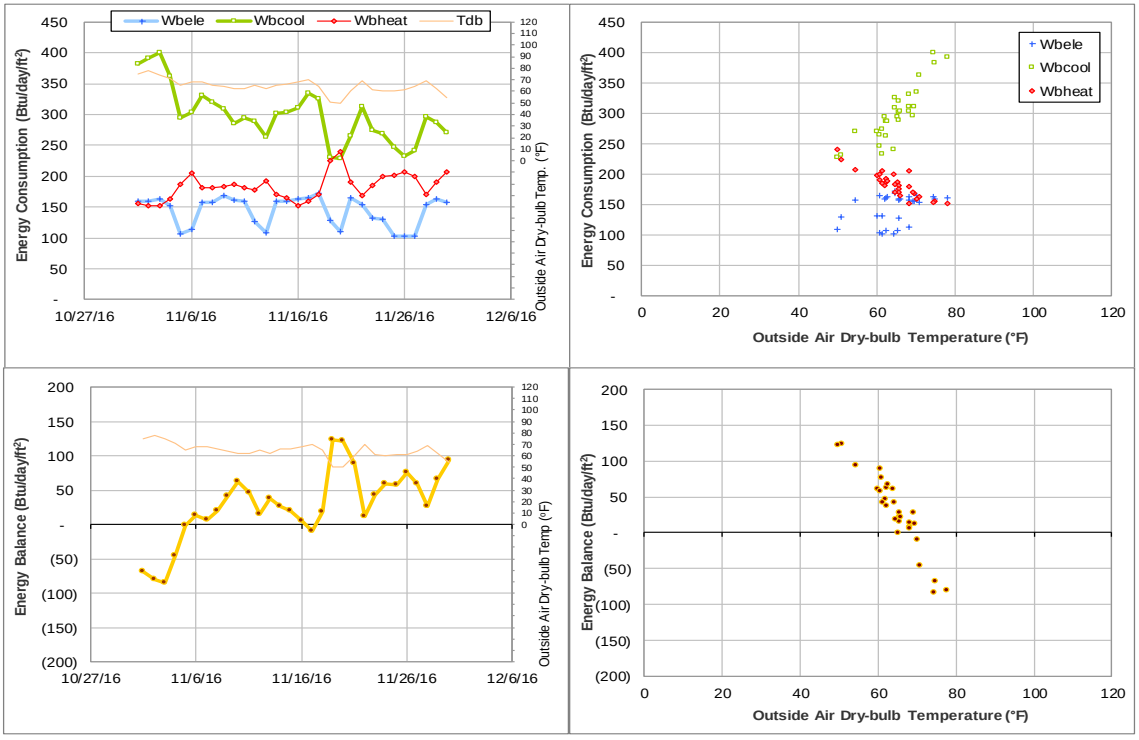


Figure IV-19 Sanders Corps of Cadets Center TAMU BLDG # 384 Energy Balance Plot during November 2016

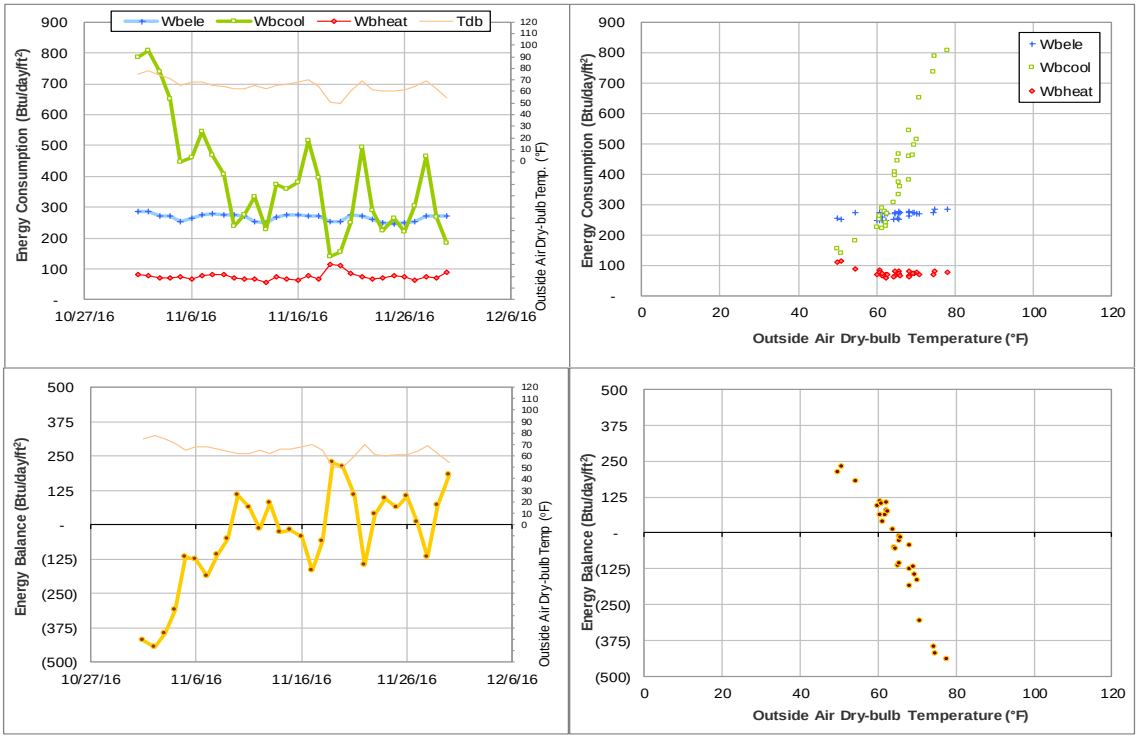


Figure IV-20 Jack E. Brown Chemical Engineering Building TAMU BLDG # 386 Energy Balance Plot during November 2016

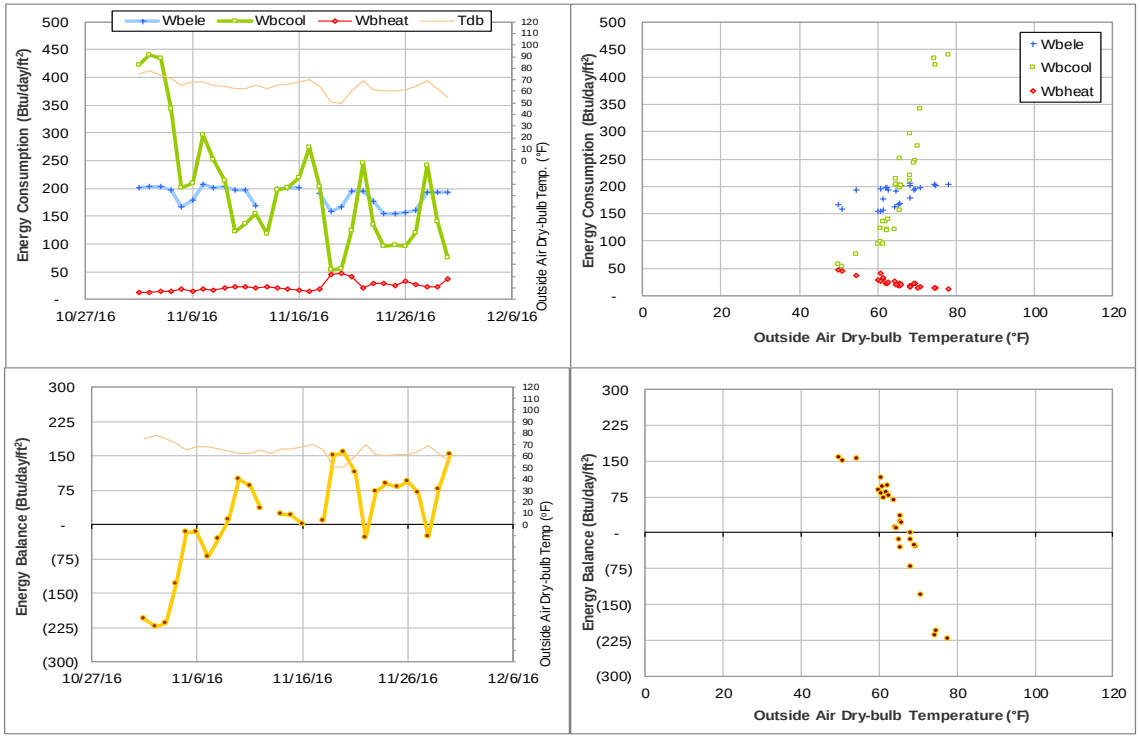


Figure IV-21 Richardson Petroleum Engineering Building TAMU BLDG # 387 Energy Balance Plot during November 2016

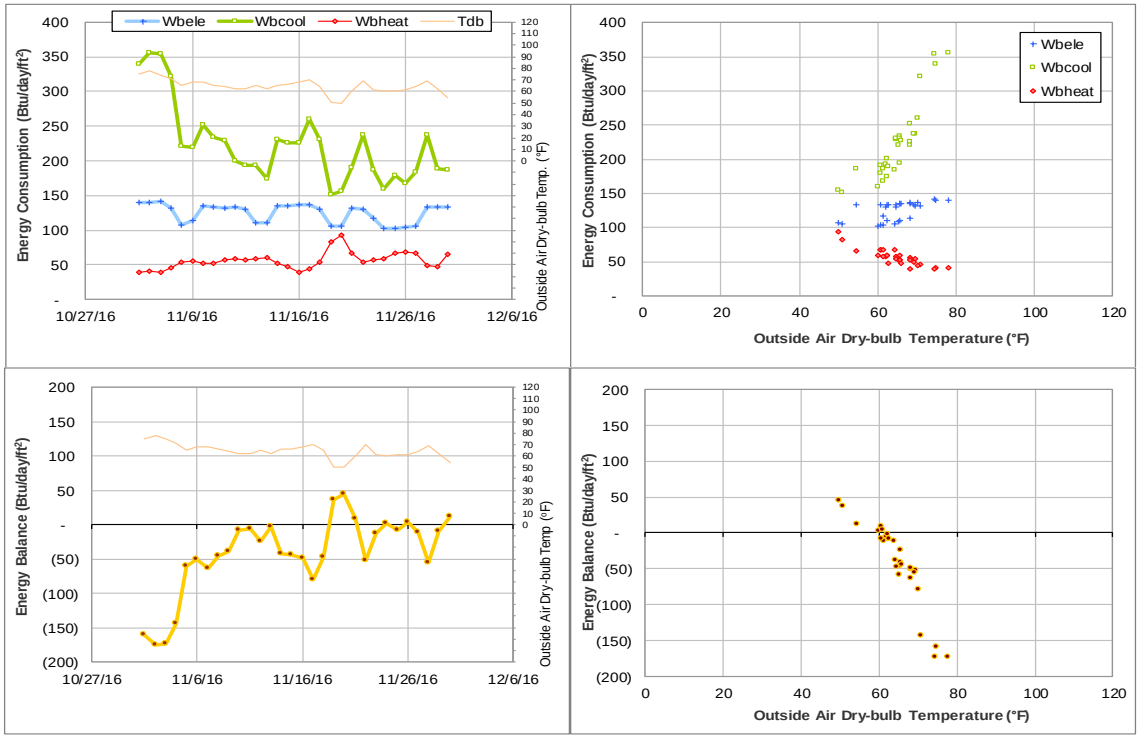


Figure IV-22 James J. Cain'51 and Mechanical Engineering Office Building TAMU BLDG # 391 Energy Balance Plot during November 2016

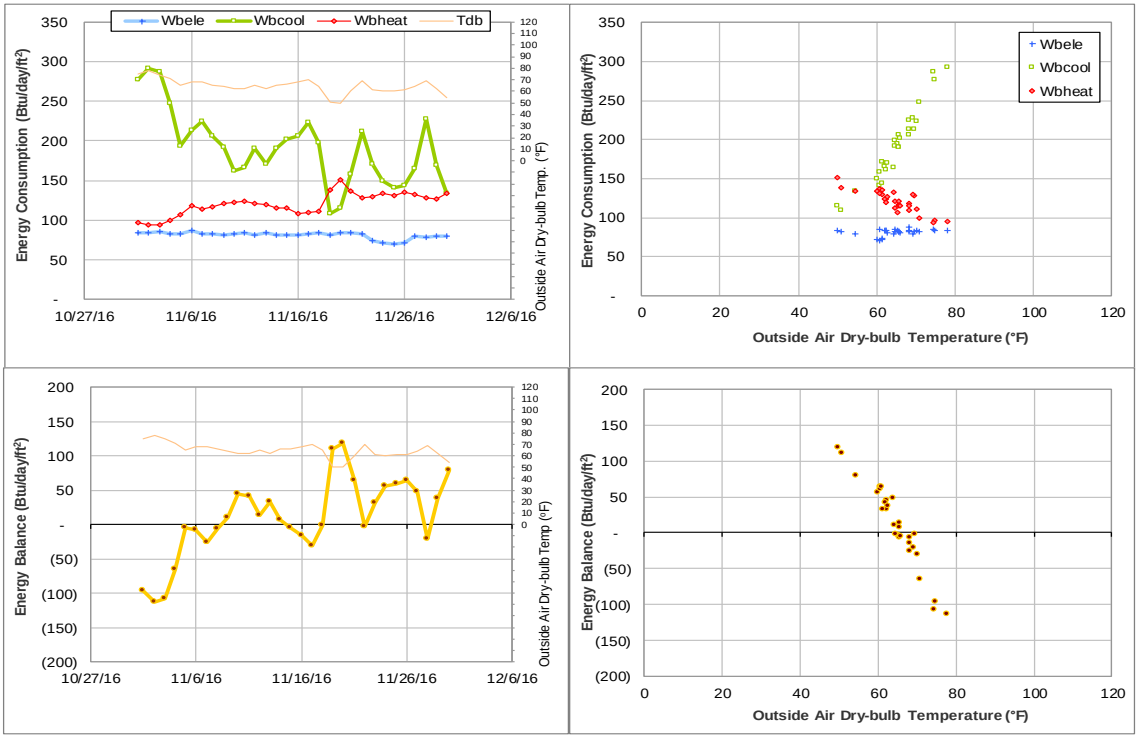


Figure IV-23 Underwood Residence Hall TAMU BLDG # 394 Energy Balance Plot during November 2016

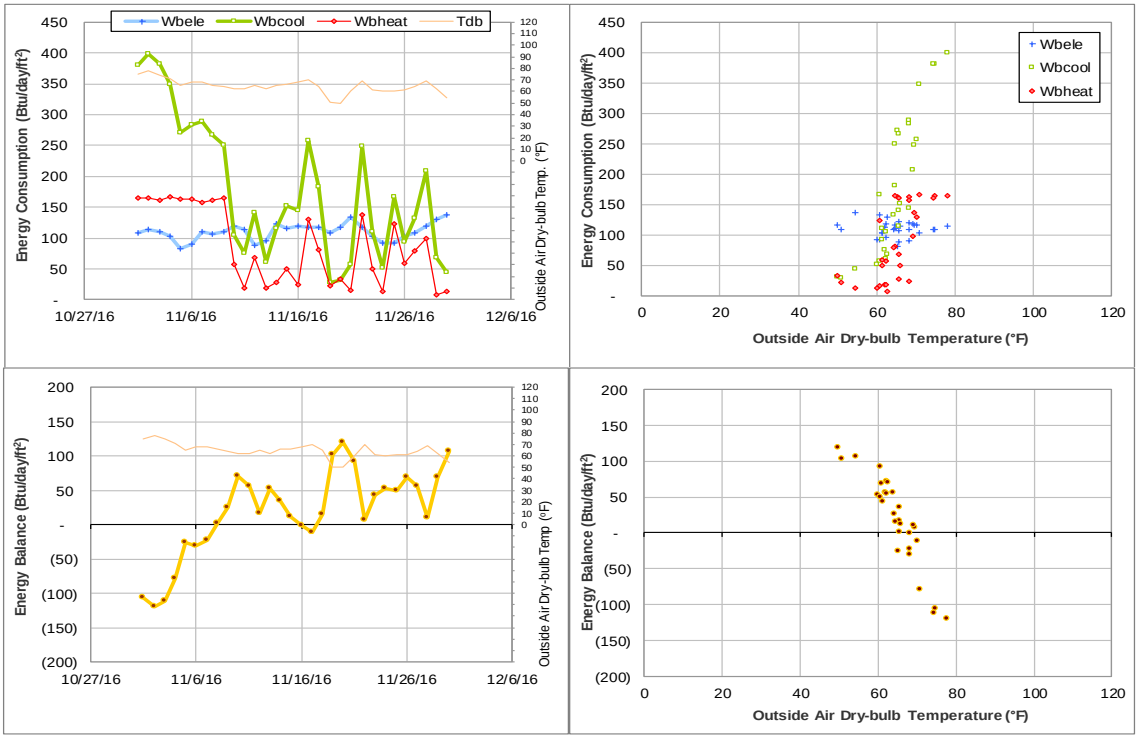


Figure IV-24 Langford Architecture Center Building A TAMU BLDG # 398 Energy Balance Plot during November 2016

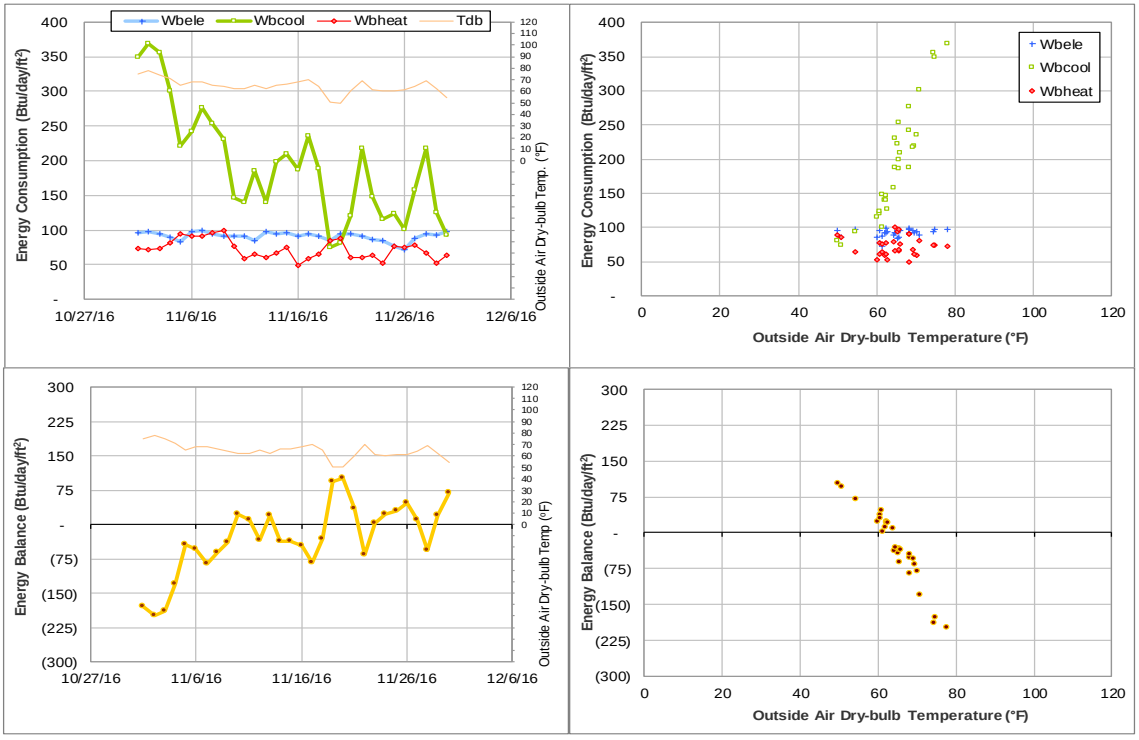


Figure IV-25 Spence Hall, Briggs Hall, and Ash II LLC TAMU BLDG # 400, 402, and 1405 Energy Balance Plot during November 2016

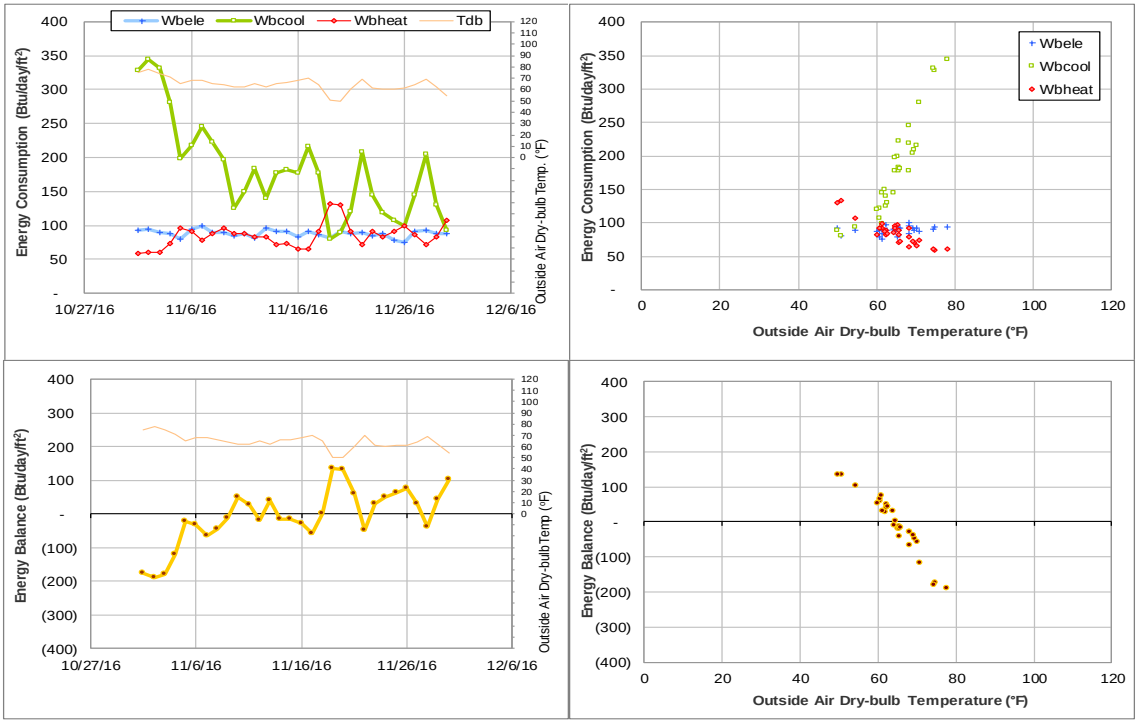


Figure IV-26 Spence Hall Dorm 1 TAMU BLDG # 400 Energy Balance Plot during November 2016

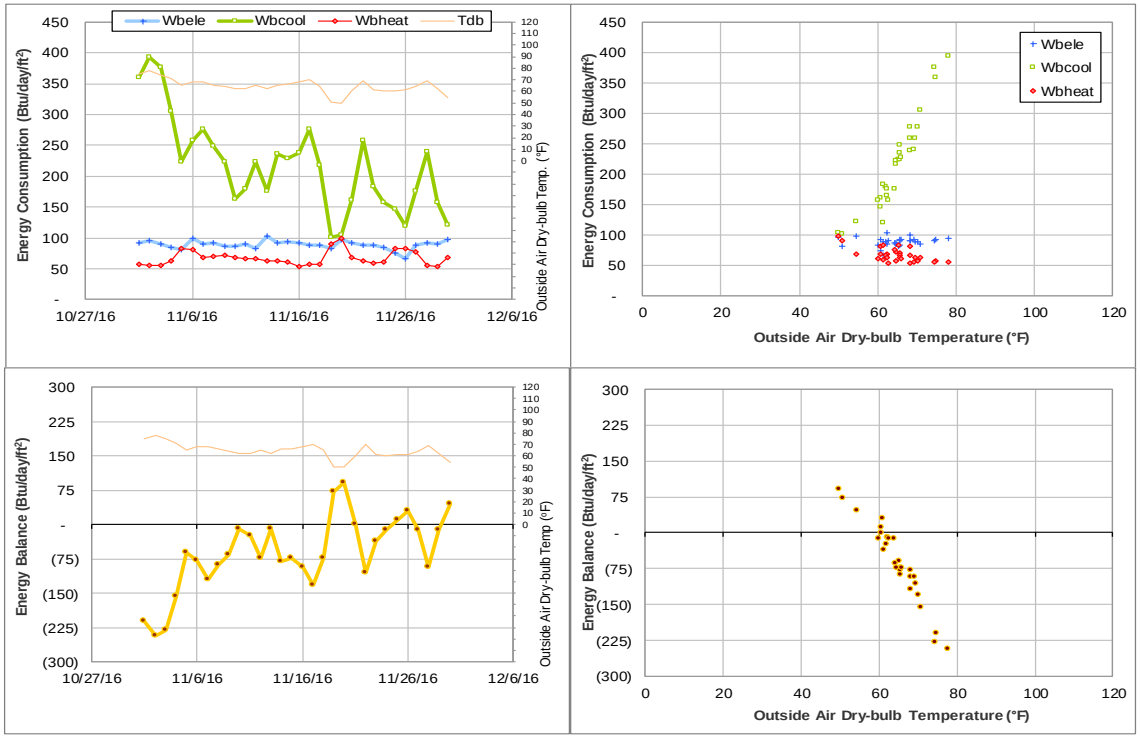


Figure IV-27 Briggs Hall Dorm 3 TAMU BLDG # 402 Energy Balance Plot during November 2016

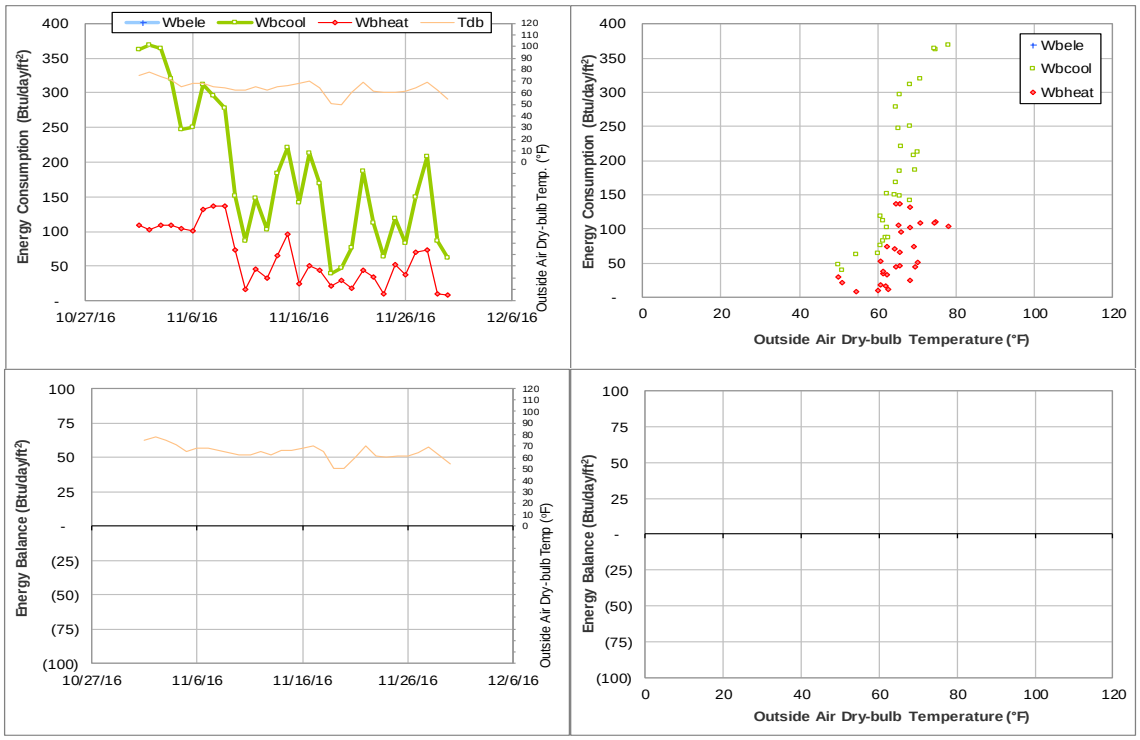


Figure IV-28 Ash II LLC TAMU BLDG # 1405 Energy Balance Plot during November 2016

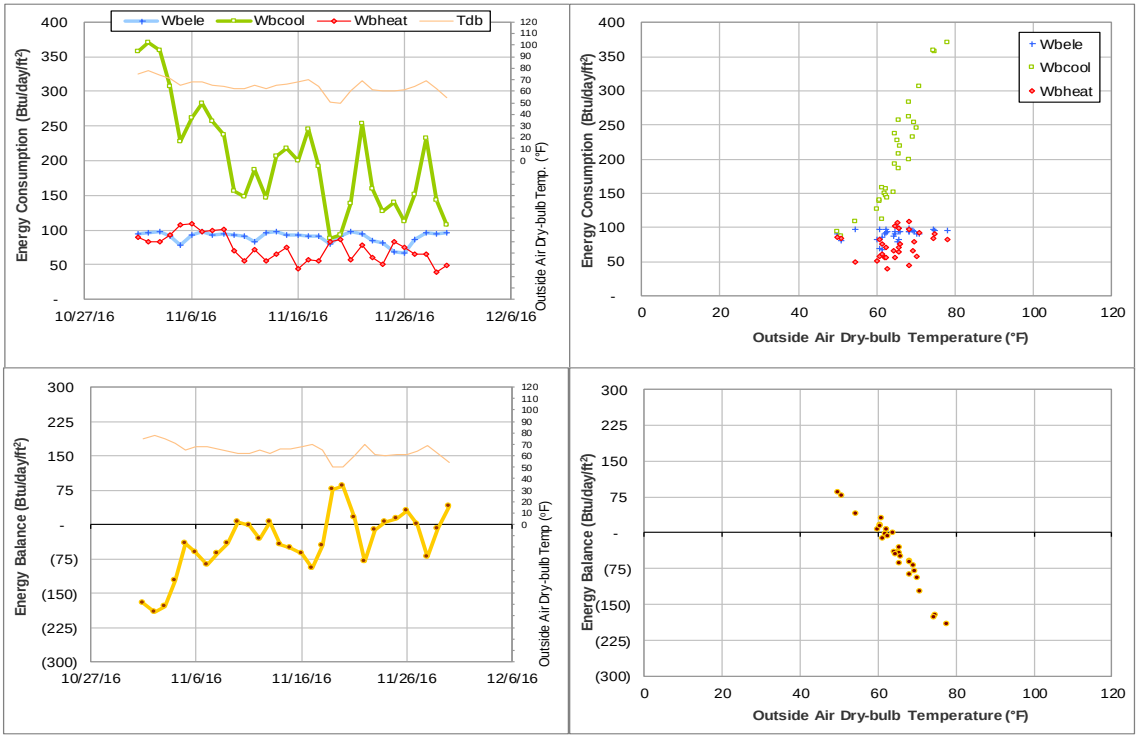


Figure IV-29 Kiest Hall, Fountain Hall, and Plank LLC TAMU BLDG # 401, 403, 1404 Energy Balance Plot during November 2016

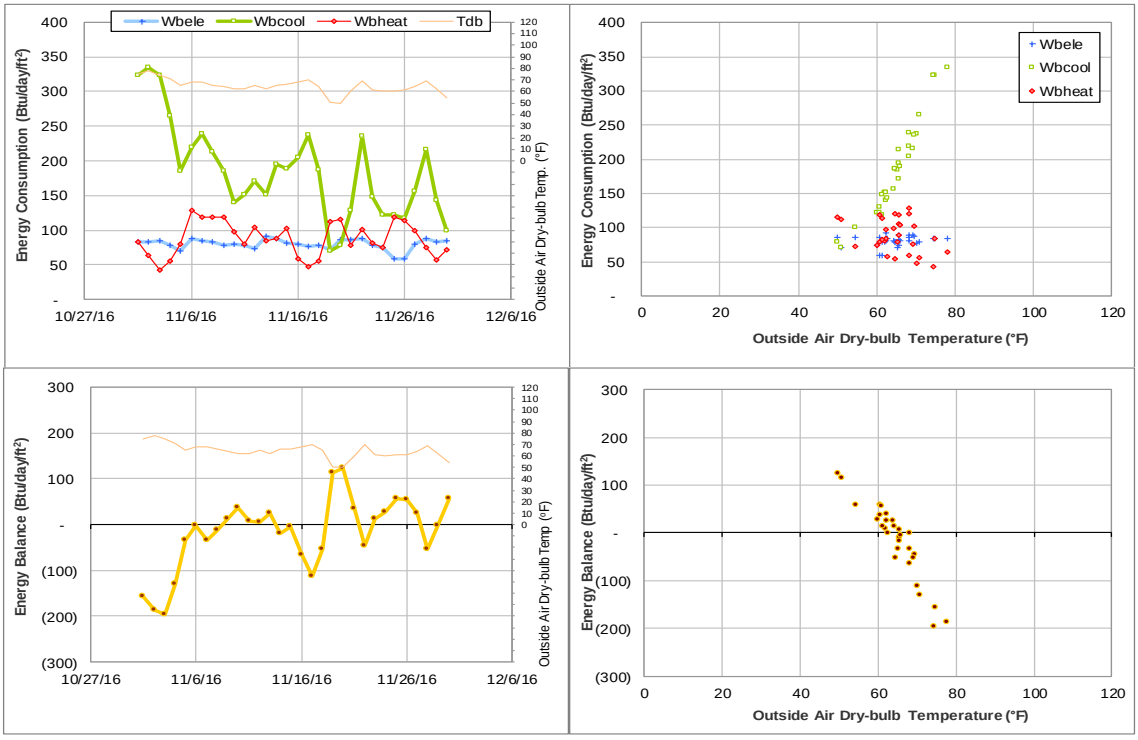


Figure IV-30 Kiest Hall Dorm 2 TAMU BLDG # 401 Energy Balance Plot during November 2016

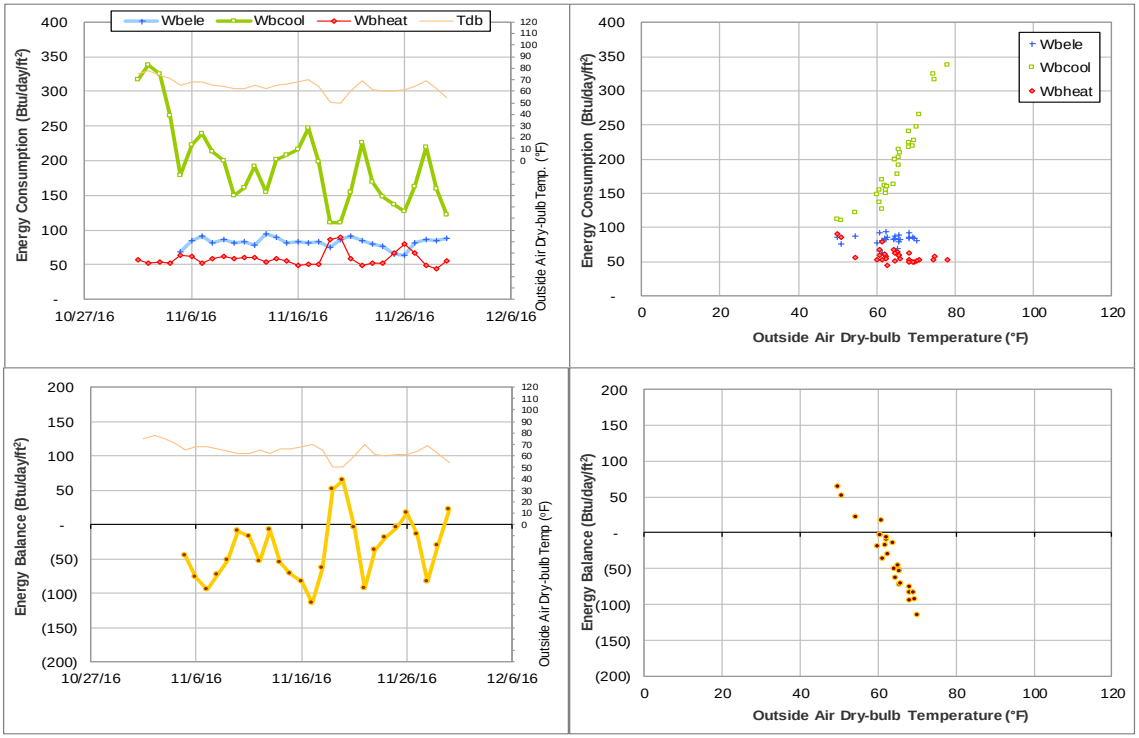


Figure IV-31 Fountain Hall Dorm 4 TAMU BLDG # 403 Energy Balance Plot during November 2016

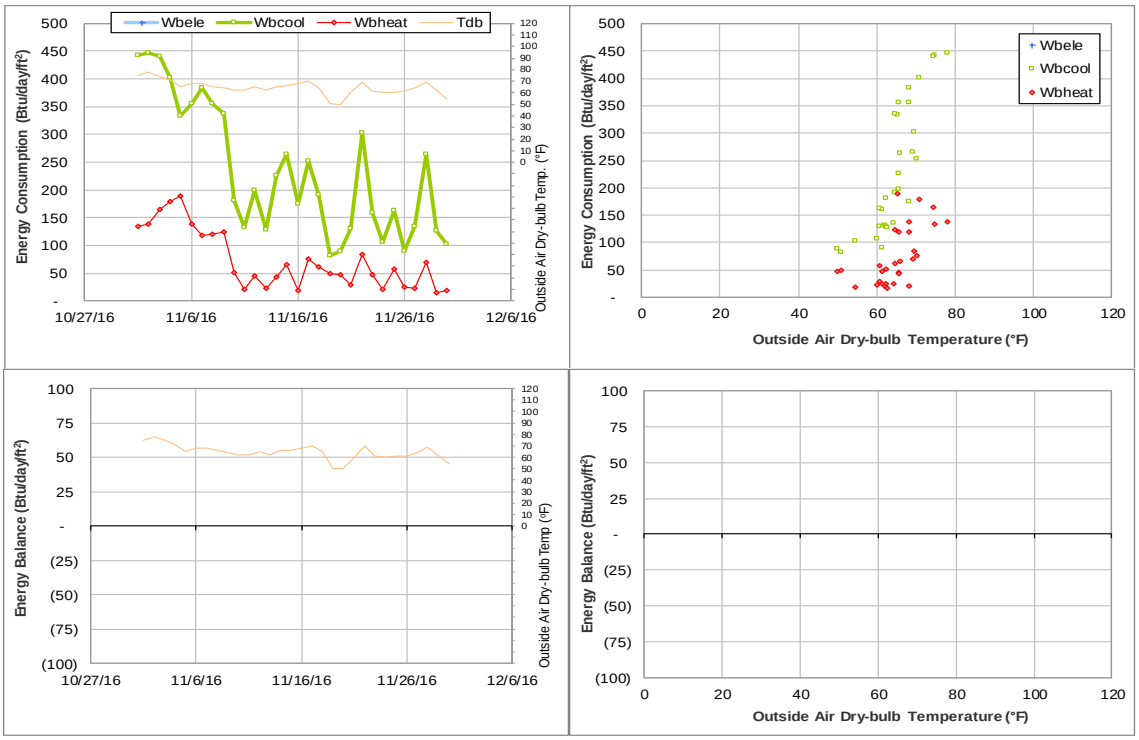


Figure IV-32 Plank LLC TAMU BLDG # 1404 Energy Balance Plot during November 2016

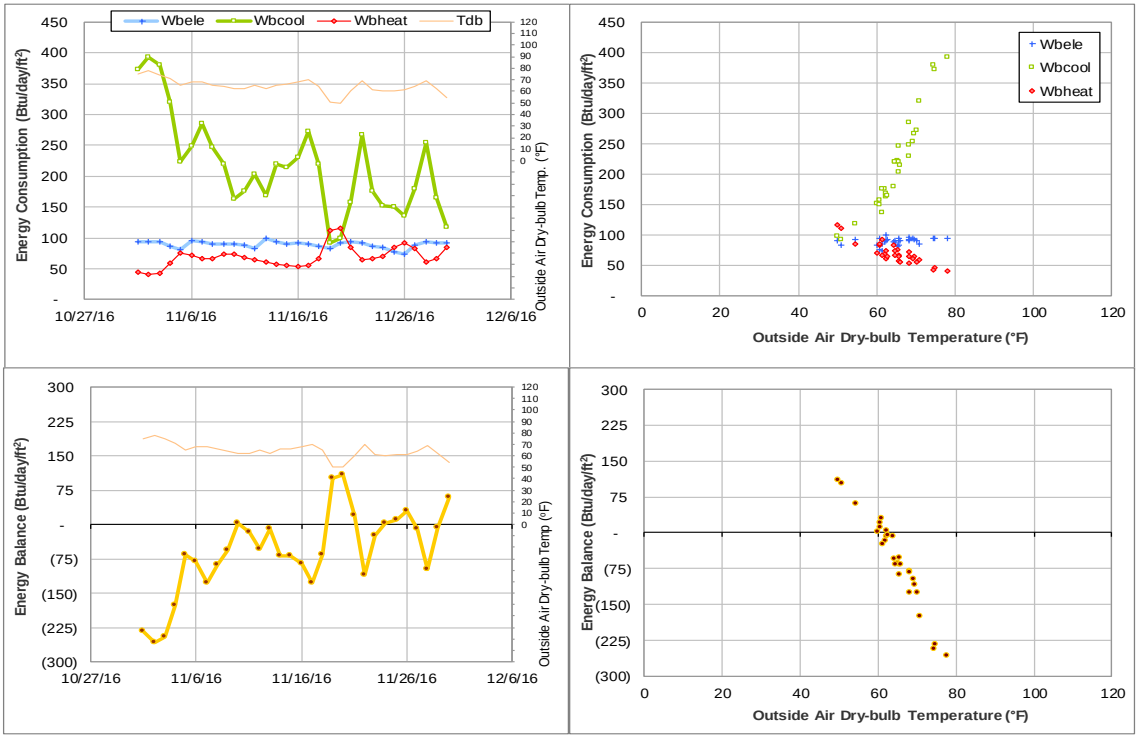


Figure IV-33 Gainer Hall, Leonard Hall and Ash LLC TAMU BLDG # 404, 406, 1403 Energy Balance Plot during November 2016

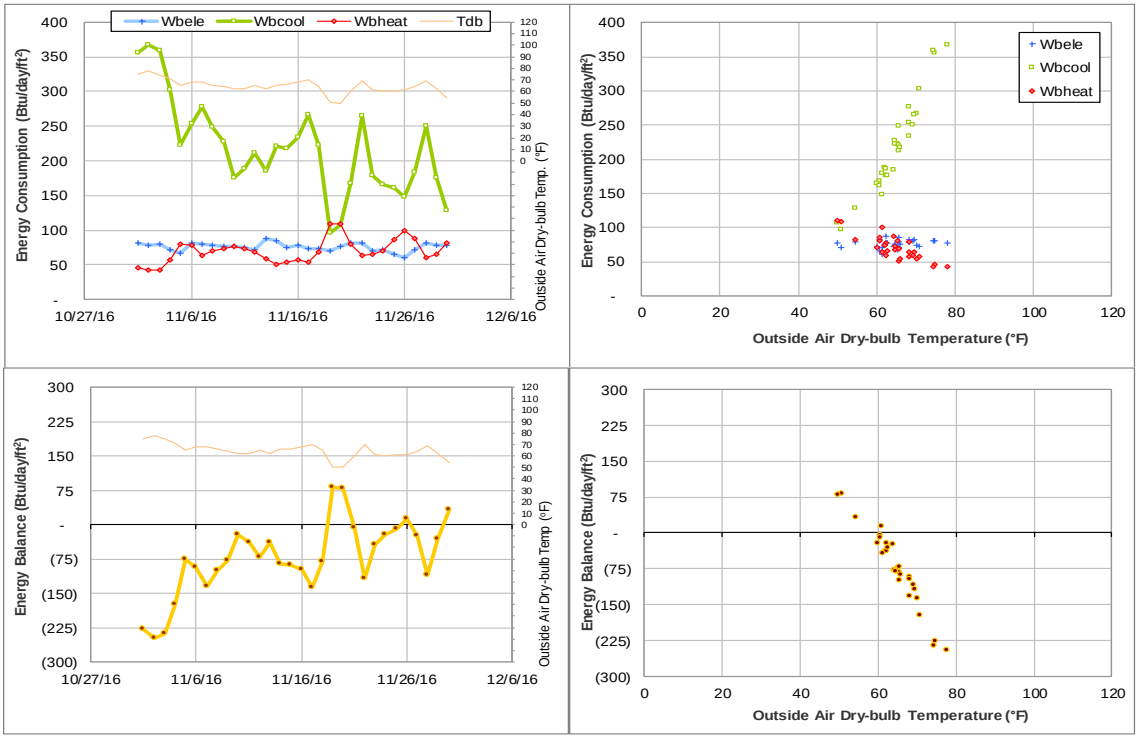


Figure IV-34 Gainer Hall Dorm 5 TAMU BLDG # 404 Energy Balance Plot during November 2016

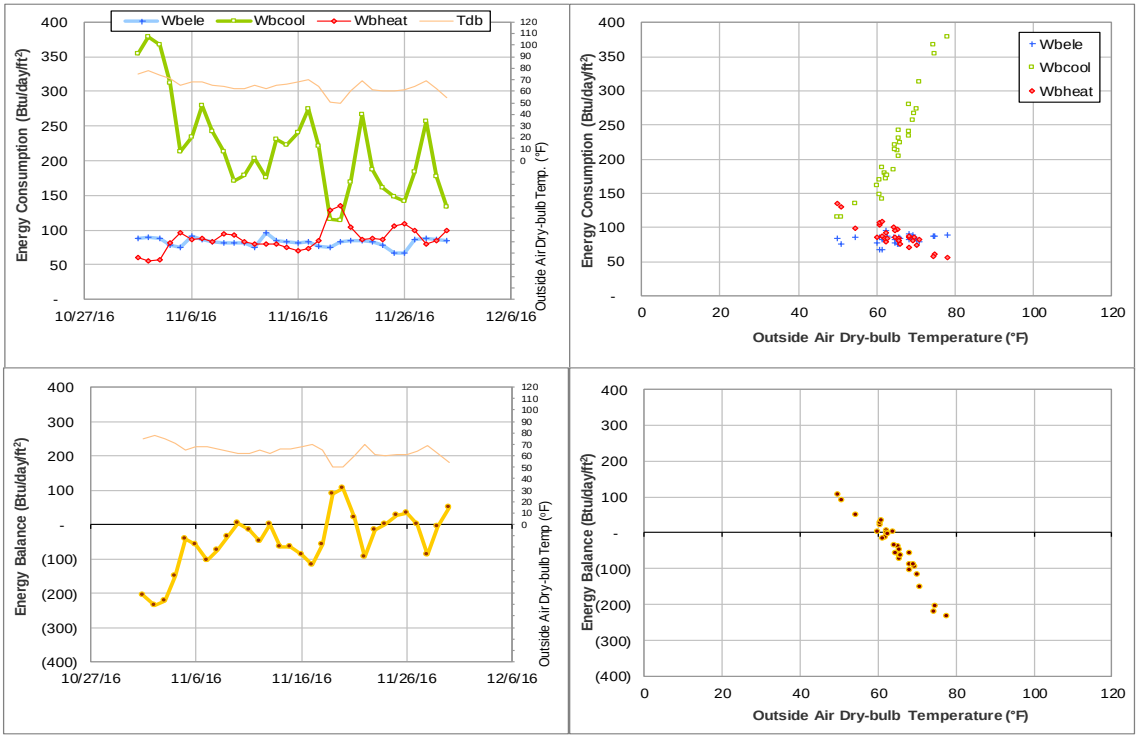


Figure IV-35 Leonard Hall - Dorm 7 TAMU BLDG # 406 Energy Balance Plot during November 2016

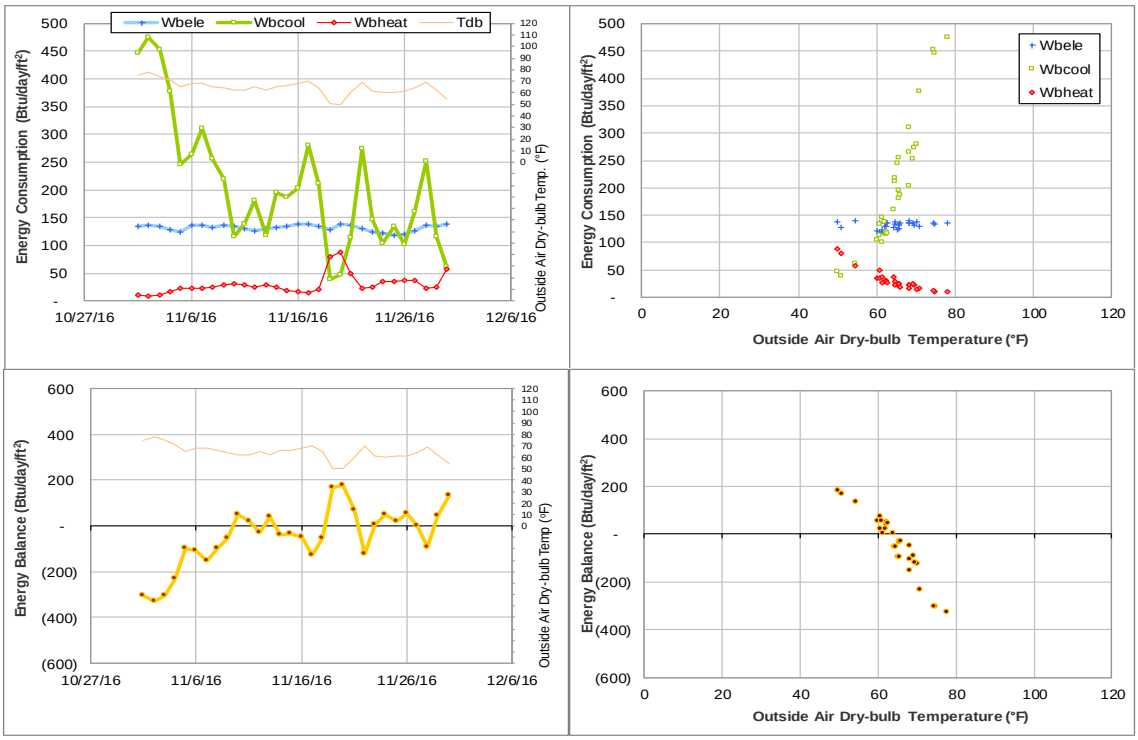


Figure IV-36 H. Grady Ash, Jr. '58 Leadership Learning Center TAMU BLDG # 1403 Energy Balance Plot during November 2016

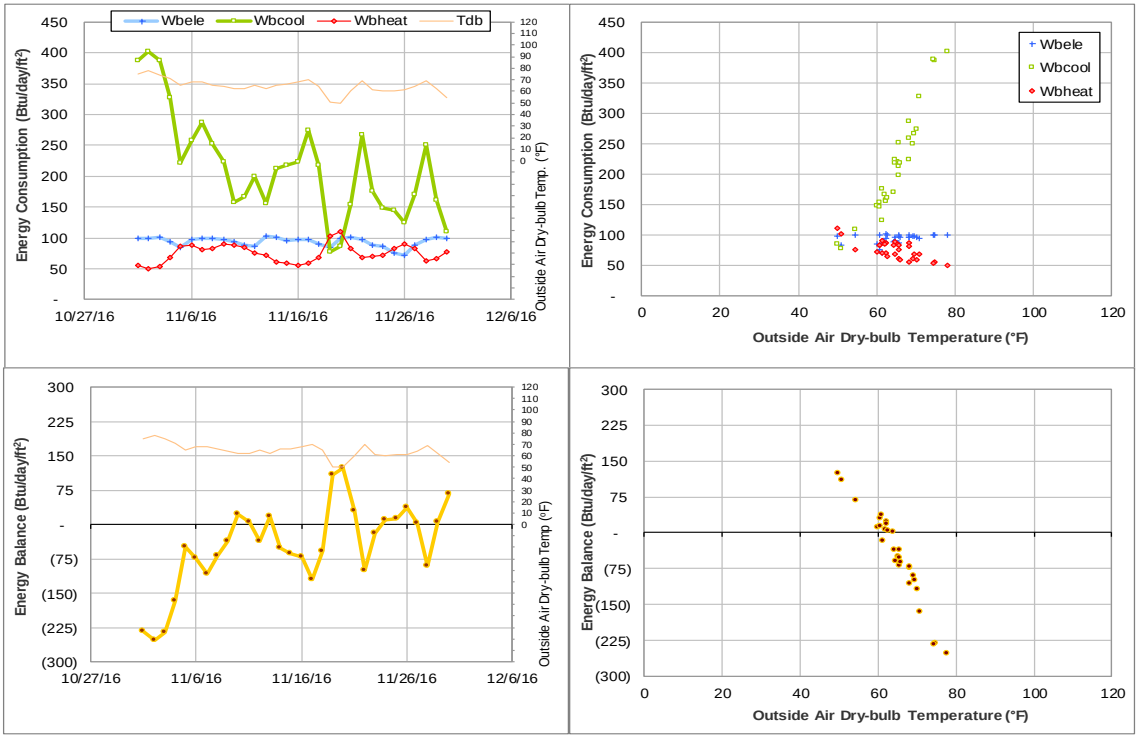


Figure IV-37 Lacy Hall - Dorm 6, Harrell Hall and Leadership Learning Center TAMU BLDG # 405, 407, 1402 Energy Balance Plot during November 2016

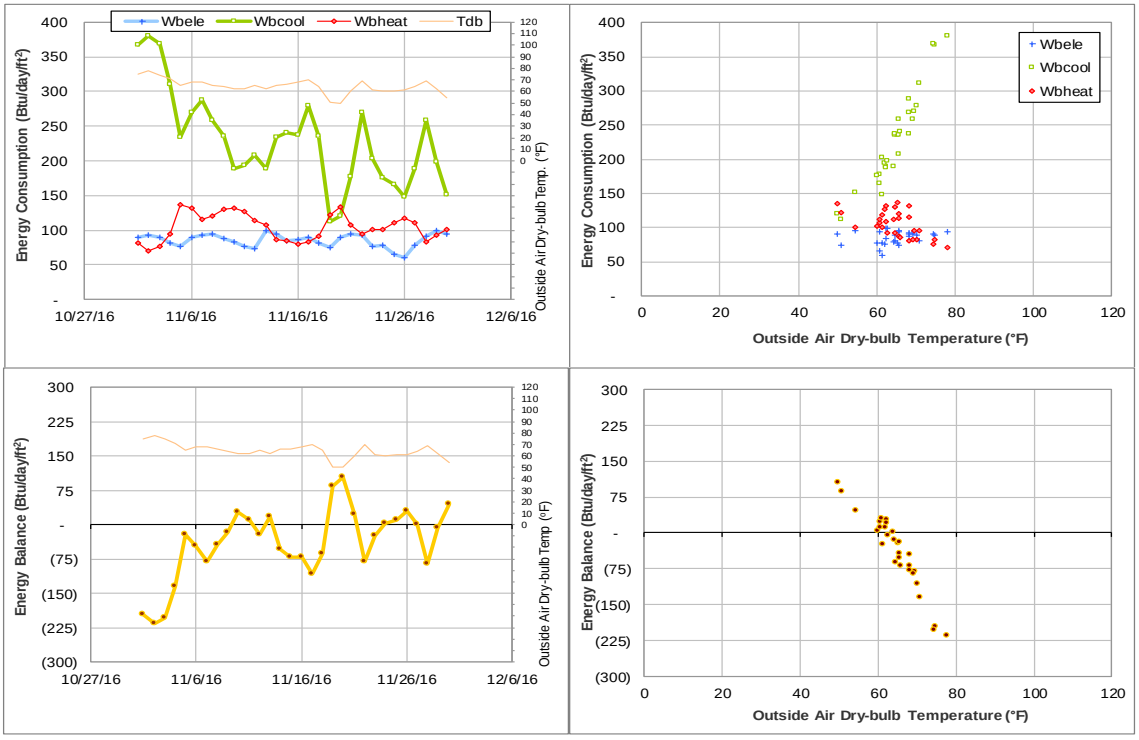


Figure IV-38 Lacy Hall - Dorm 6 TAMU BLDG # 405 Energy Balance Plot during November 2016

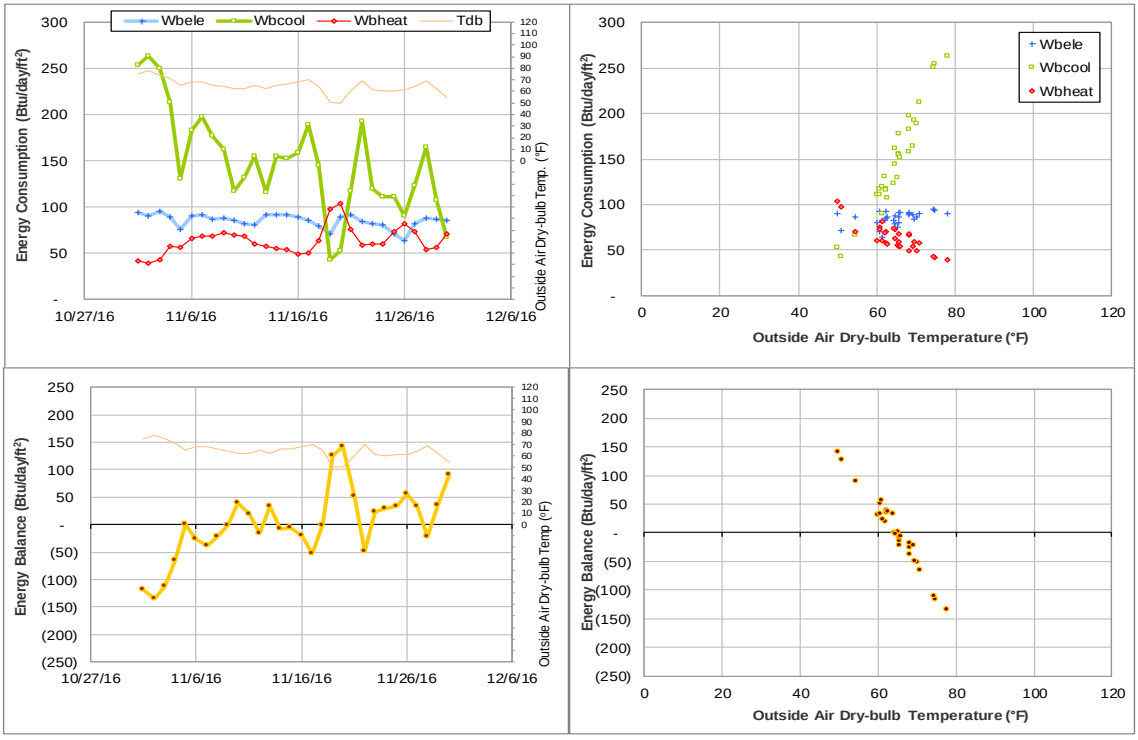


Figure IV-39 Harrell Hall - Dorm 8 TAMU BLDG # 407 Energy Balance Plot during November 2016

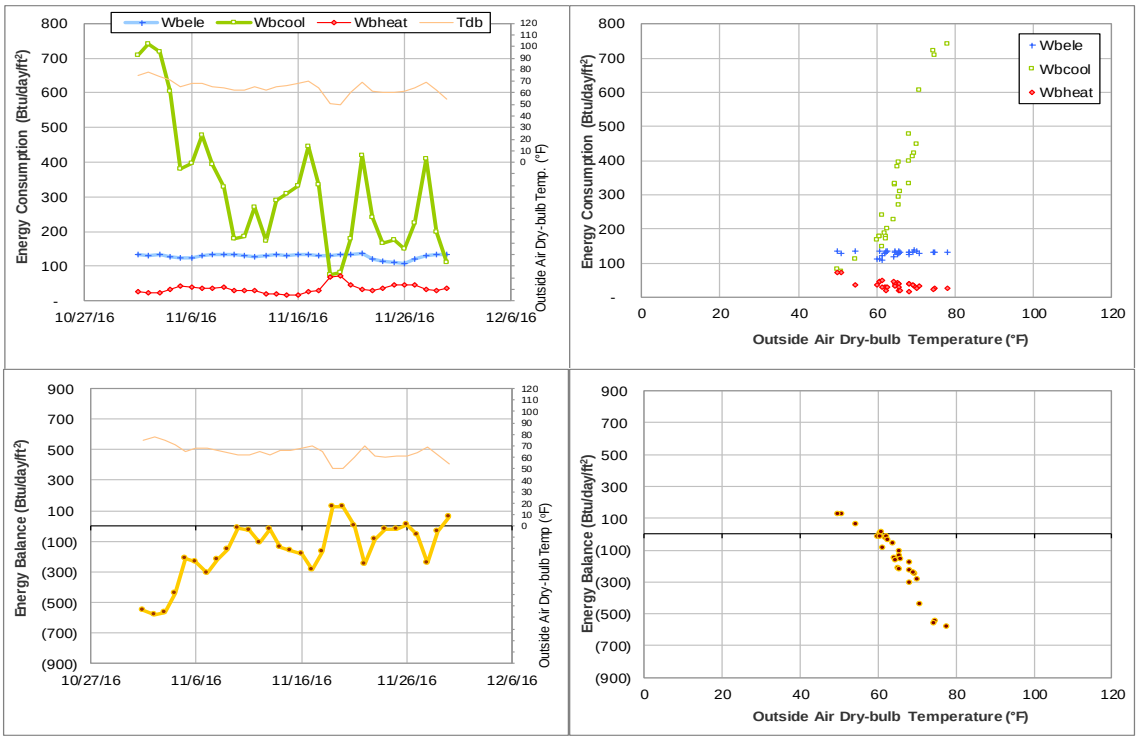


Figure IV-40 Buzbee Leadership Learning Center TAMU BLDG # 1402 Energy Balance Plot during November 2016

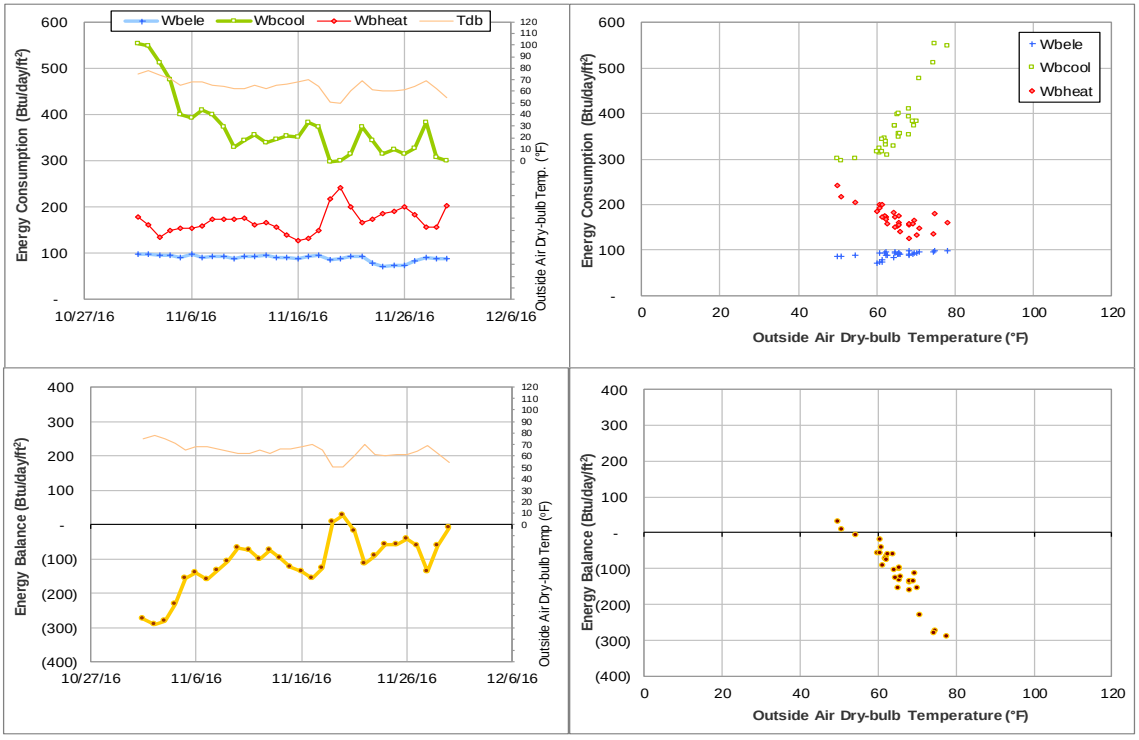


Figure IV-41 Moses Residence Hall TAMU BLDG # 412 Energy Balance Plot during November 2016

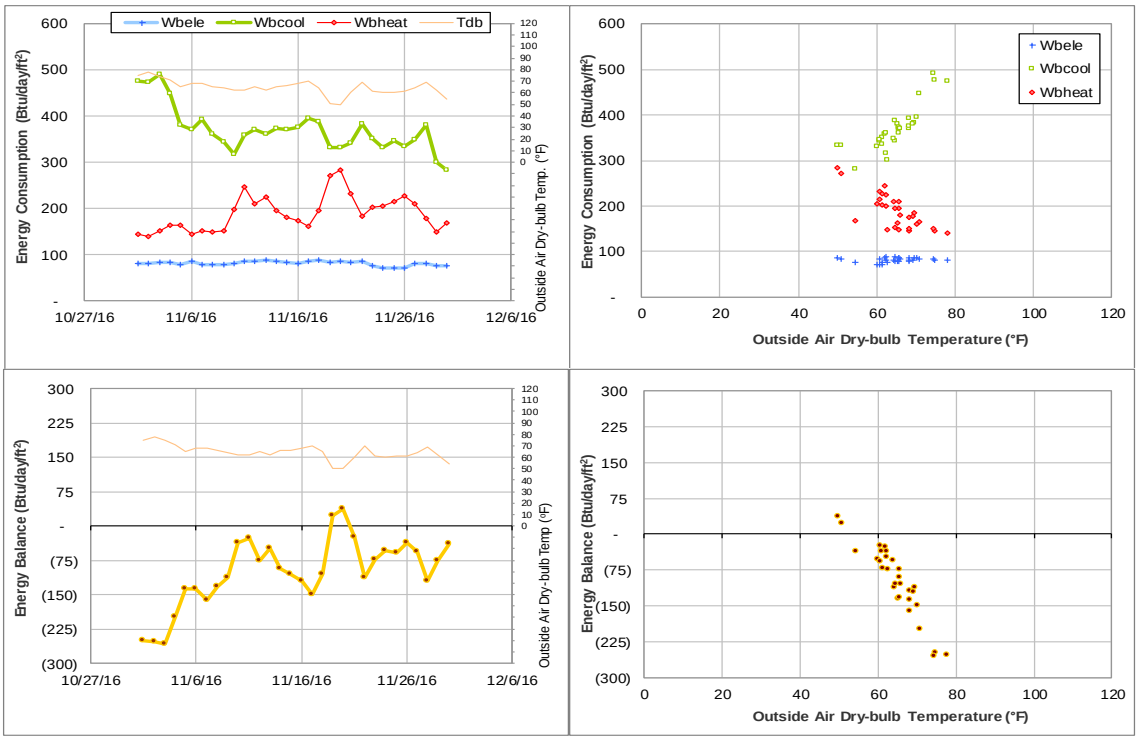


Figure IV-42 Davis-Gary Residence Hall TAMU BLDG # 415 Energy Balance Plot during November 2016

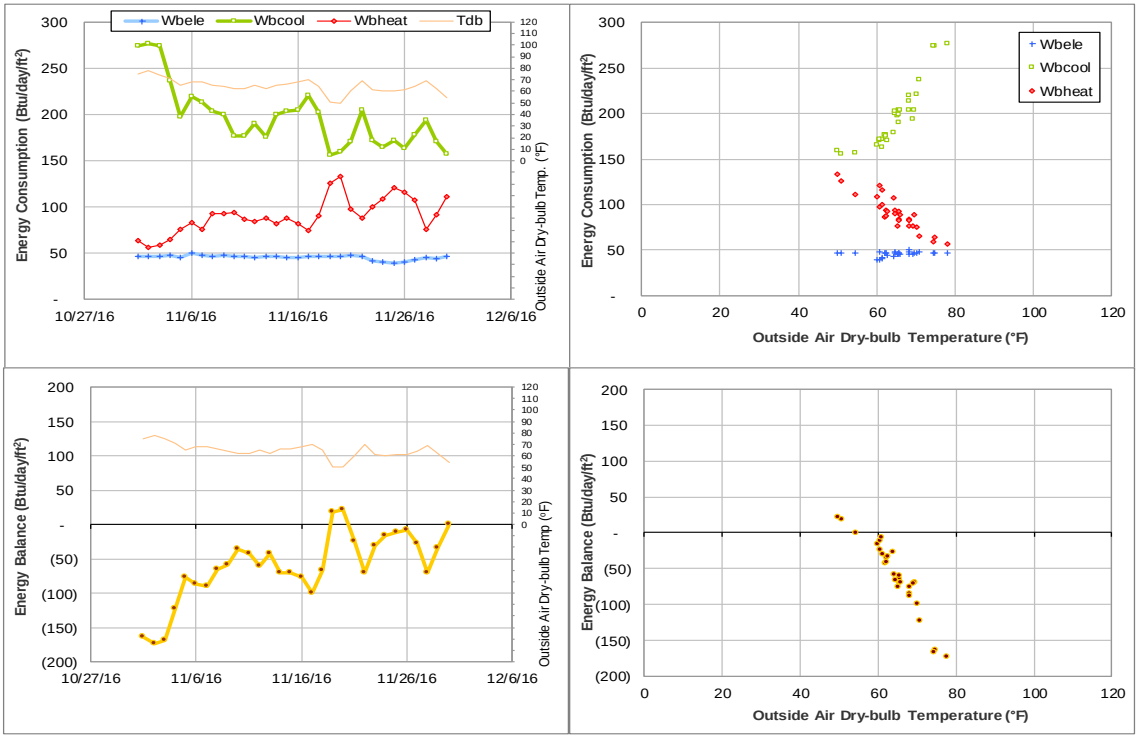


Figure IV-43 Legett Residence Hall TAMU BLDG # 419 Energy Balance Plot during November 2016

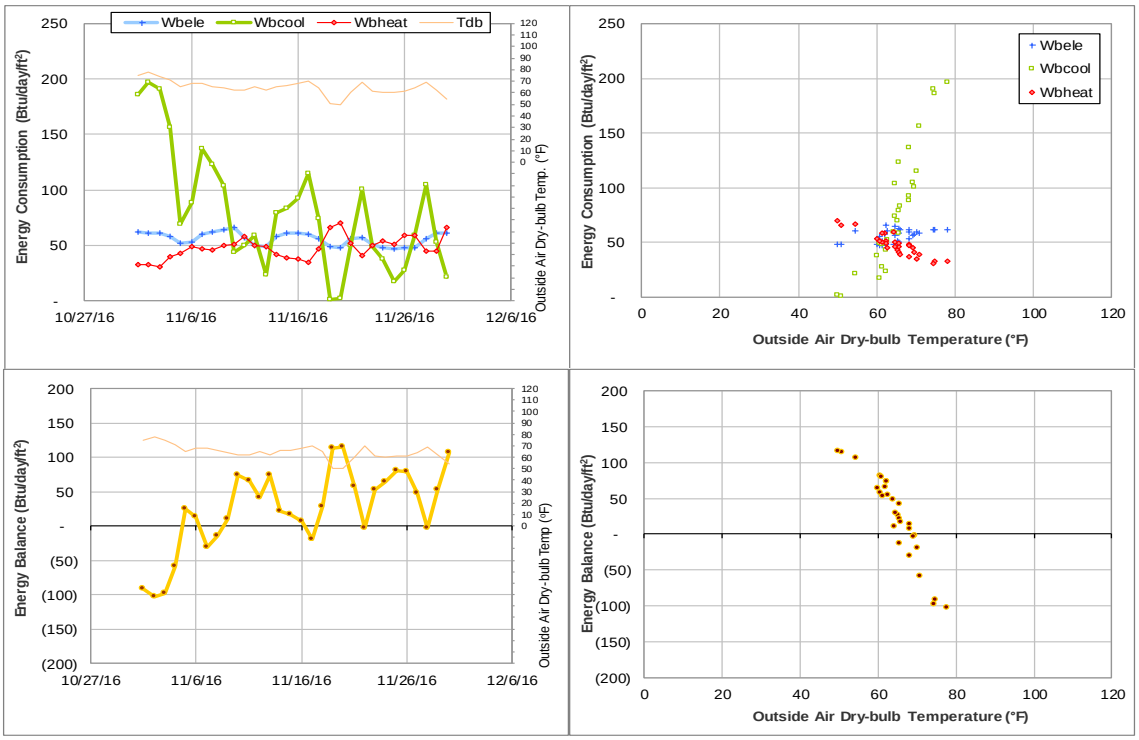


Figure IV-44 Milner Hall TAMU BLDG # 420 Energy Balance Plot during November 2016

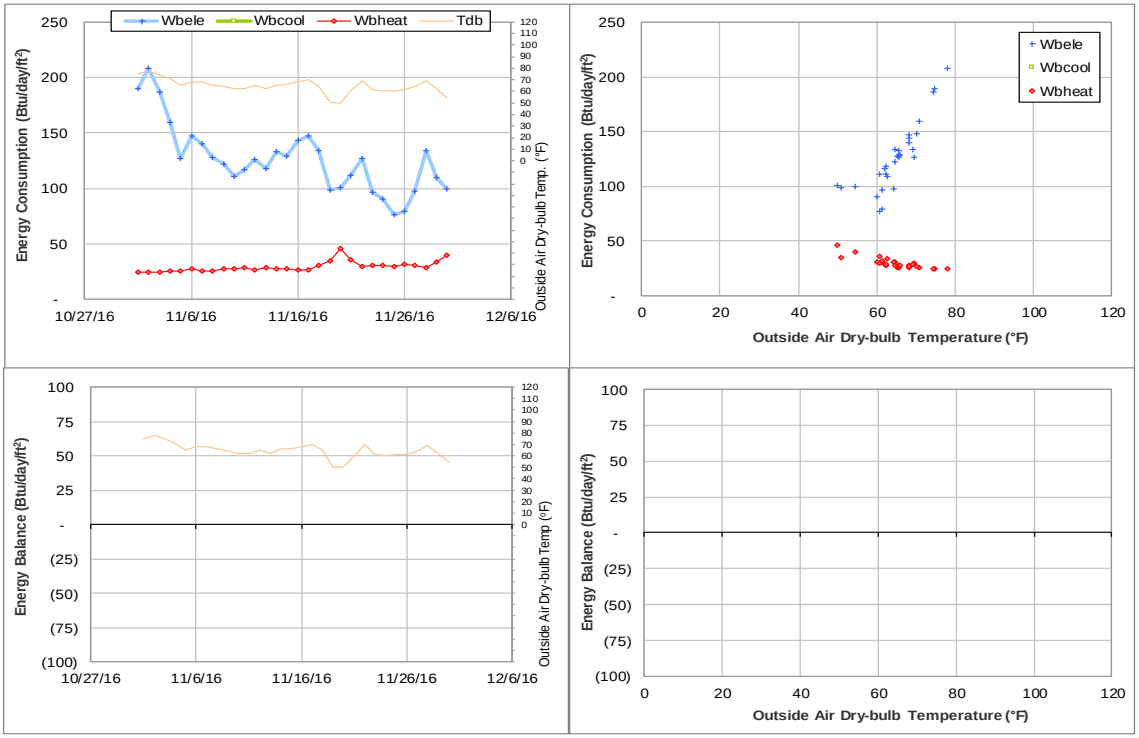


Figure IV-45 Walton Residence Hall TAMU BLDG # 422 Energy Balance Plot during November 2016

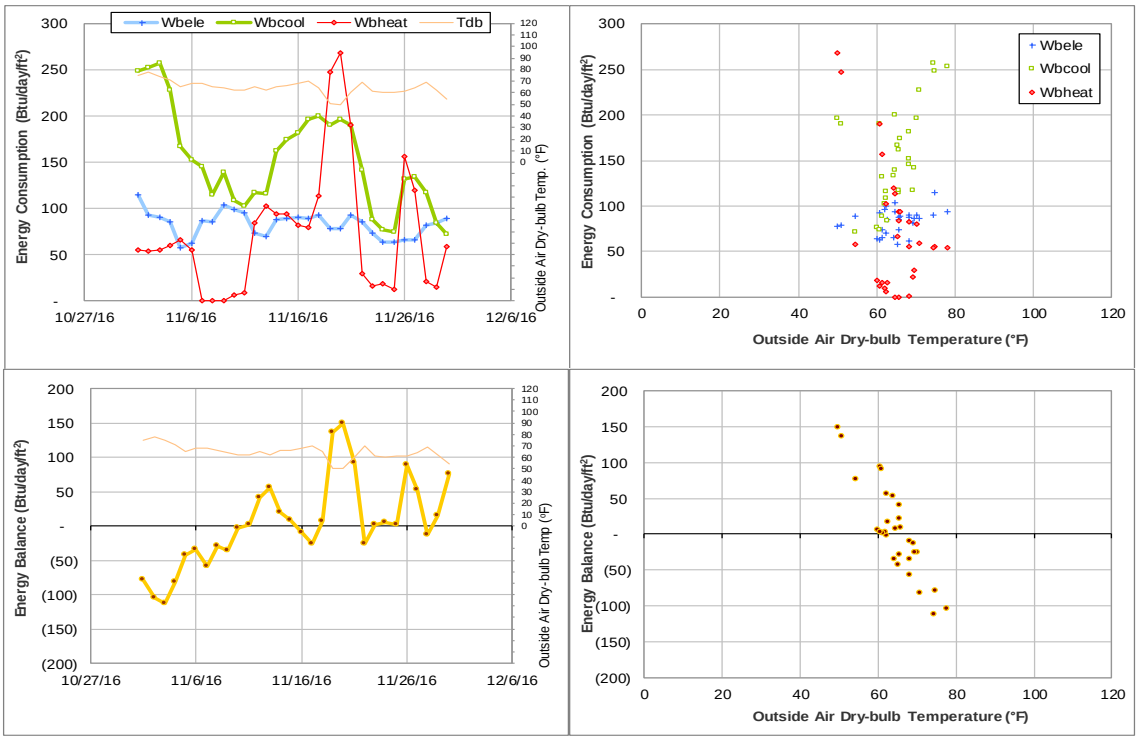


Figure IV-46 Hotard Hall TAMU BLDG # 424 Energy Balance Plot during November 2016

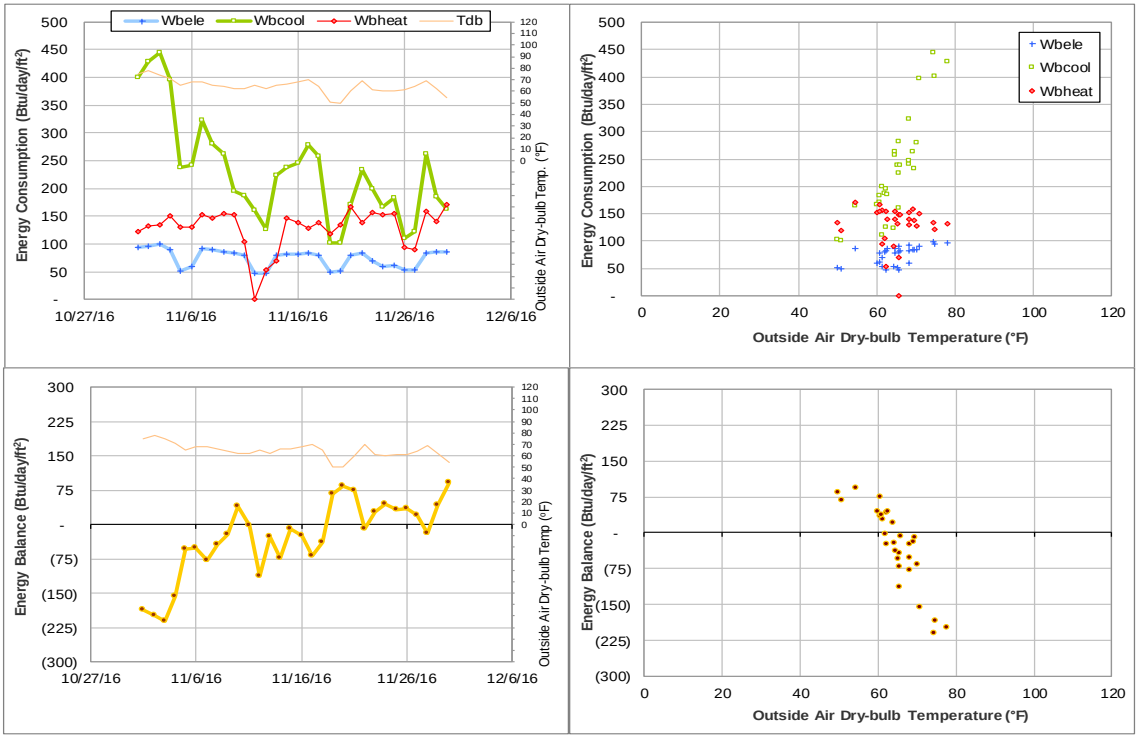


Figure IV-47 Henderson Hall TAMU BLDG # 425 Energy Balance Plot during November 2016

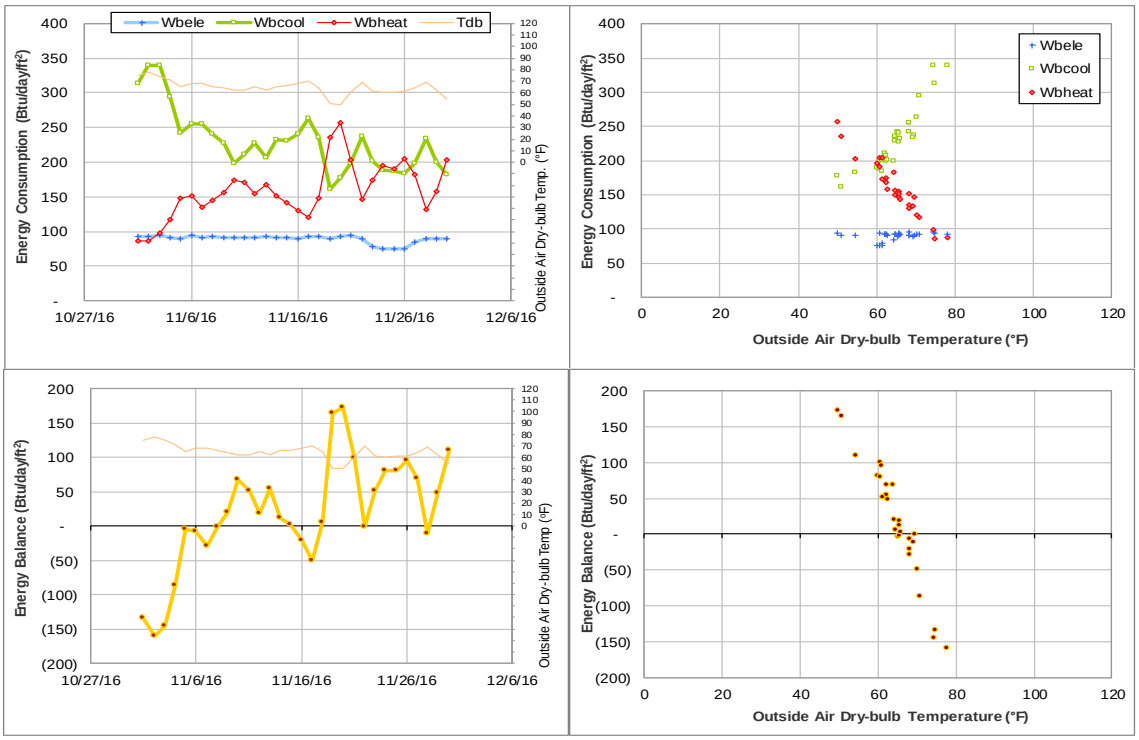


Figure IV-48 FHK Complex TAMU BLDG # 426 Energy Balance Plot during November 2016

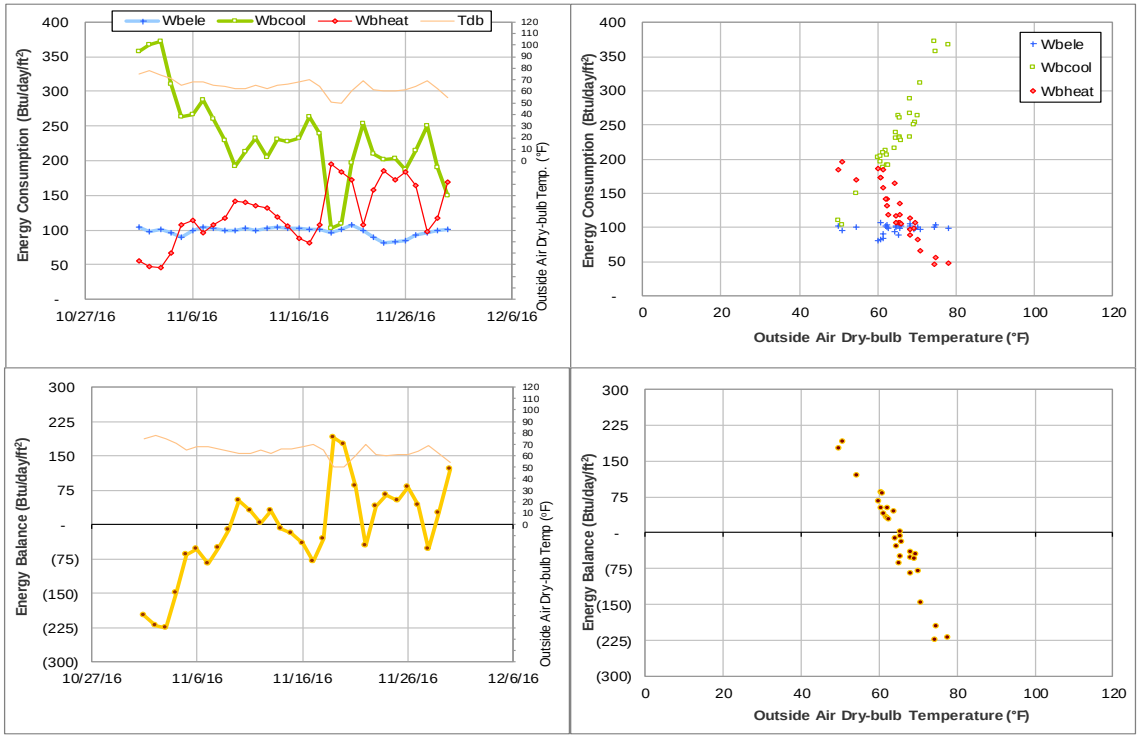


Figure IV-49 Schumacher Residence Hall TAMU BLDG # 430 Energy Balance Plot during November 2016

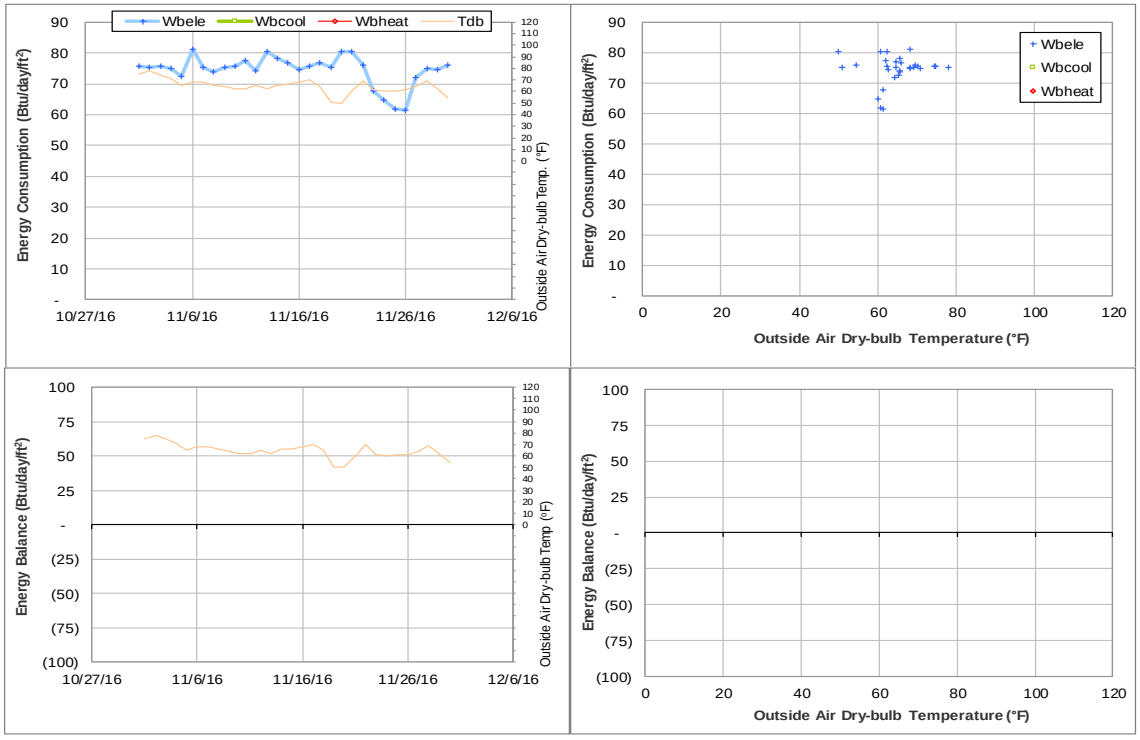


Figure IV-50 Mosher Commons Krueger Dunn Aston TAMU BLDG # 433, 440, 441, 442, 447 Energy Balance Plot during November 2016

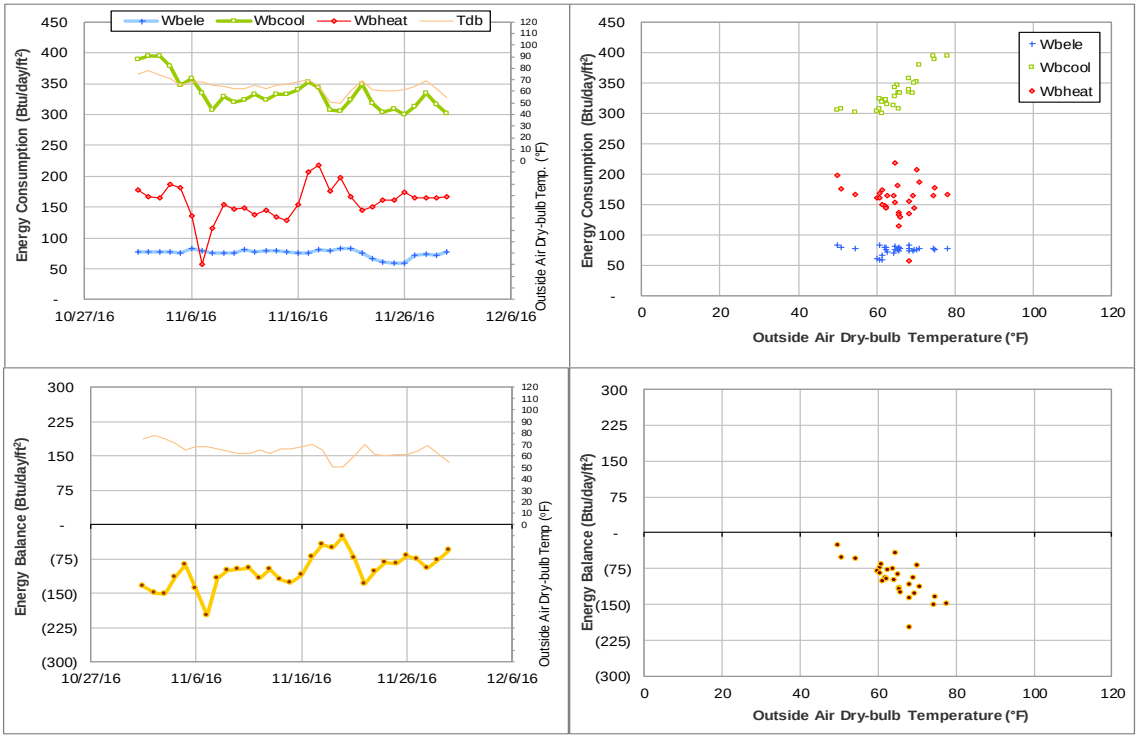


Figure IV-51 Mosher Residence Hall TAMU BLDG # 433 Energy Balance Plot during November 2016

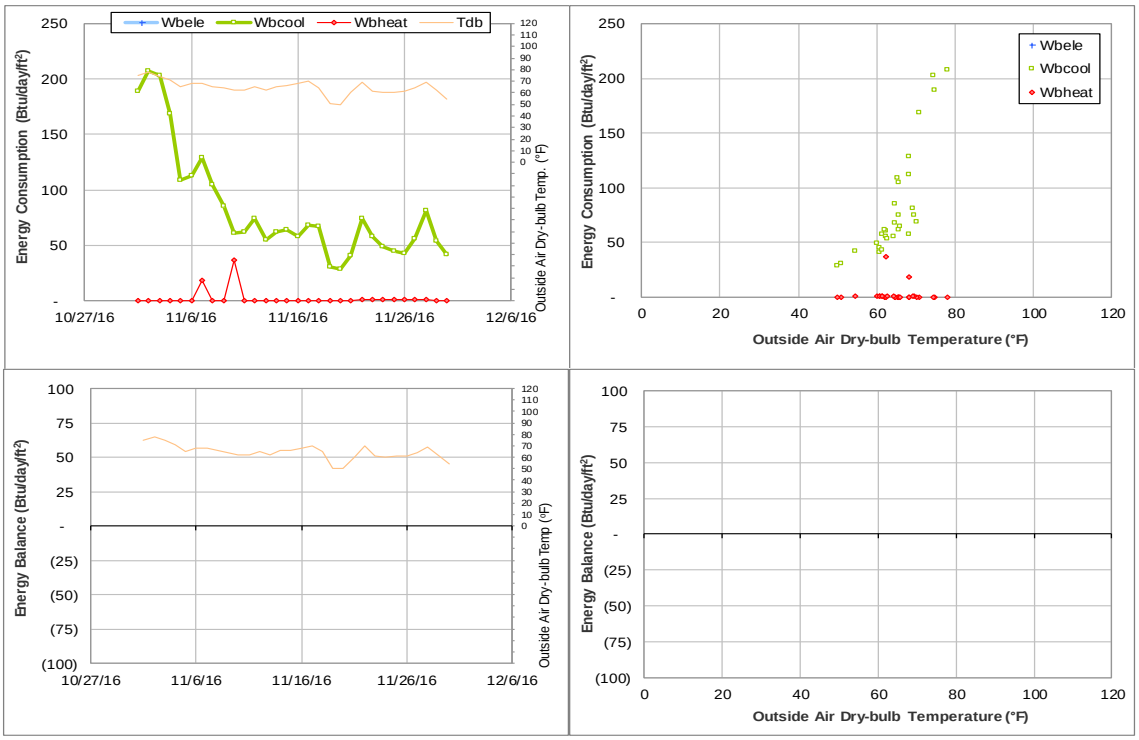


Figure IV-52 Commons Hall TAMU BLDG # 440 Energy Balance Plot during November 2016

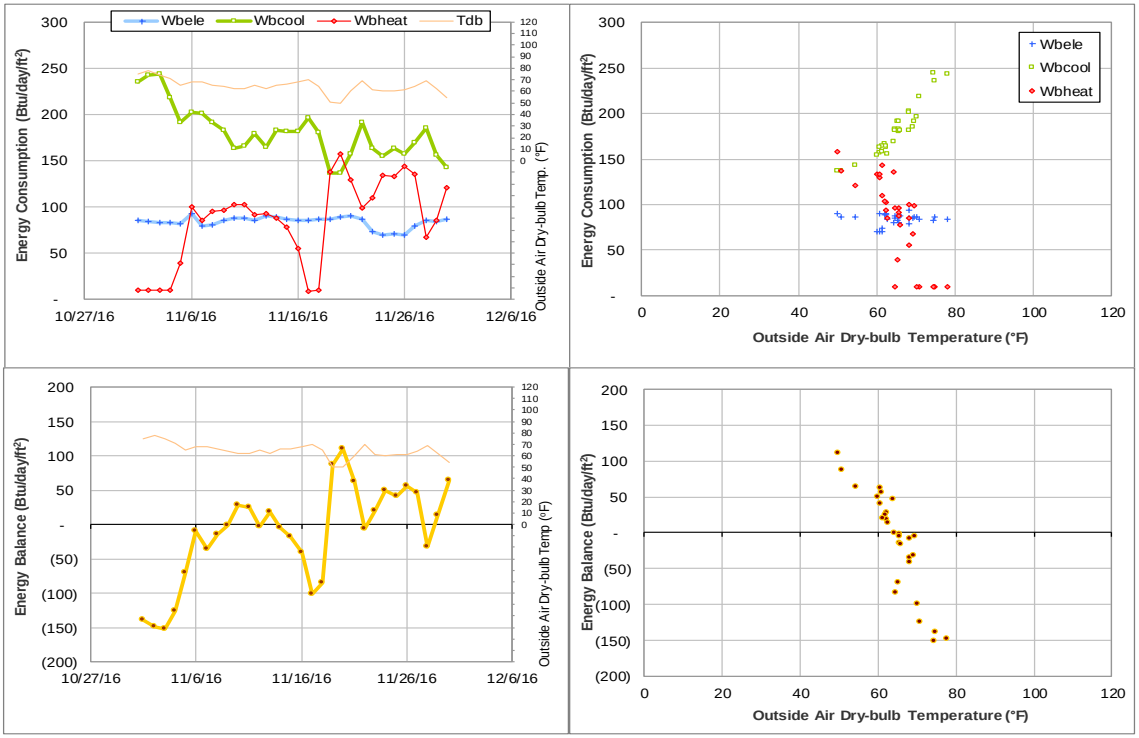


Figure IV-53 Krueger Residence Hall TAMU BLDG # 441 Energy Balance Plot during November 2016

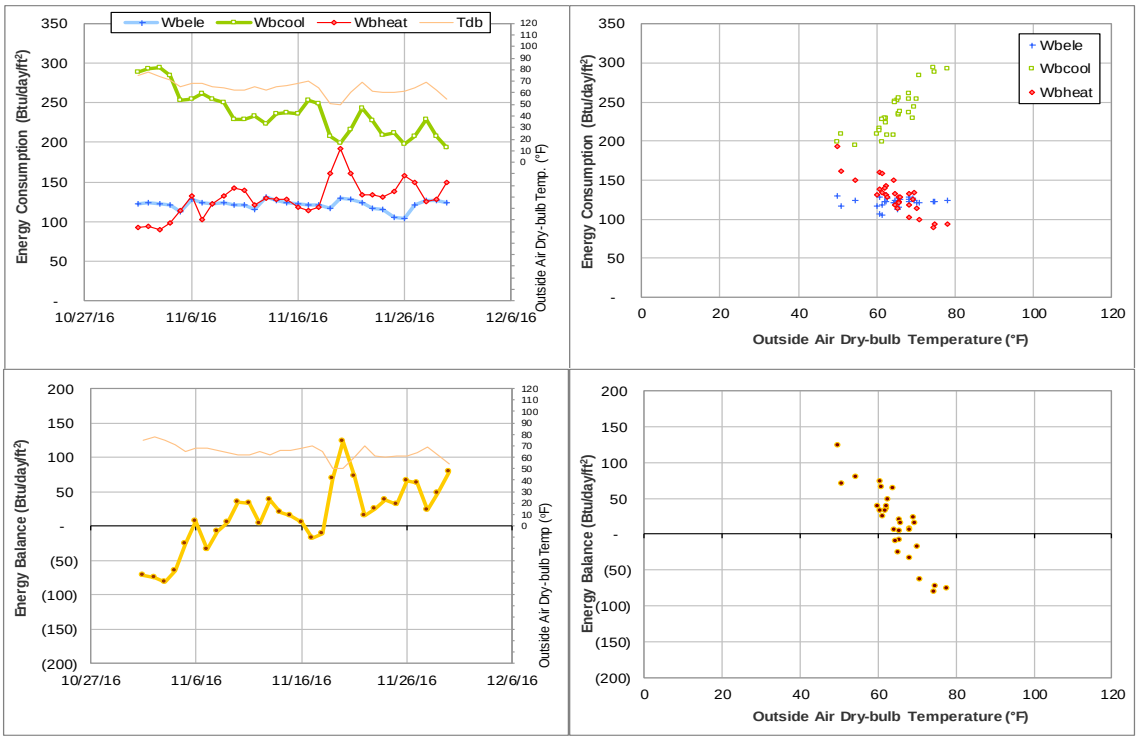


Figure IV-54 Dunn Residence Hall TAMU BLDG # 442 Energy Balance Plot during November 2016

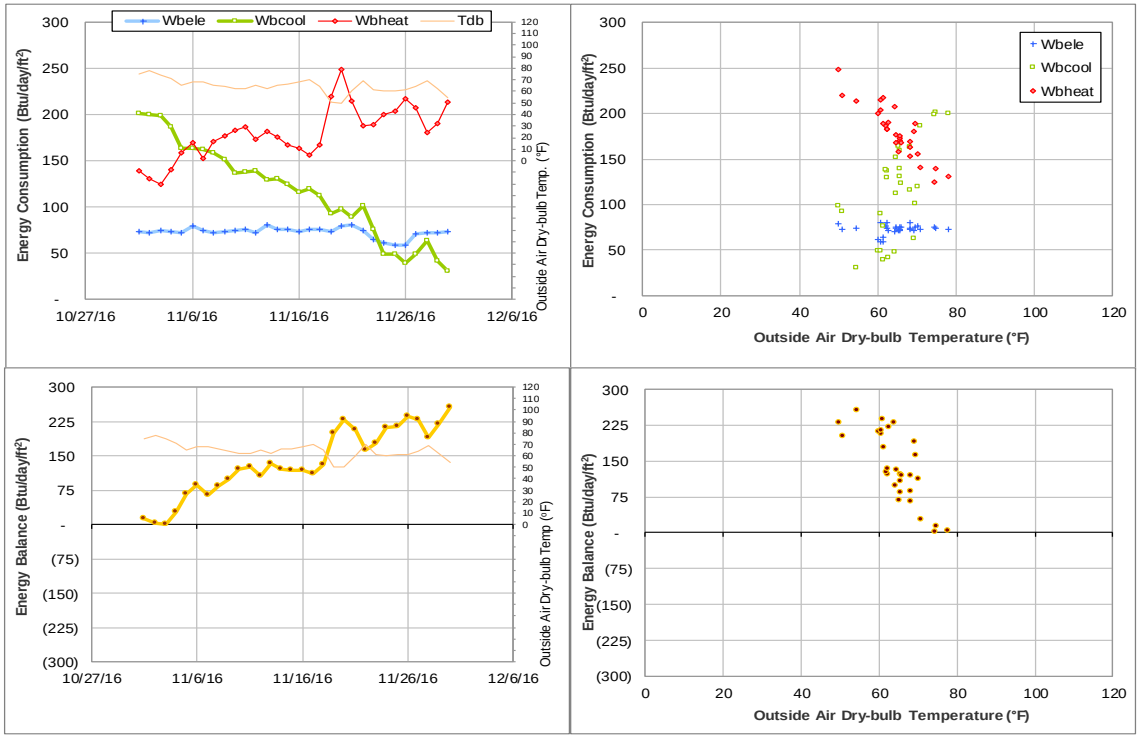


Figure IV-55 Aston Residence Hall TAMU BLDG # 447 Energy Balance Plot during November 2016

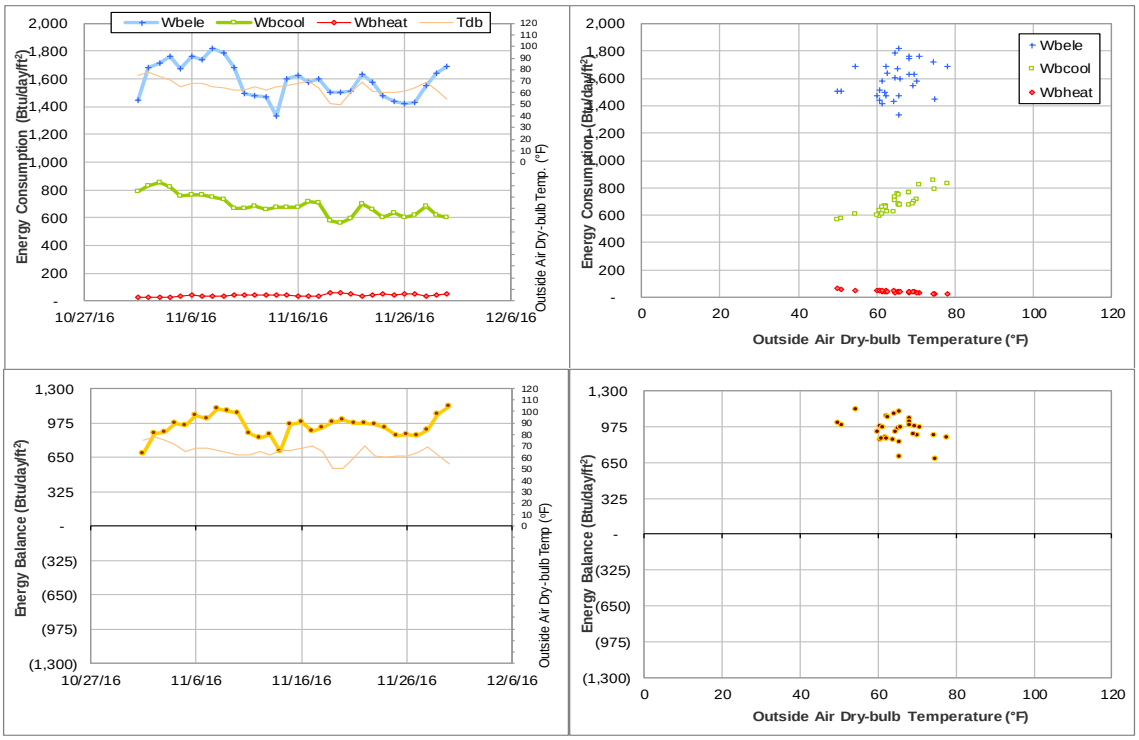


Figure IV-56 Luedecke Building (Cyclotron) TAMU BLDG # 434 Energy Balance Plot during November 2016

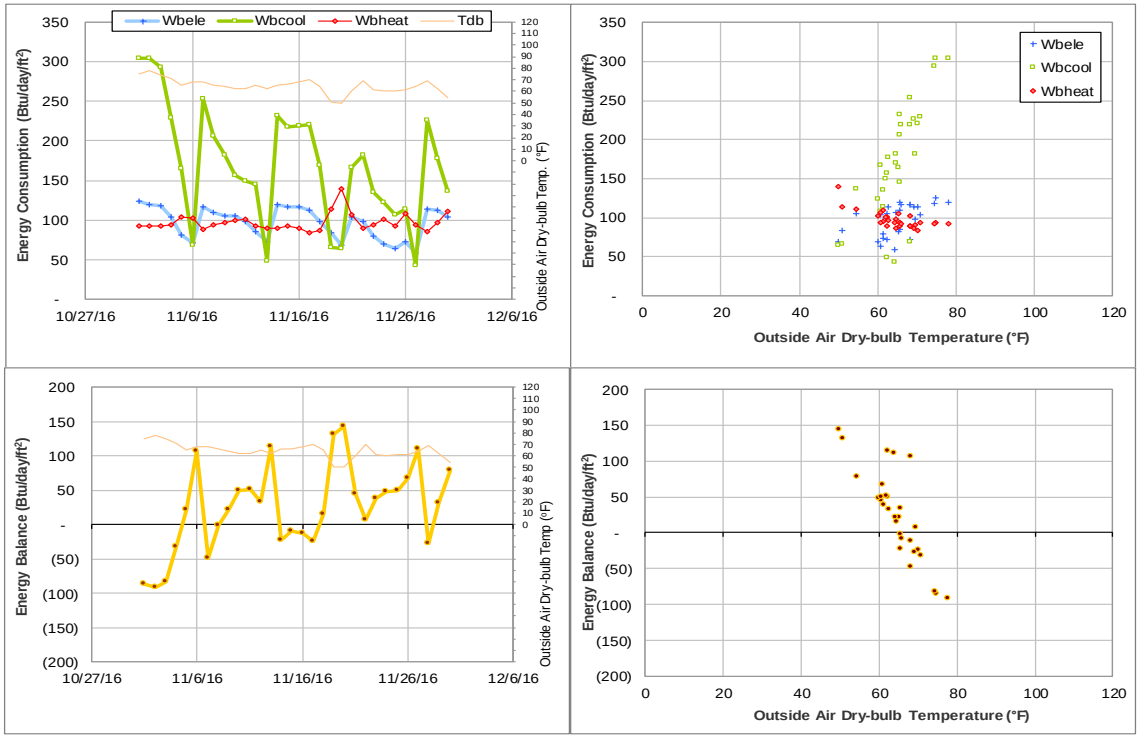


Figure IV-57 Harrington Education Center Office Tower TAMU BLDG # 435 Energy Balance Plot during November 2016

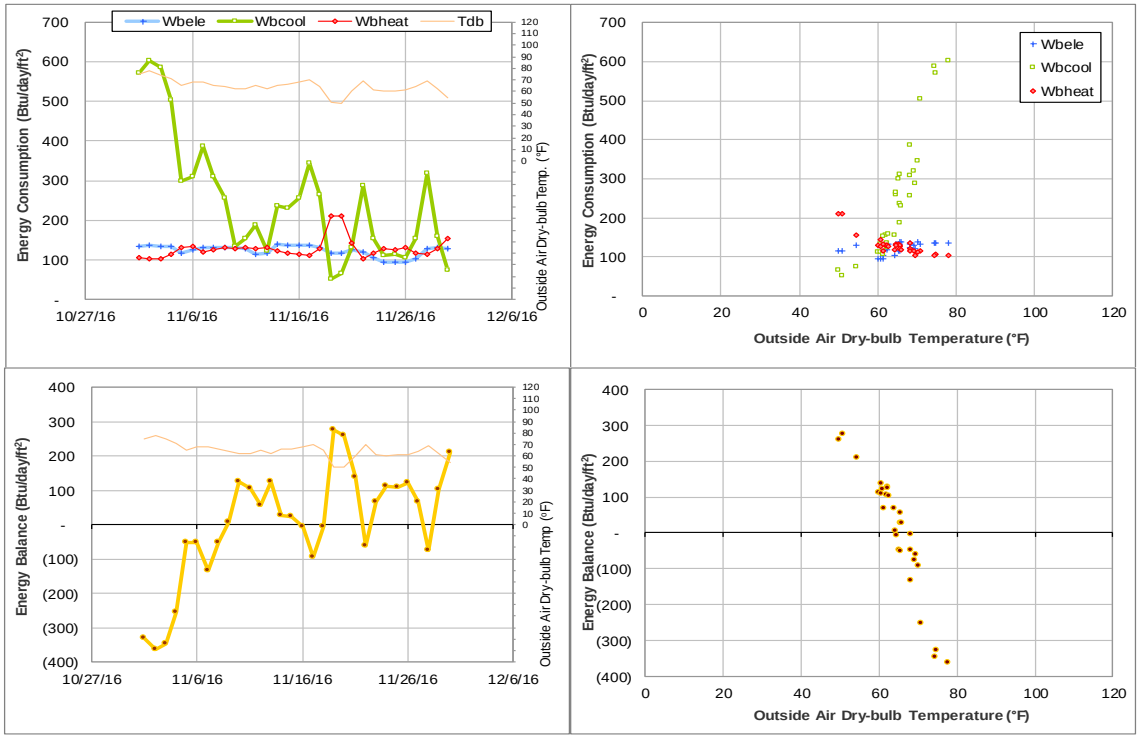


Figure IV-58 Reed-McDonald and Engineering Innovation Center TAMU BLDG # 436 and 499 Energy Balance Plot during November 2016

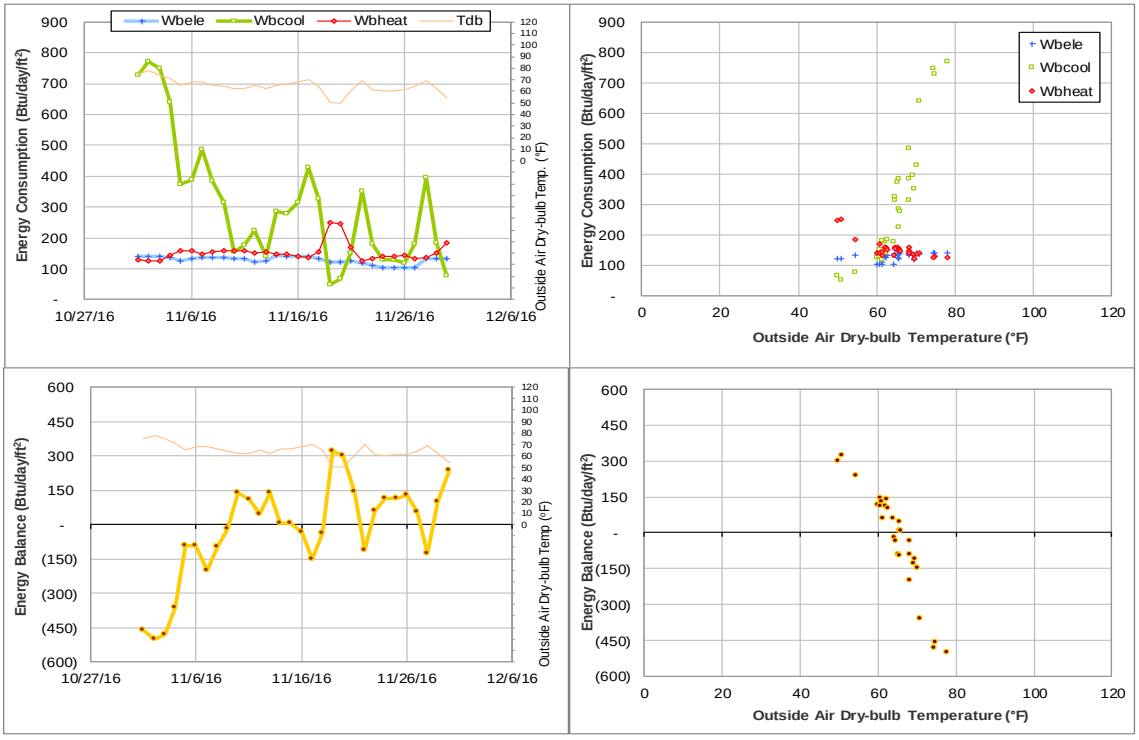


Figure IV-59 Reed-McDonald Building TAMU BLDG # 436 Energy Balance Plot during November 2016

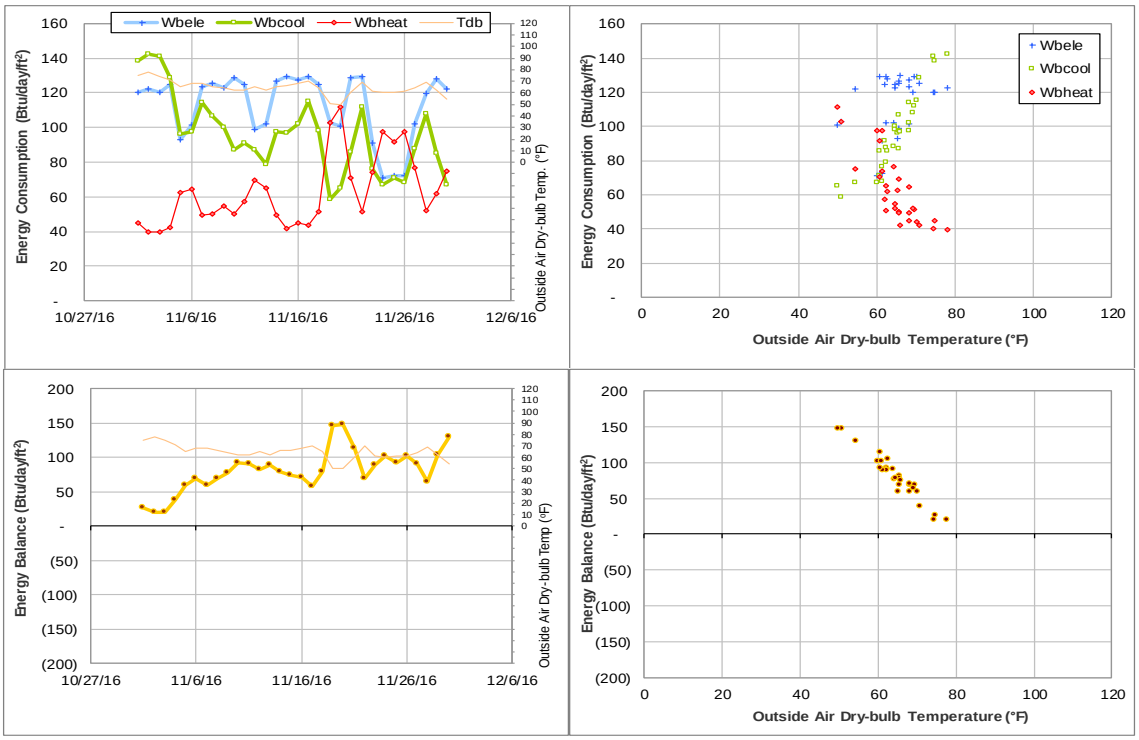


Figure IV-60 Engineering Innovation Center TAMU BLDG # 499 Energy Balance Plot during November 2016

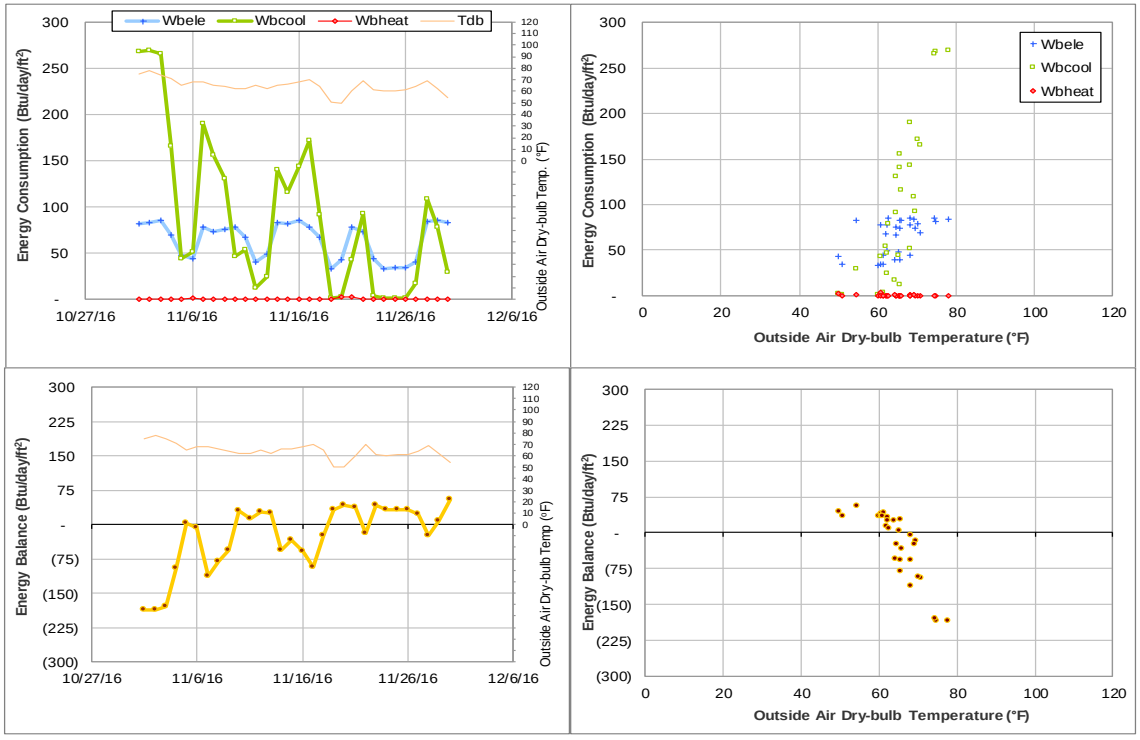


Figure IV-61 Harrington Education Center Classroom Building TAMU BLDG # 438 Energy Balance Plot during November 2016

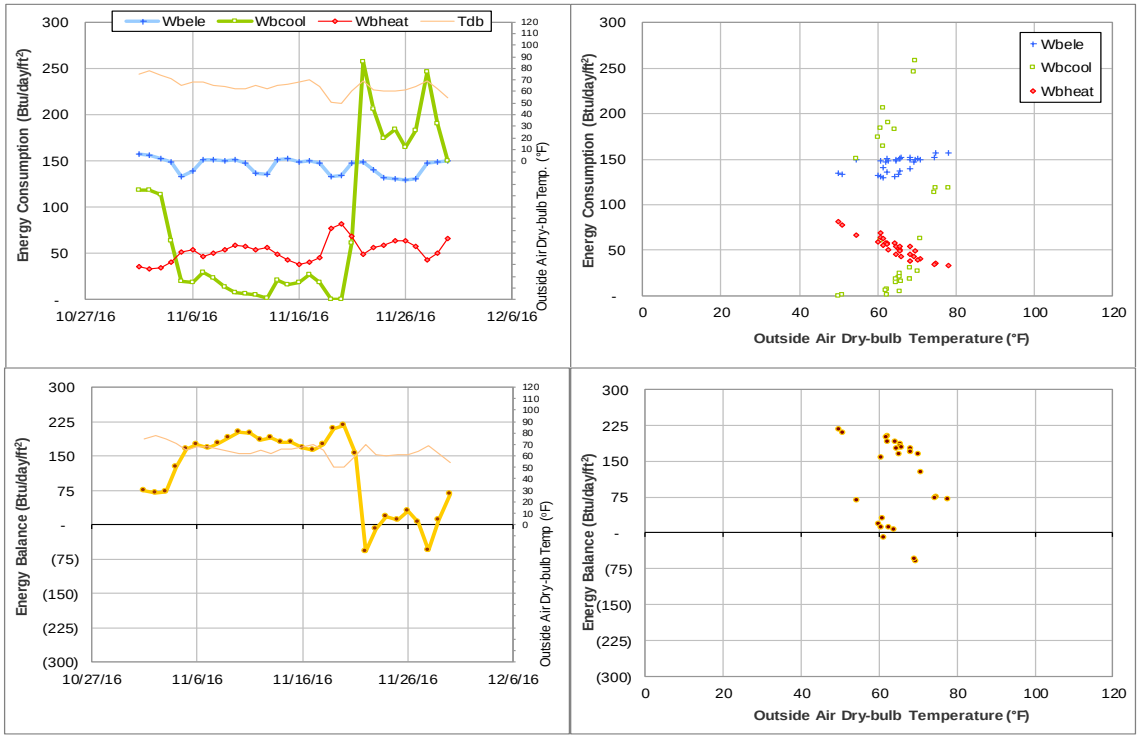


Figure IV-62 Oceanography & Meteorology Building TAMU BLDG # 443 Energy Balance Plot during November 2016

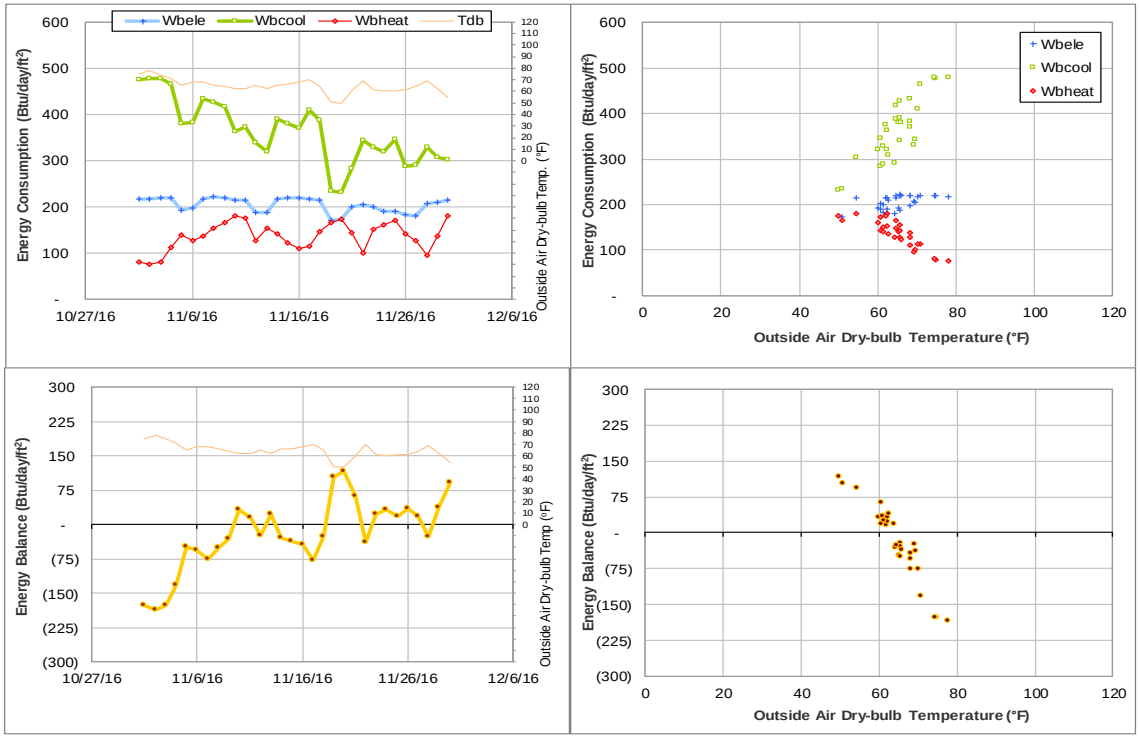


Figure IV-63 Peterson Building TAMU BLDG # 444 Energy Balance Plot during November 2016

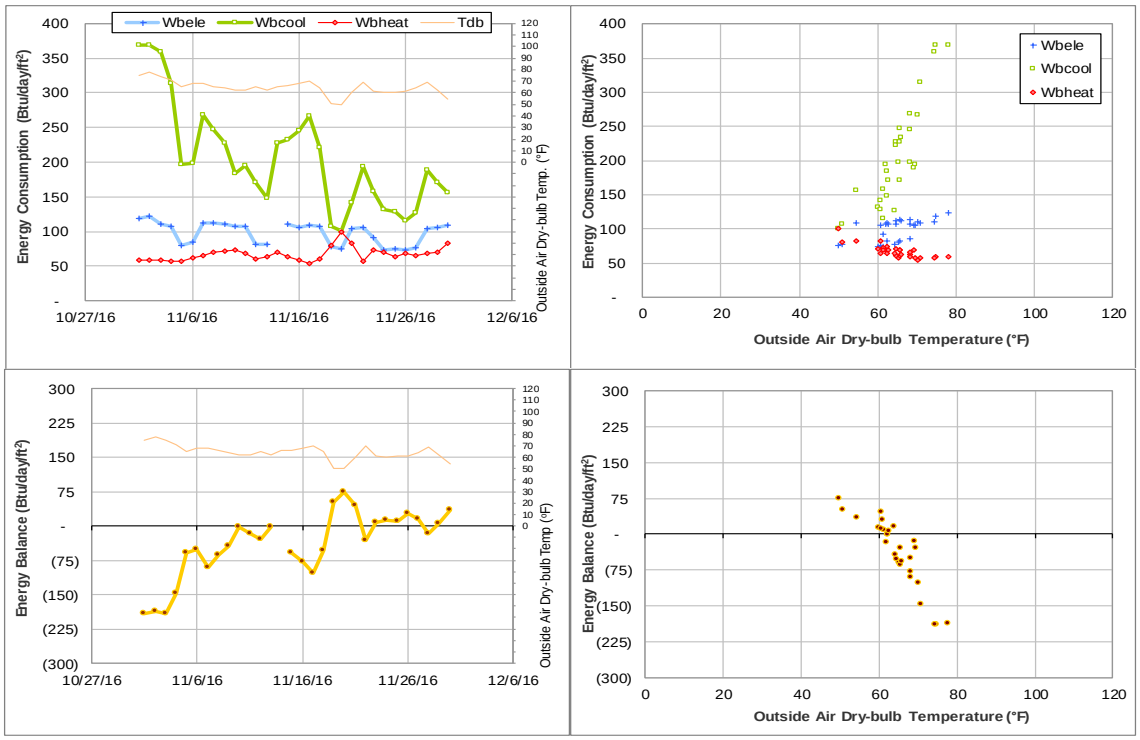


Figure IV-64 Teague Research Center and DPC Annex TAMU BLDG # 445 and 517 Energy Balance Plot during November 2016

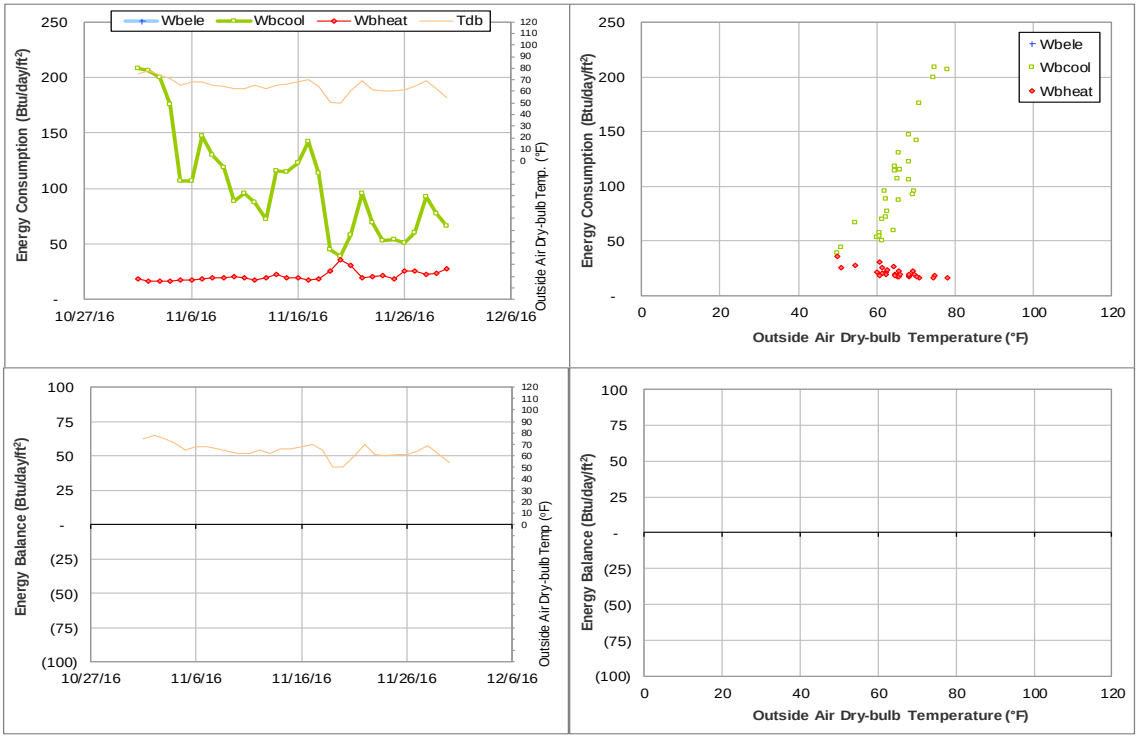


Figure IV-65 Teague Research Center TAMU BLDG # 445 Energy Balance Plot during November 2016

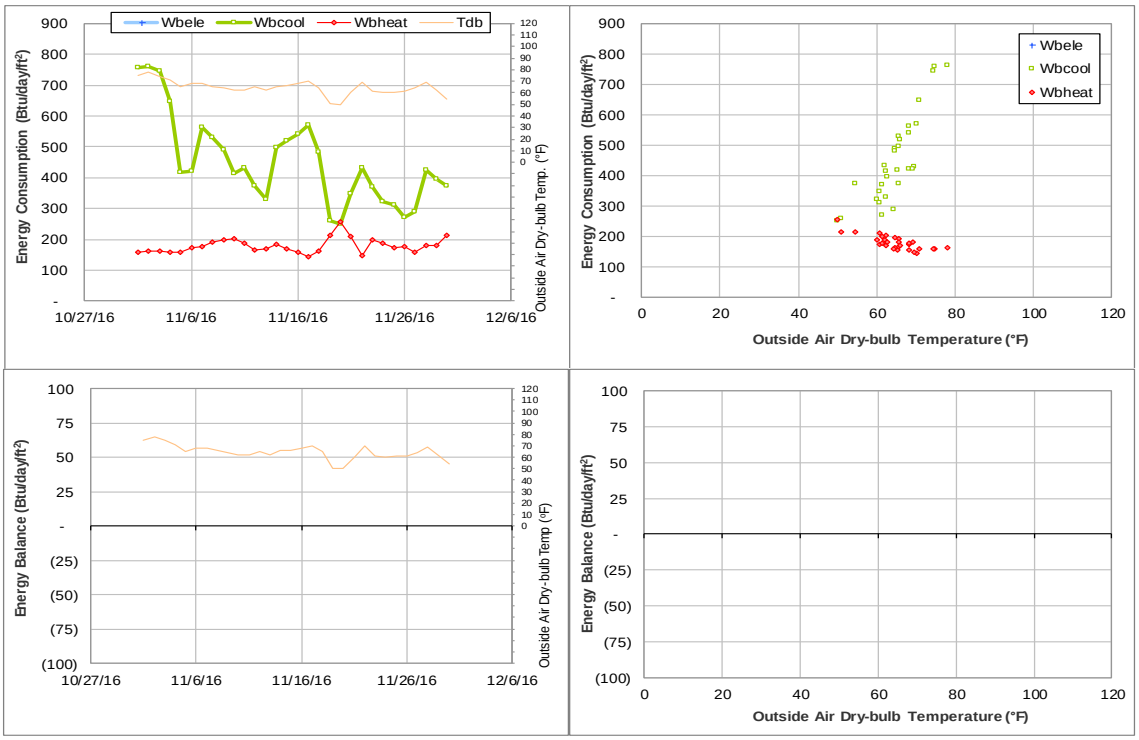


Figure IV-66 DPC Annex TAMU BLDG # 517 Energy Balance Plot during November 2016

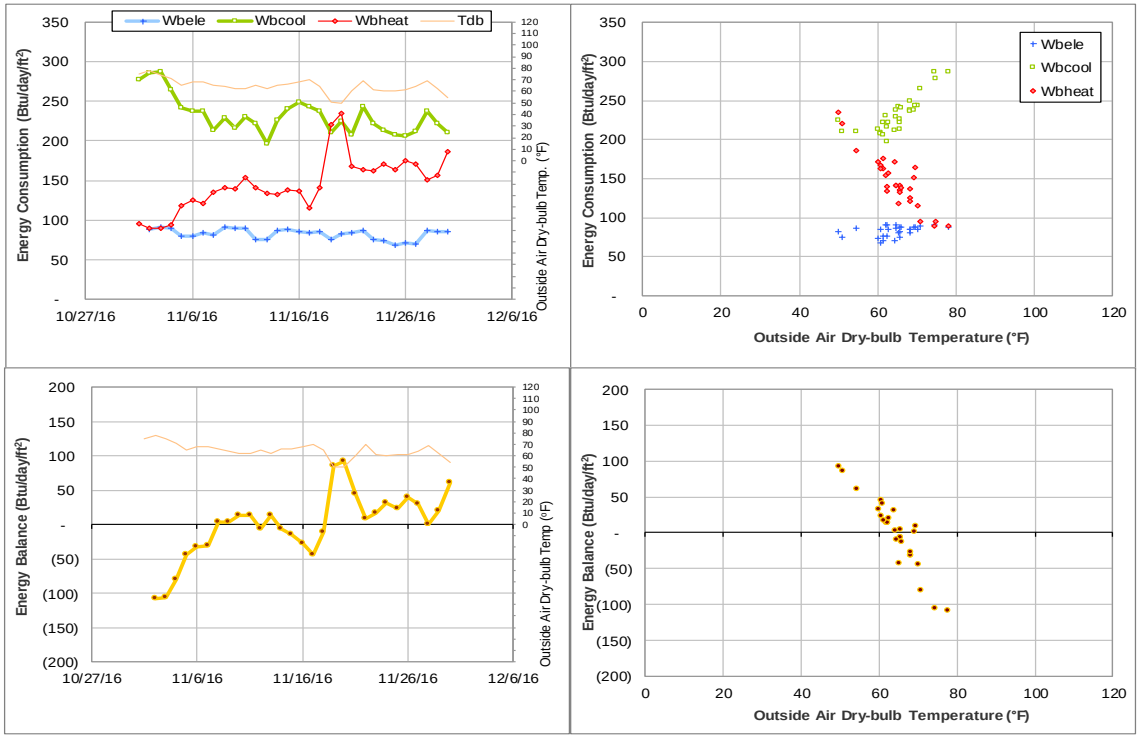


Figure IV-67 Rudder Tower and Theatre Complex TAMU BLDG # 446 Energy Balance Plot during November 2016

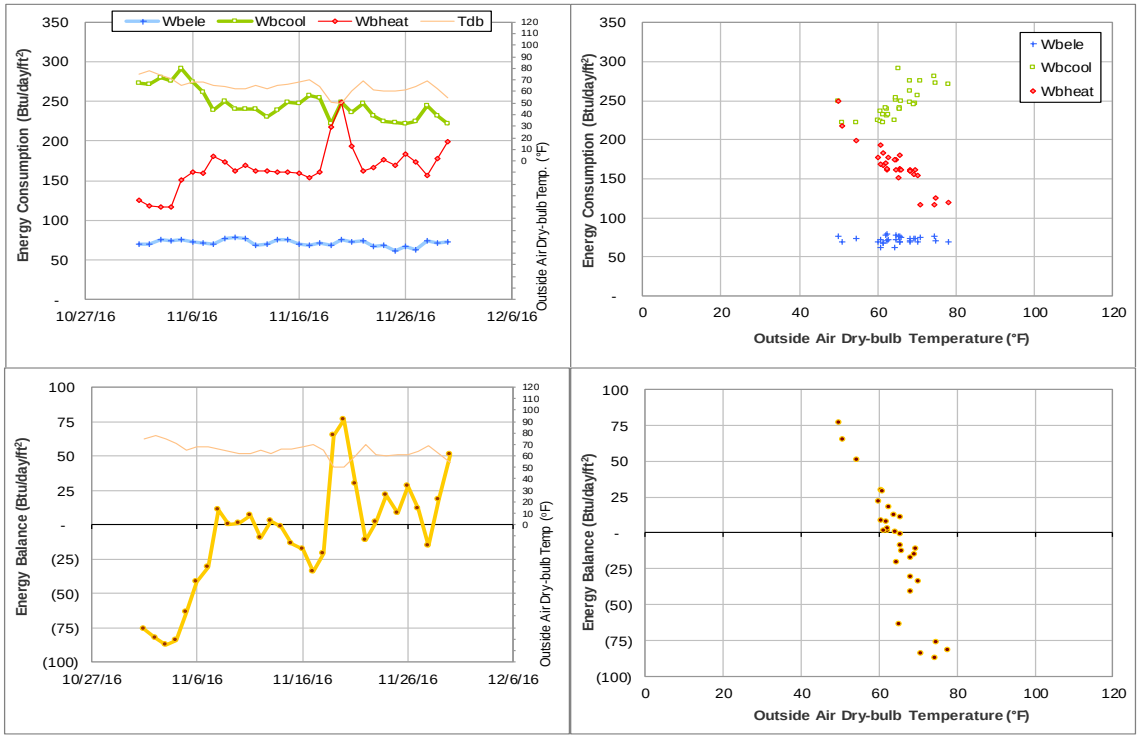


Figure IV-68 Rudder Theatre Complex TAMU BLDG # 446 Energy Balance Plot during November 2016

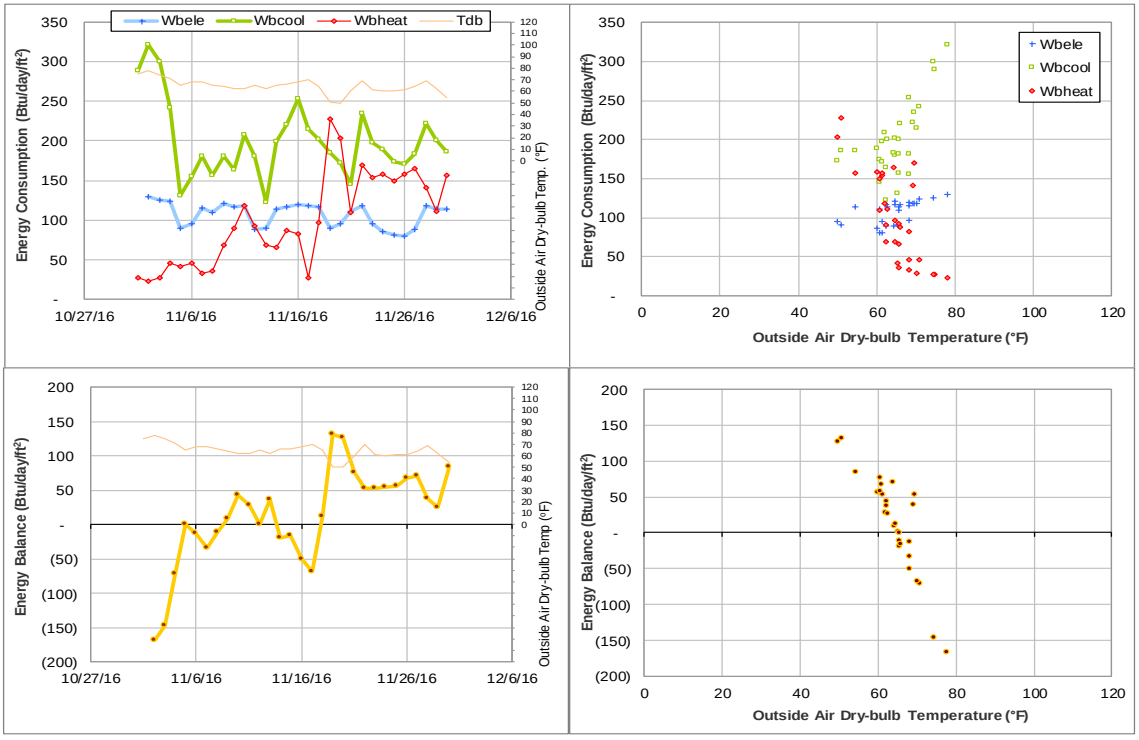


Figure IV-69 Rudder Tower TAMU BLDG # 446 Energy Balance Plot during November 2016

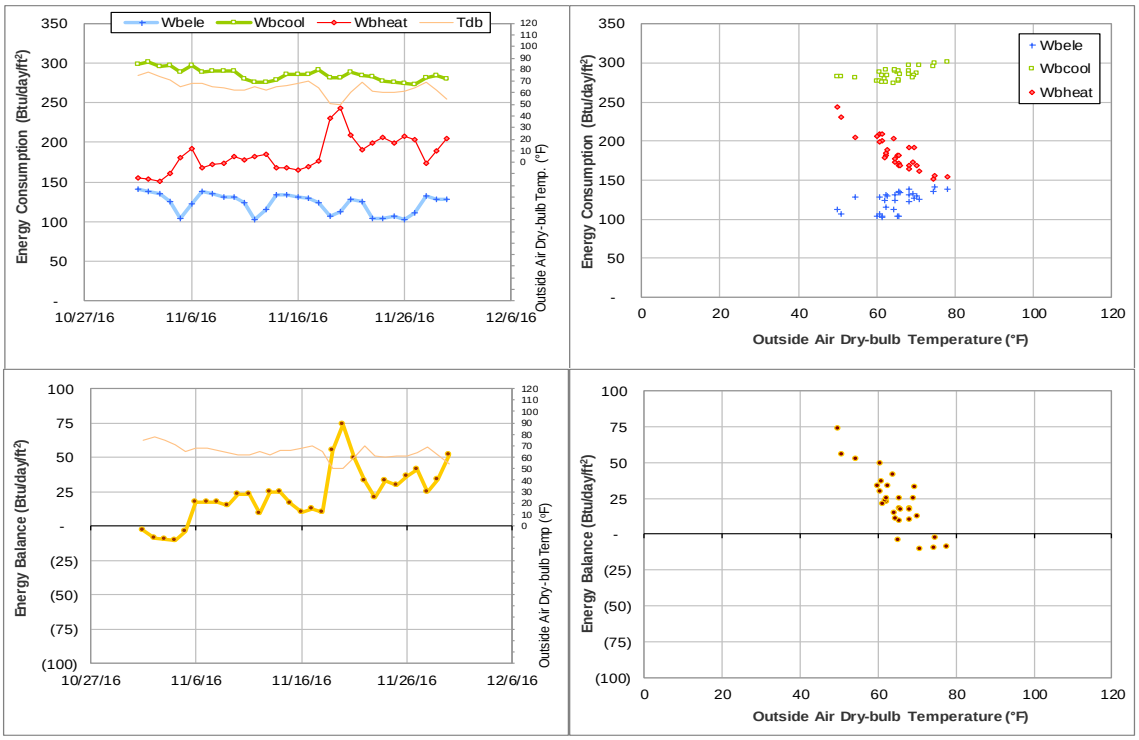


Figure IV-70 Adams Band Hall TAMU BLDG # 448 Energy Balance Plot during November 2016

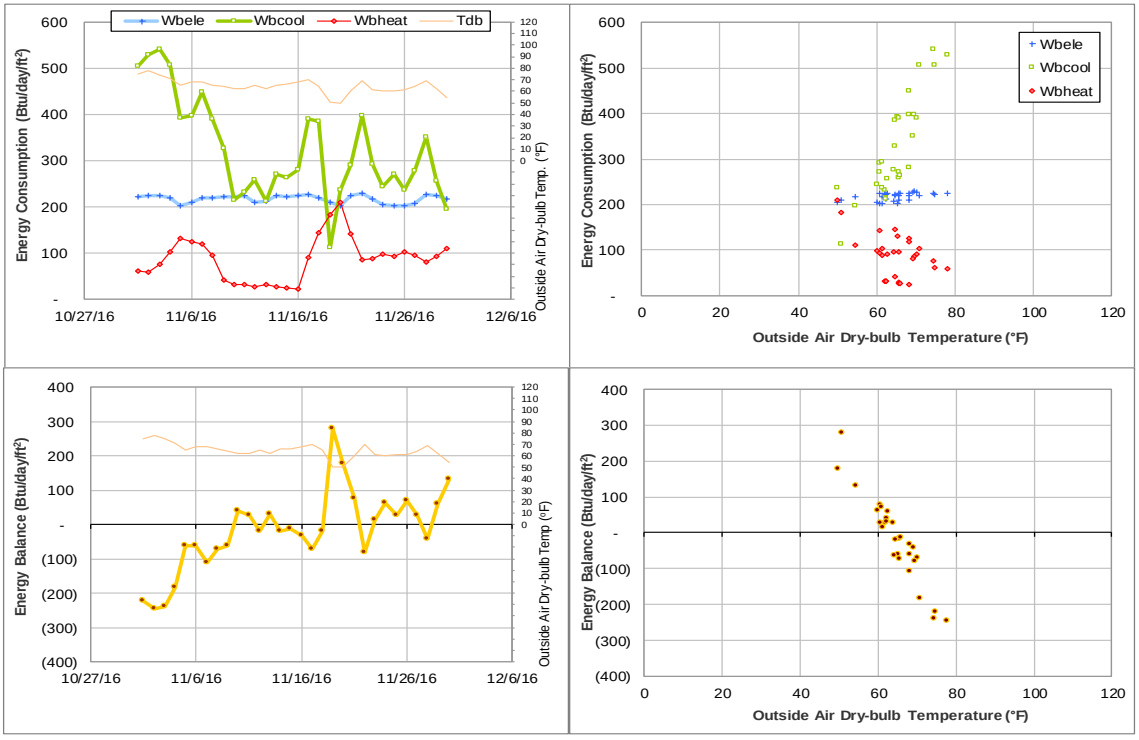


Figure IV-71 Biological Sciences Building - West TAMU BLDG # 449 Energy Balance Plot during November 2016

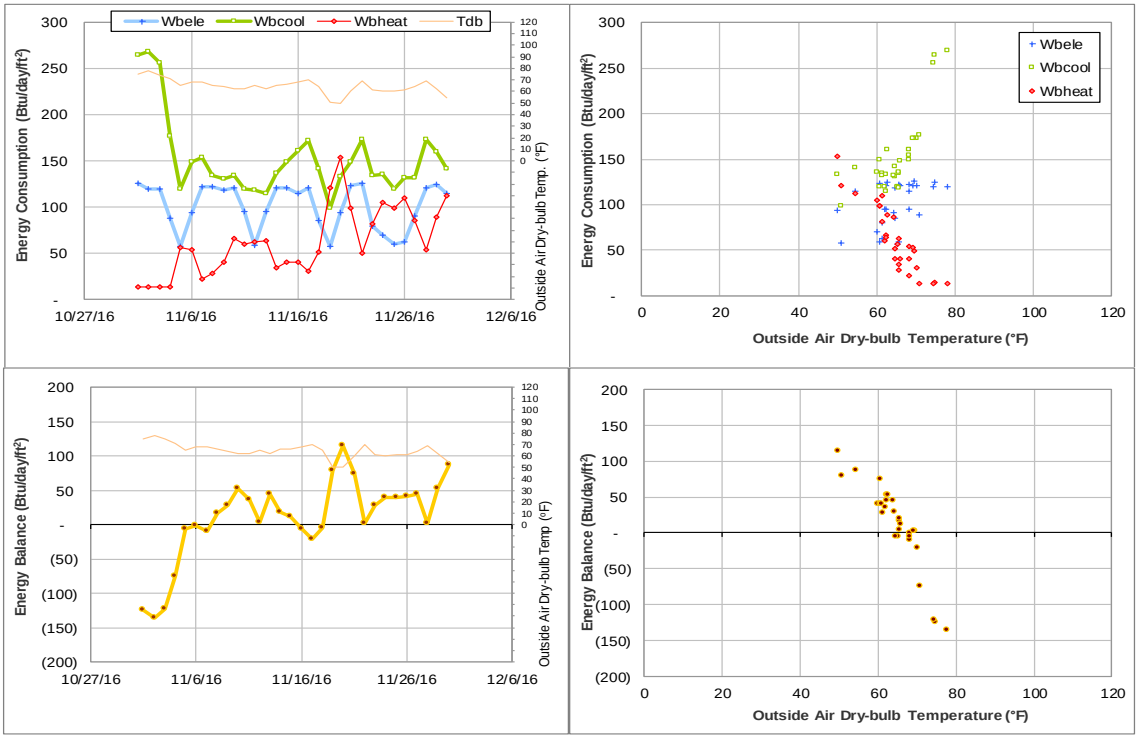


Figure IV-72 Duncan Dining Hall TAMU BLDG # 450 Energy Balance Plot during November 2016

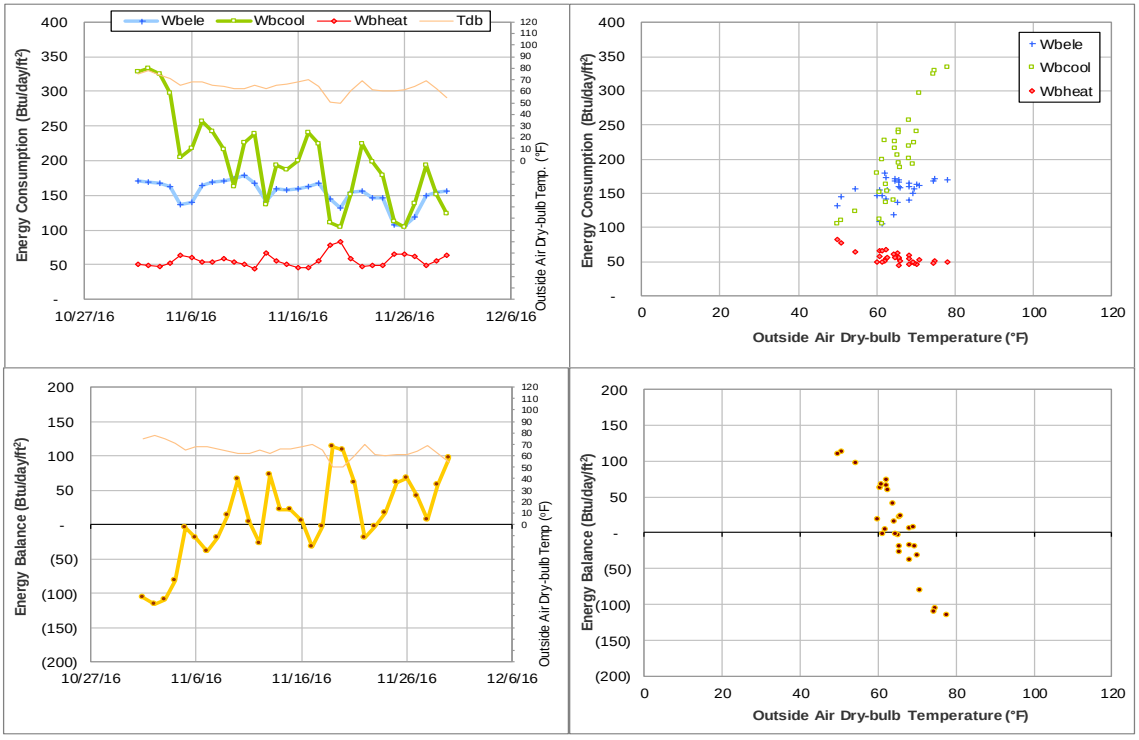


Figure IV-73 MSC TAMU BLDG # 454 Energy Balance Plot during November 2016

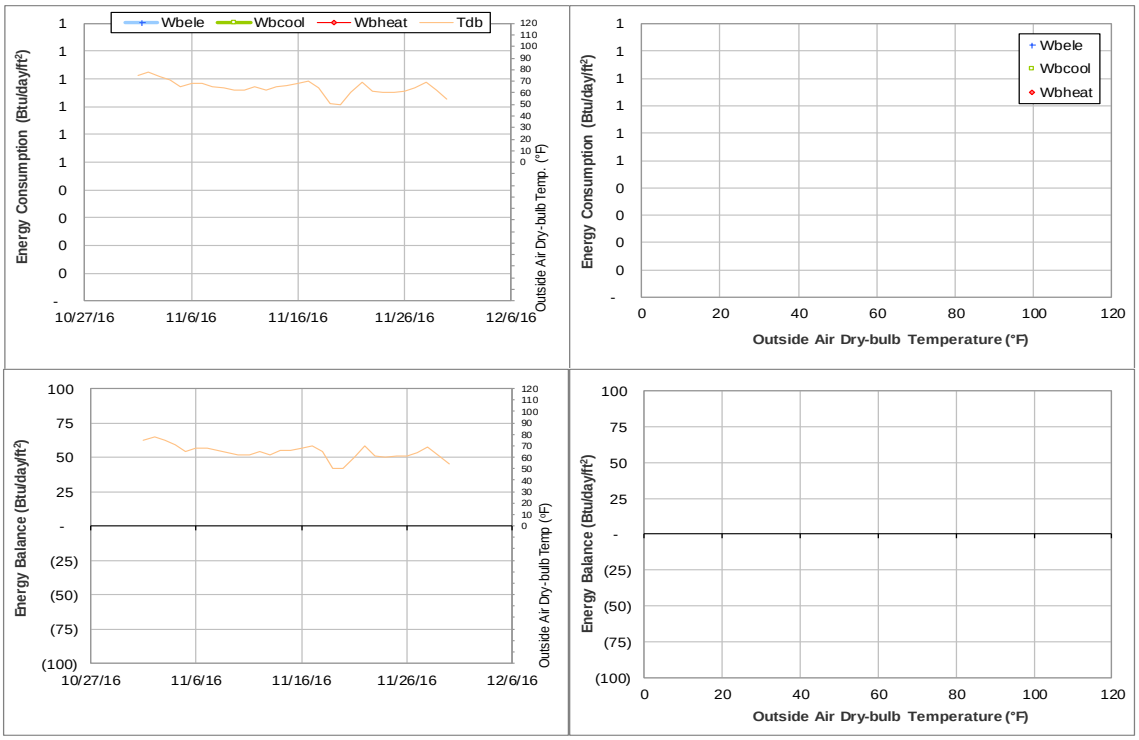


Figure IV-74 Military Sciences Building TAMU BLDG # 456 Energy Balance Plot during November 2016

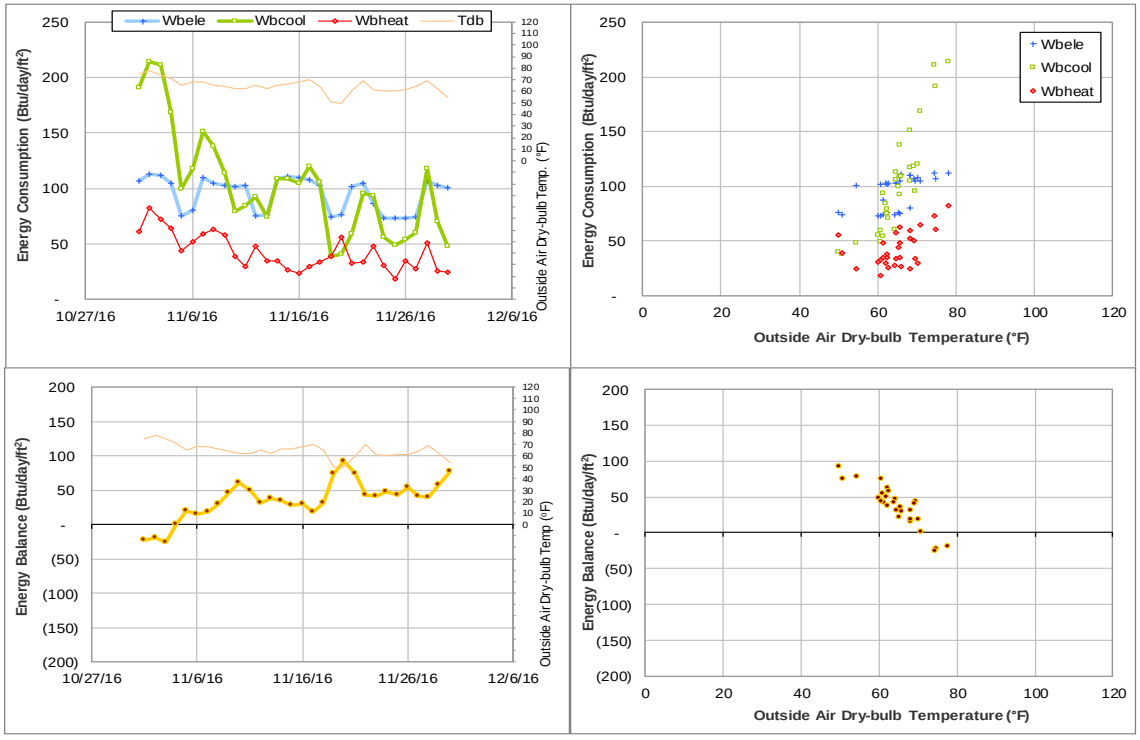


Figure IV-75 TAES Annex Building TAMU BLDG # 457 Energy Balance Plot during November 2016

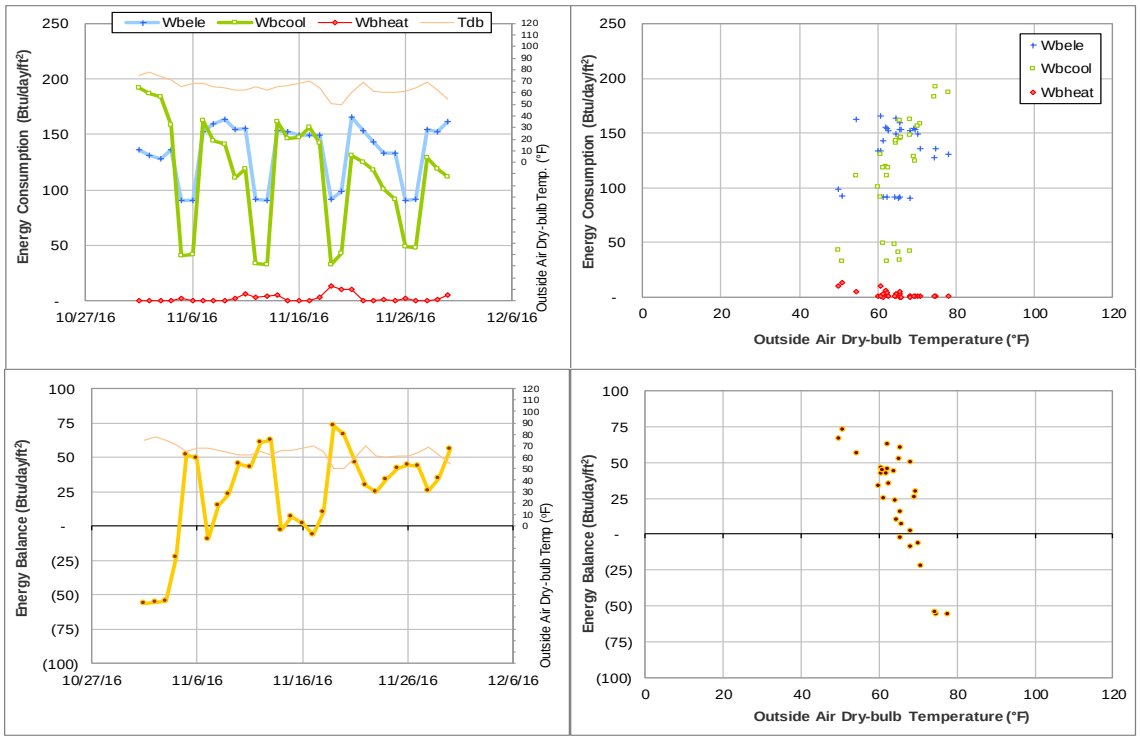


Figure IV-76 Coke Building TAMU BLDG # 461 Energy Balance Plot during November 2016

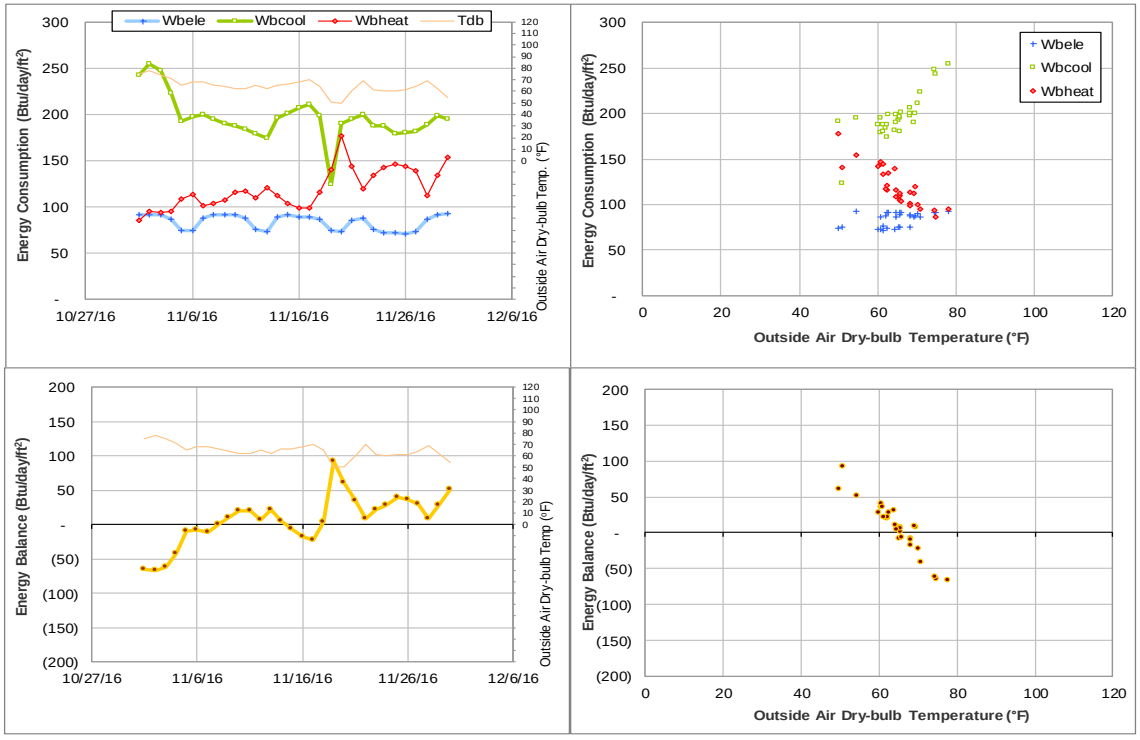


Figure IV-77 Academic Building TAMU BLDG # 462 Energy Balance Plot during November 2016

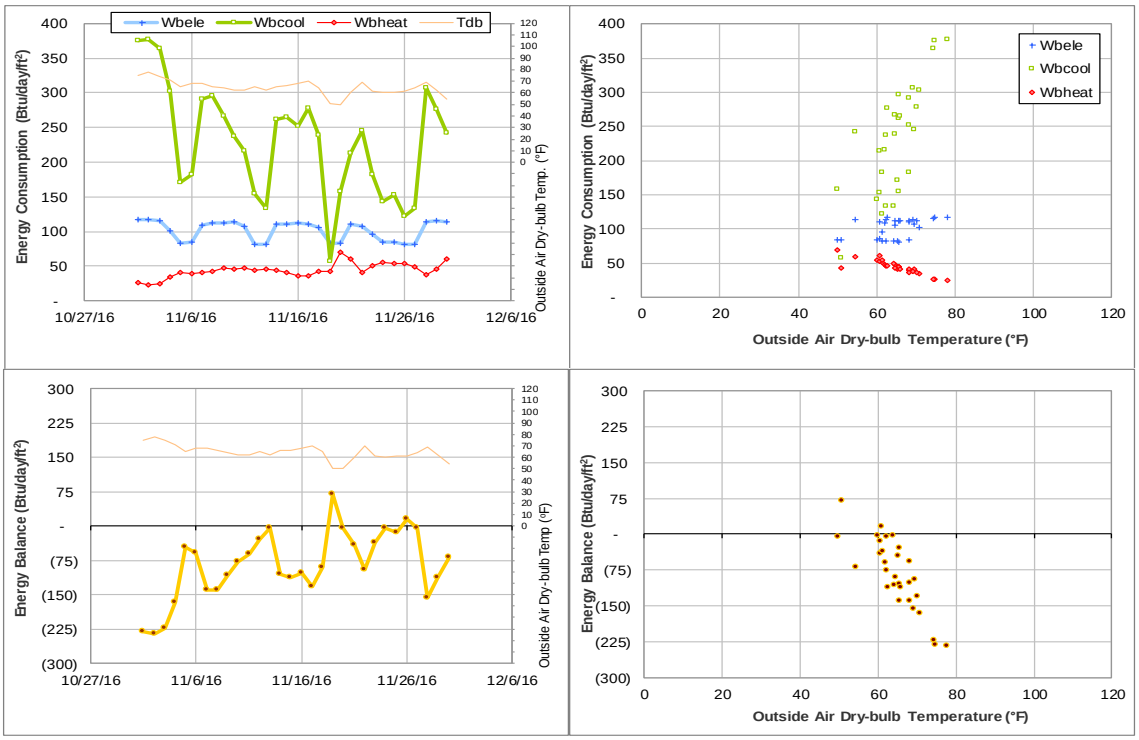


Figure IV-78 Psychology Building TAMU BLDG # 463 Energy Balance Plot during November 2016

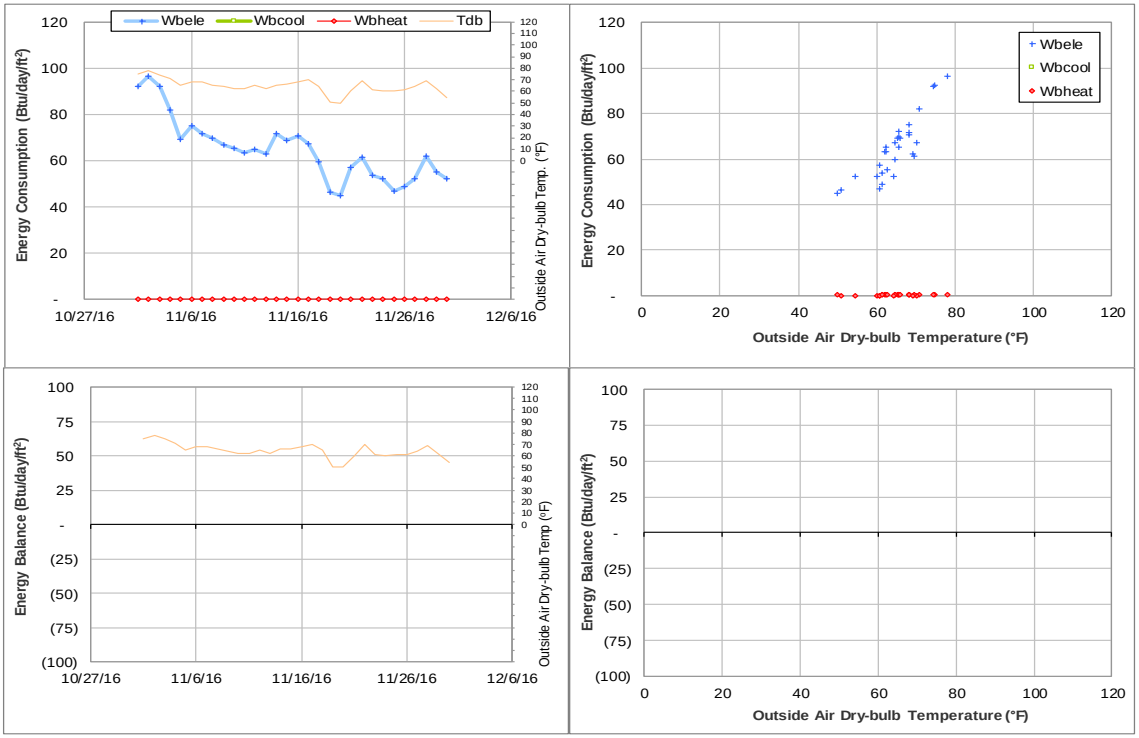


Figure IV-79 State Chemist Building TAMU BLDG # 464 Energy Balance Plot during November 2016

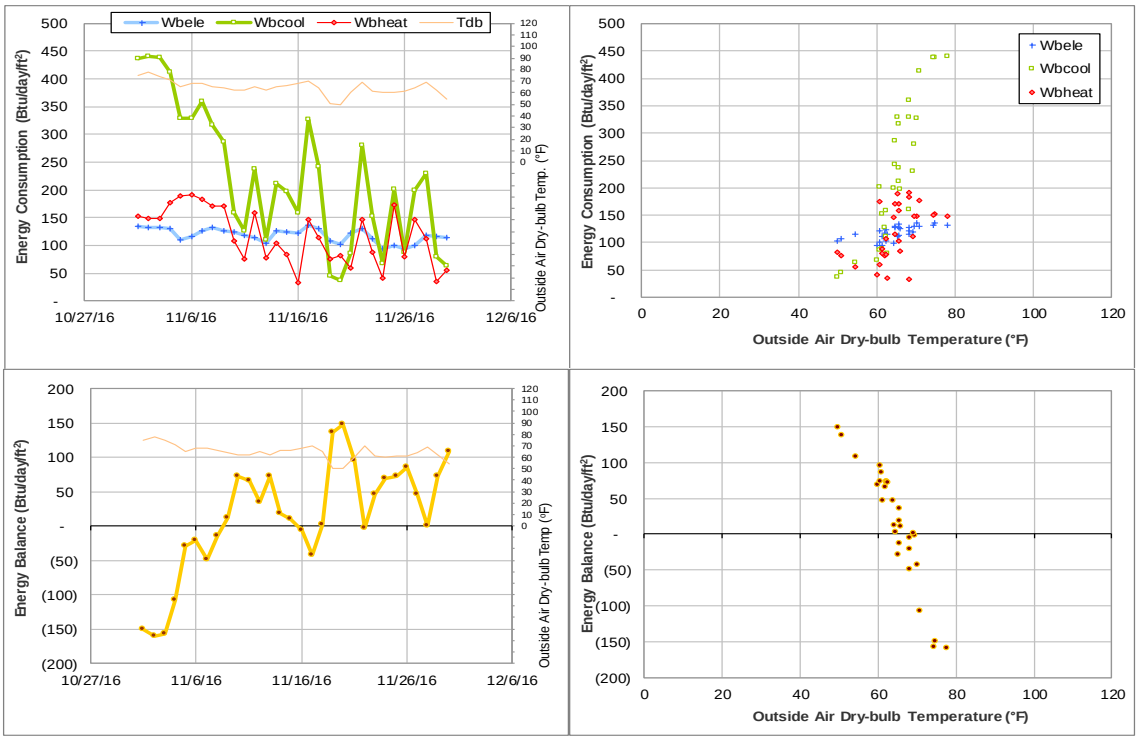


Figure IV-80 Butler Hall TAMU BLDG # 465 Energy Balance Plot during November 2016

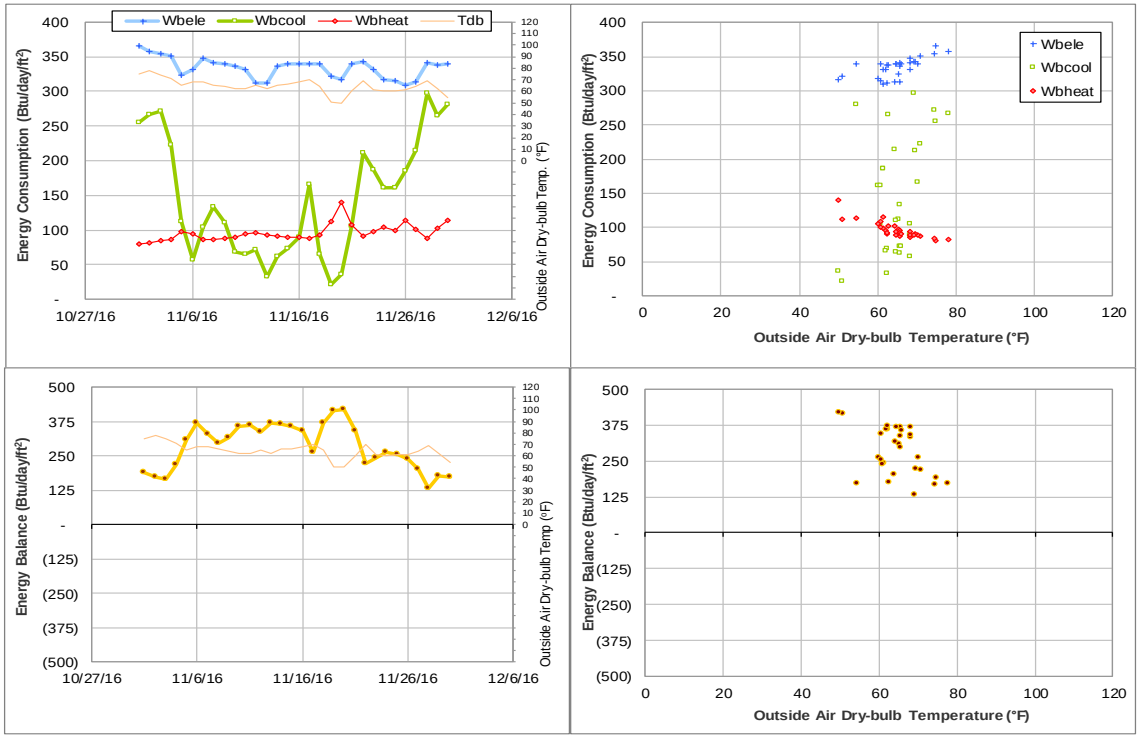


Figure IV-81 Biological Sciences Building - East TAMU BLDG # 467 Energy Balance Plot during November 2016

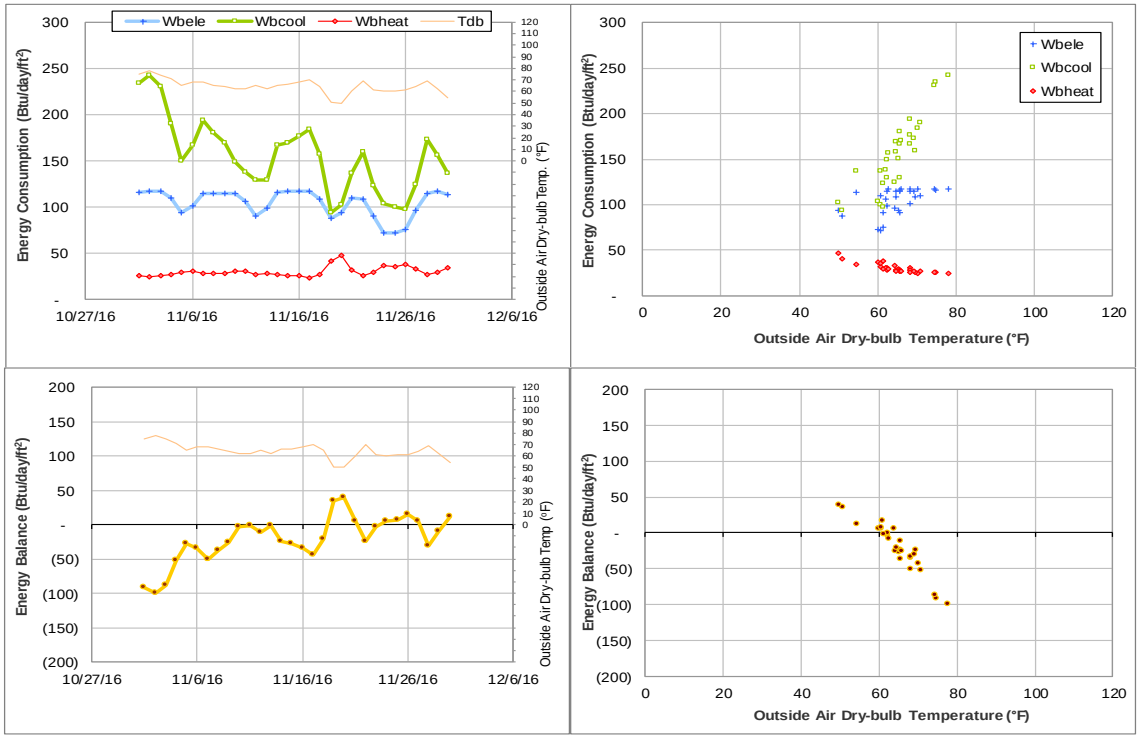


Figure IV-82 Evans Library TAMU BLDG # 468 Energy Balance Plot during November 2016

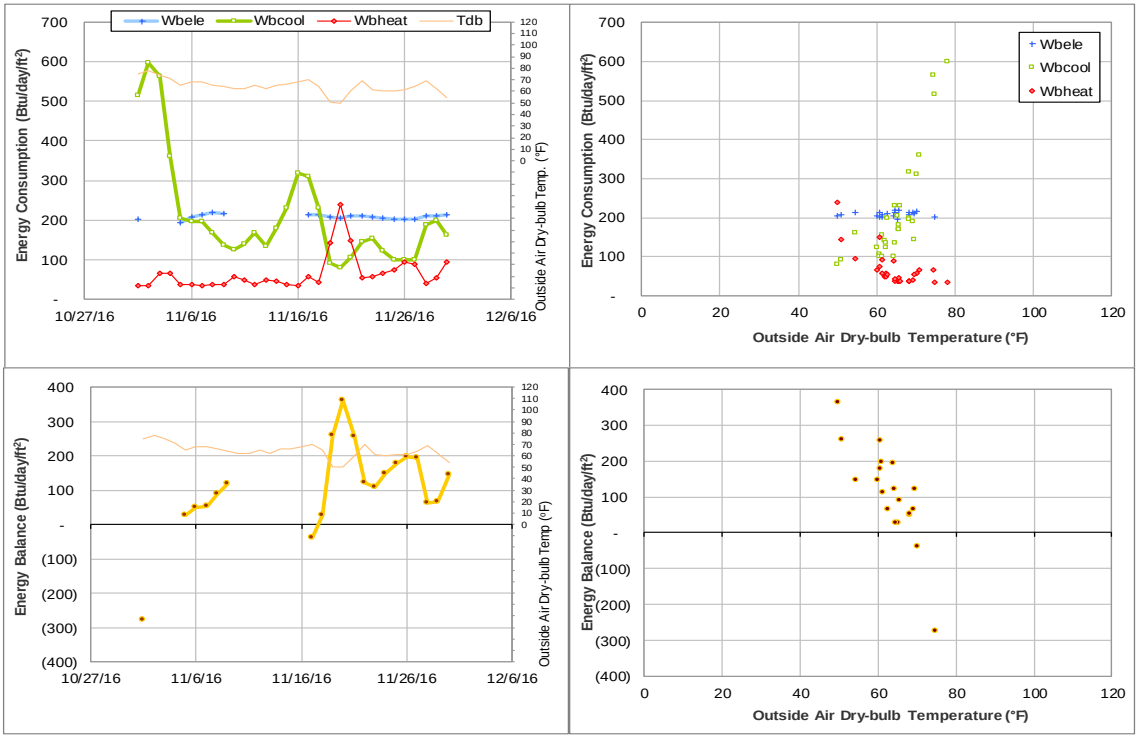


Figure IV-83 Central Campus Parking Garage TAMU BLDG # 469 Energy Balance Plot during November 2016

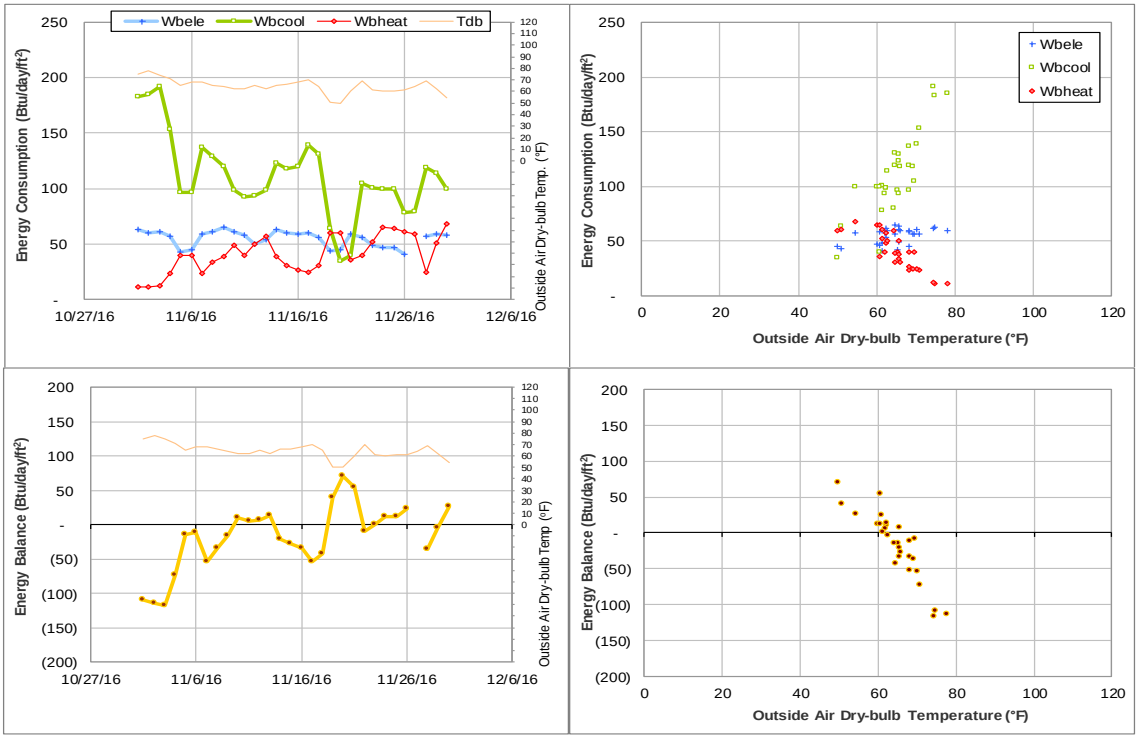


Figure IV-84 Glasscock History Bldg TAMU BLDG # 470 Energy Balance Plot during November 2016

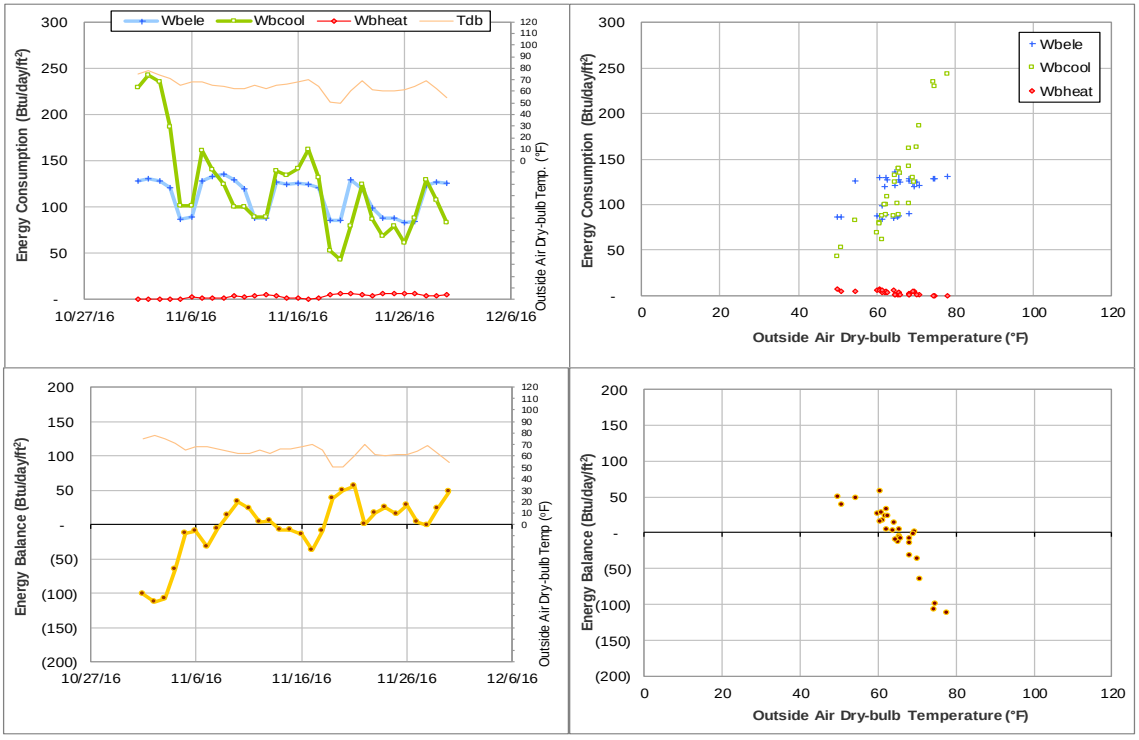


Figure IV-85 Pavilion TAMU BLDG # 471 Energy Balance Plot during November 2016

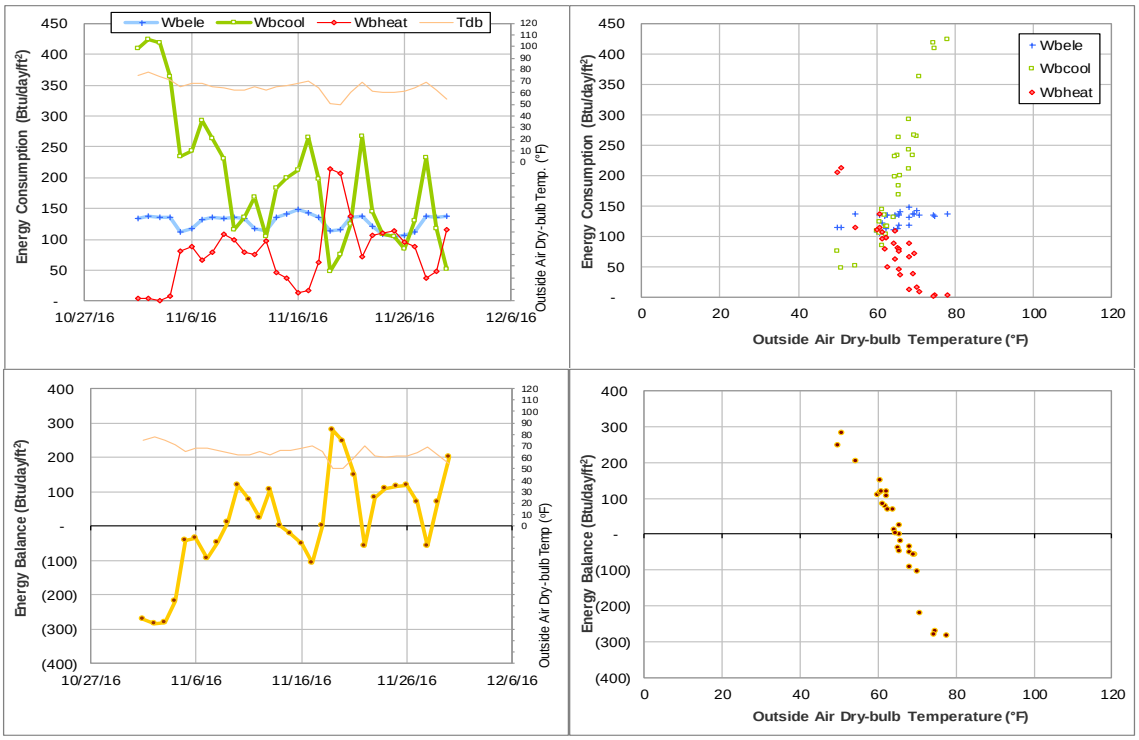


Figure IV-86 Animal Industries TAMU BLDG # 472 Energy Balance Plot during November 2016

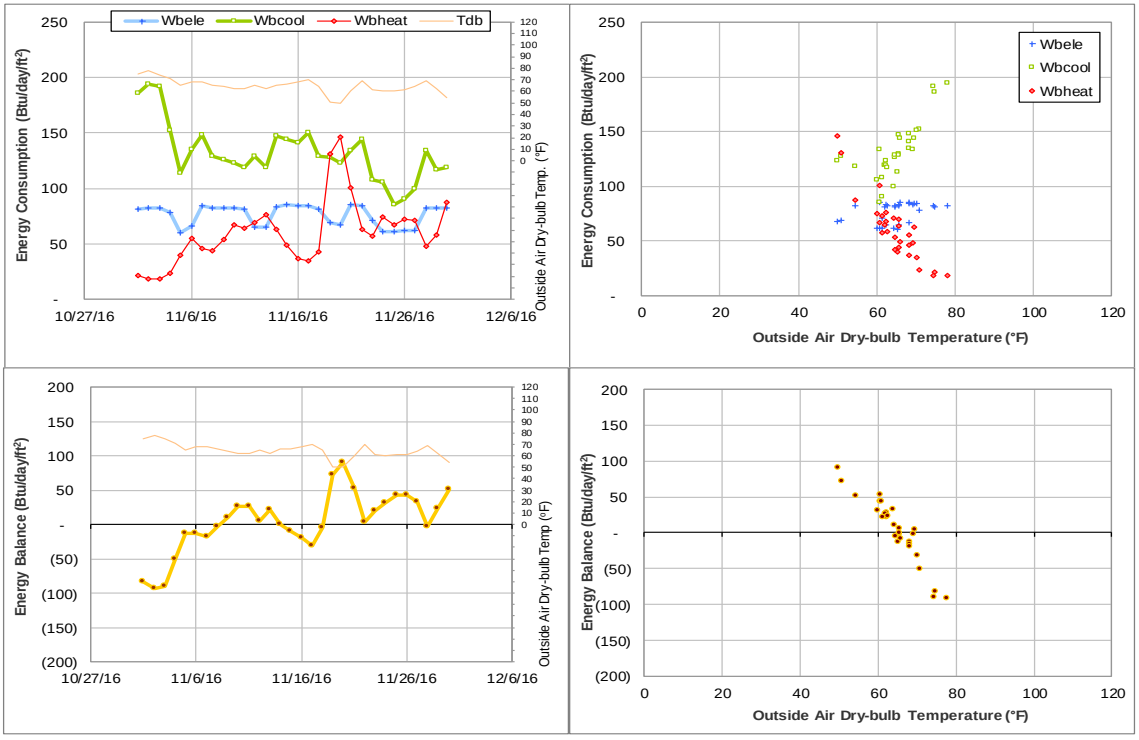


Figure IV-87 Williams Administration Building TAMU BLDG # 473 Energy Balance Plot during November 2016

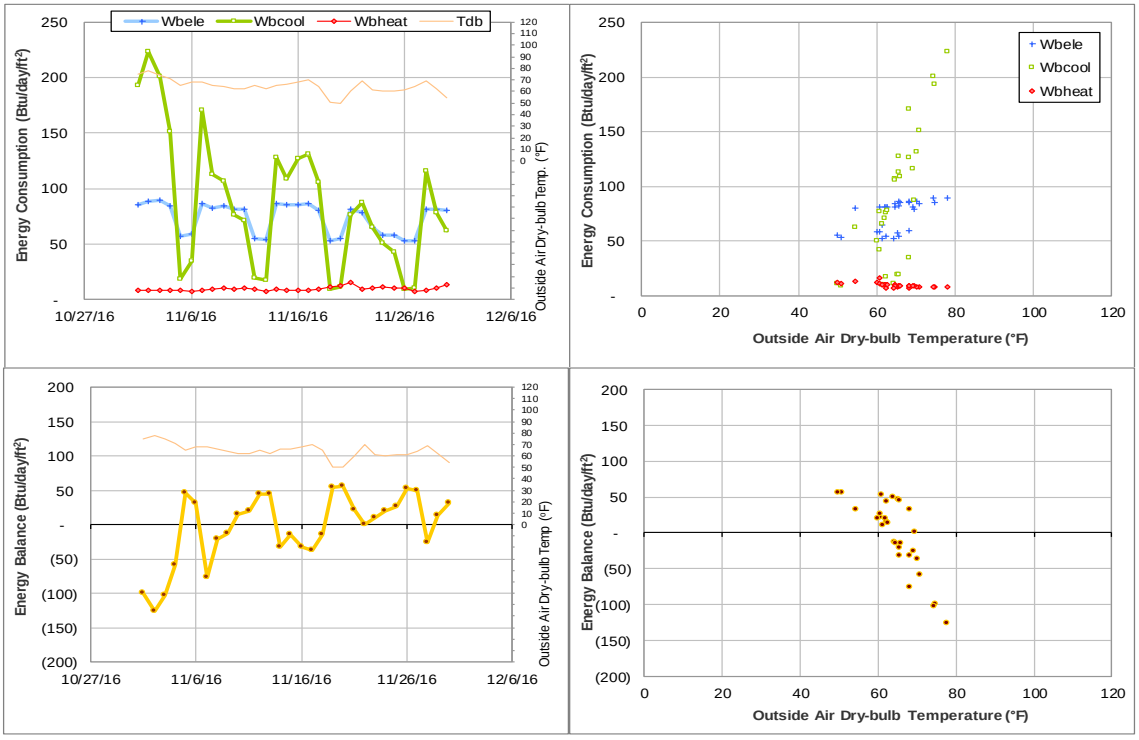


Figure IV-88 YMCA Building TAMU BLDG # 474 Energy Balance Plot during November 2016

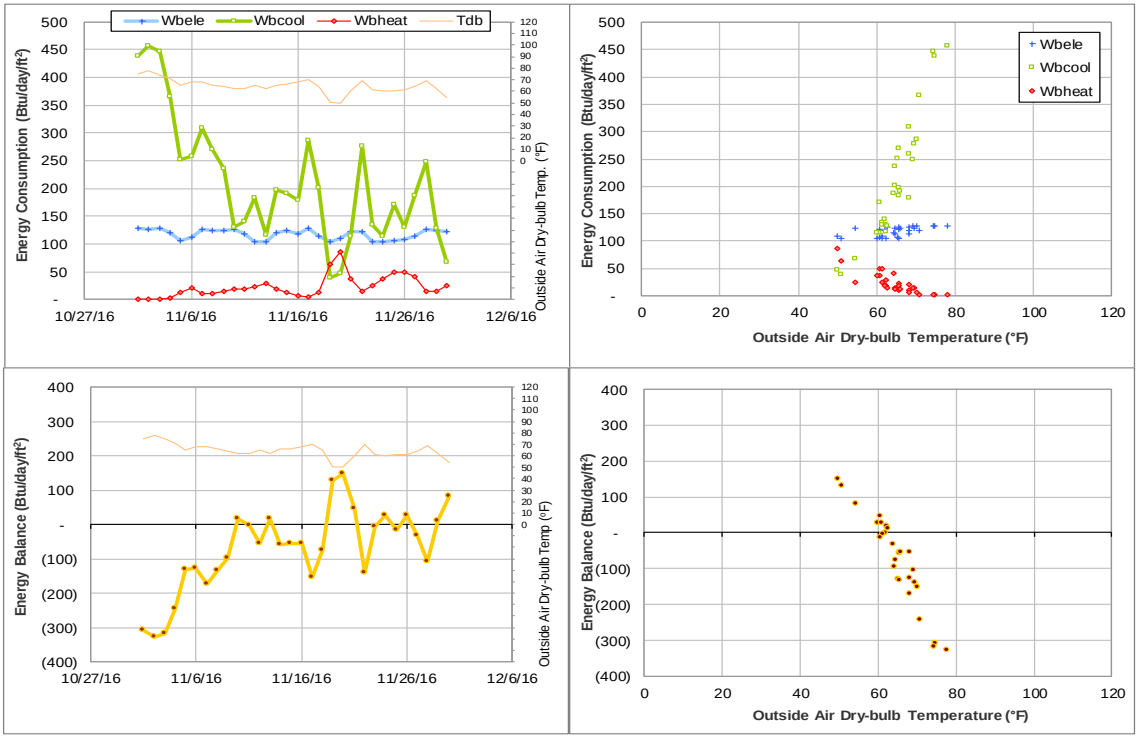


Figure IV-89 Francis Hall TAMU BLDG # 476 Energy Balance Plot during November 2016

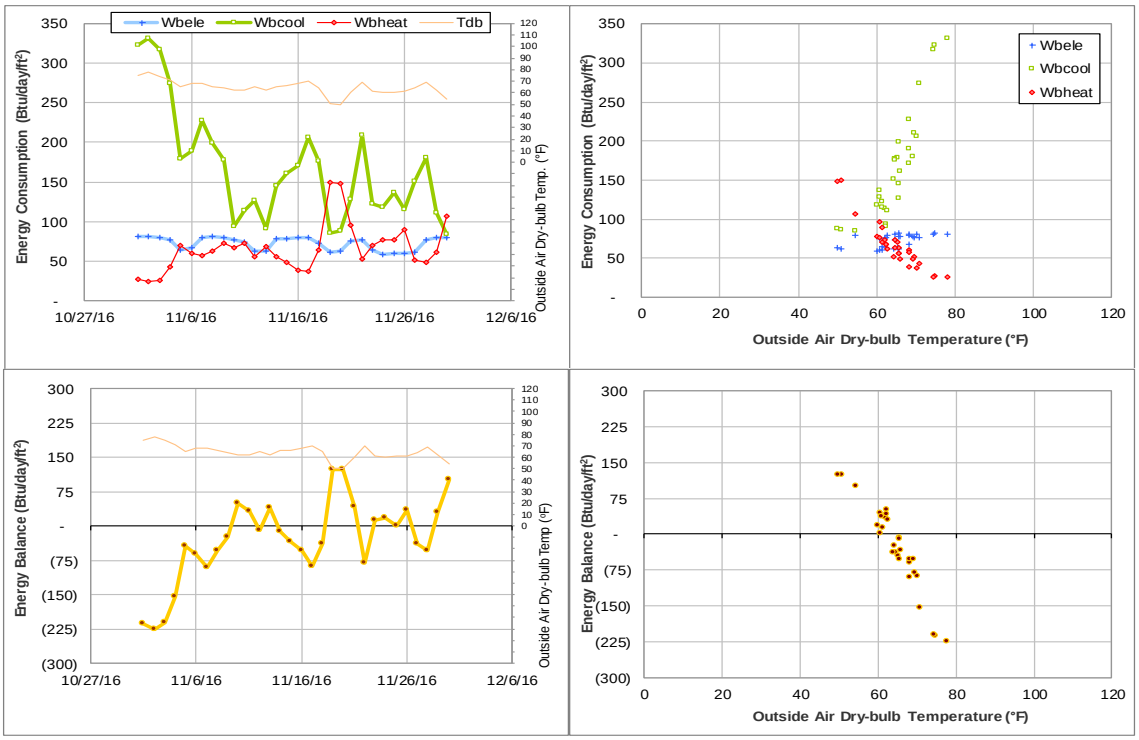


Figure IV-90 Anthropology Building TAMU BLDG # 477 Energy Balance Plot during November 2016

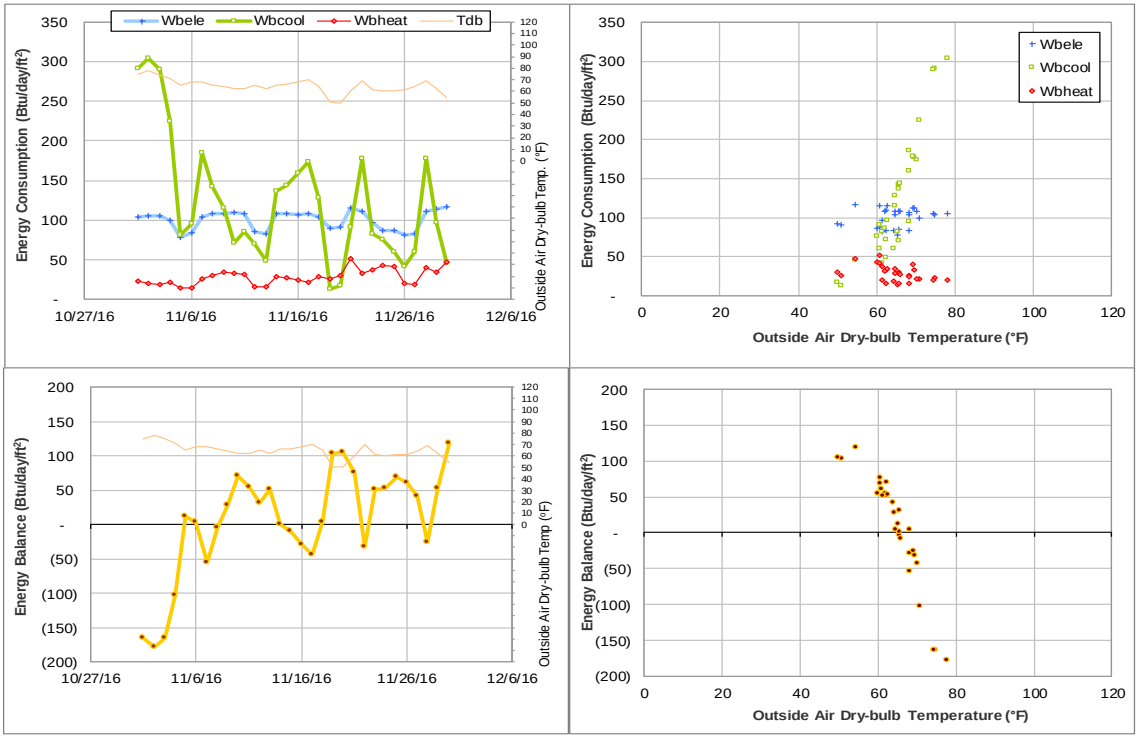


Figure IV-91 Scoates Hall TAMU BLDG # 478 Energy Balance Plot during November 2016

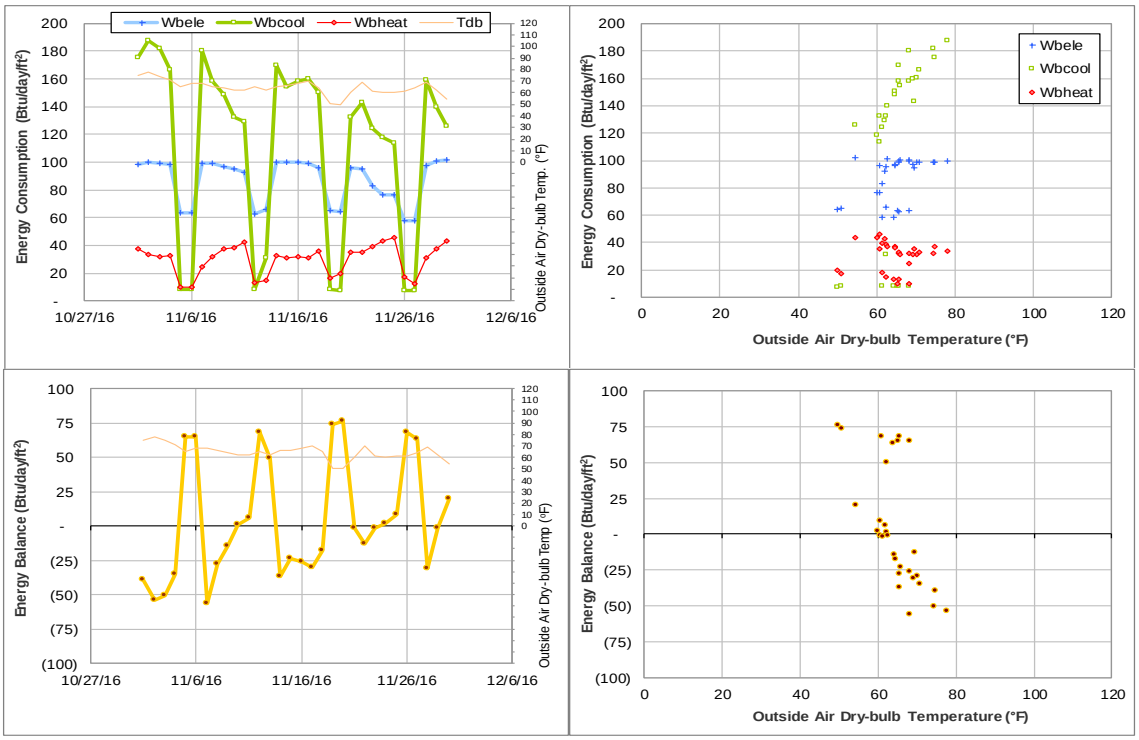


Figure IV-92 Bolton Hall TAMU BLDG # 480 Energy Balance Plot during November 2016

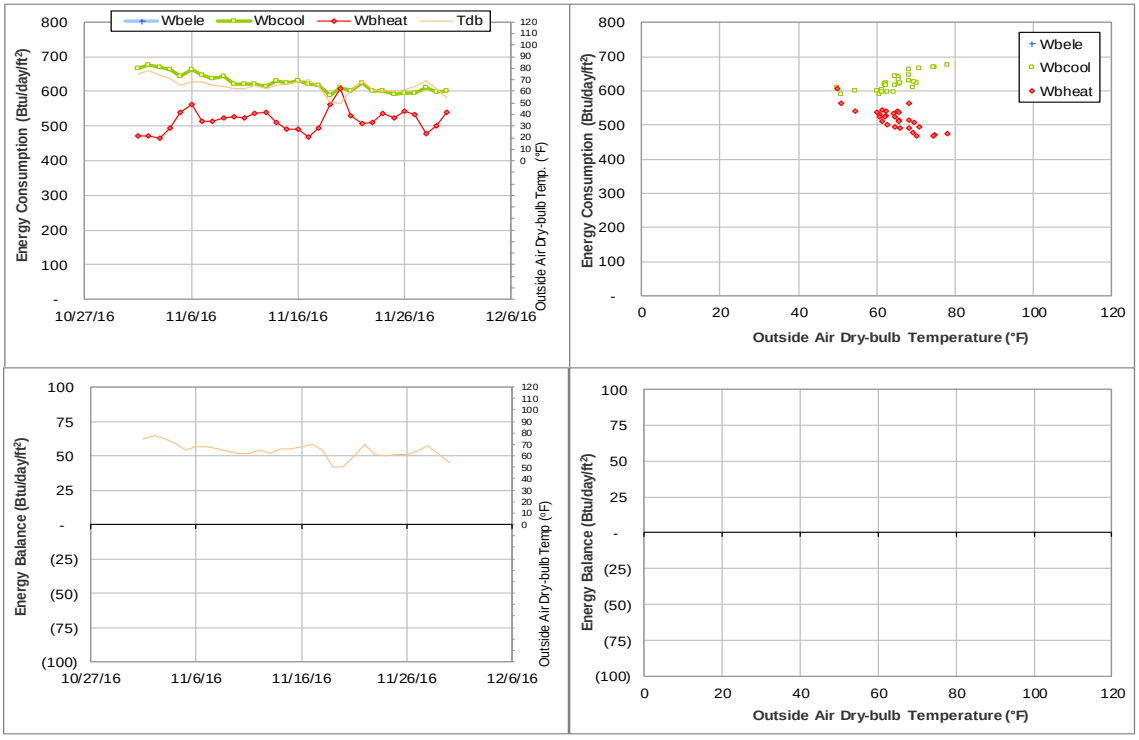


Figure IV-93 Heaton Hall TAMU BLDG # 481 Energy Balance Plot during November 2016

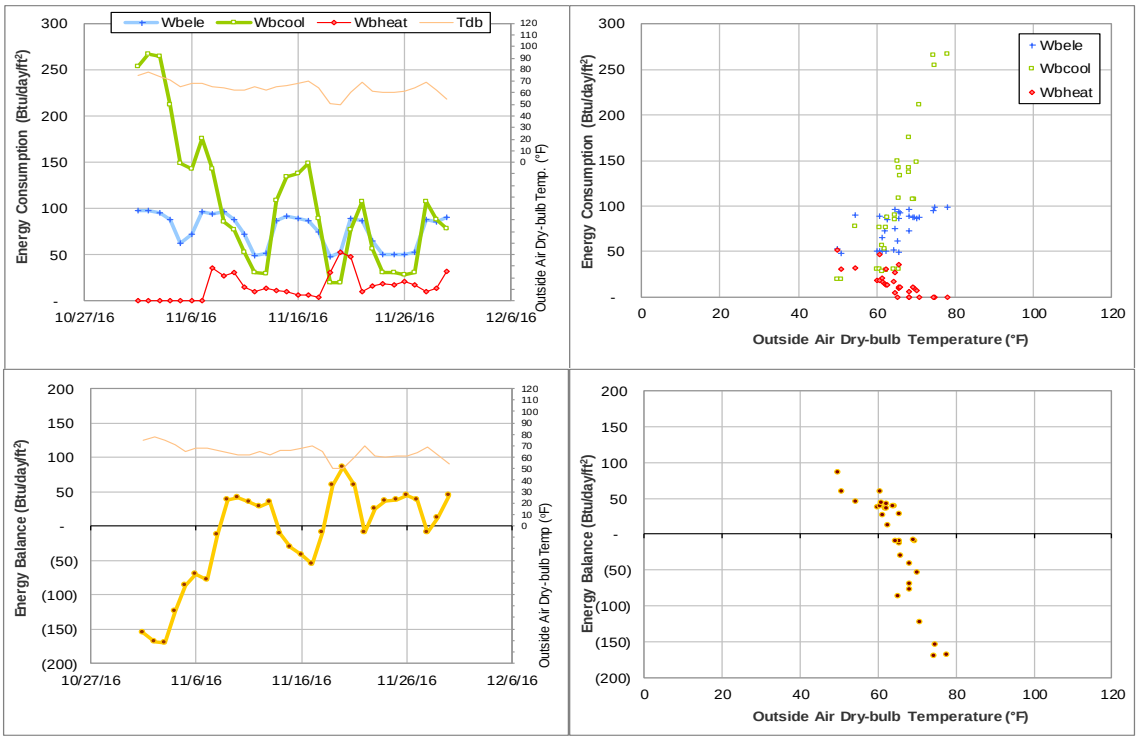


Figure IV-94 Fermier Hall TAMU BLDG # 482 Energy Balance Plot during November 2016

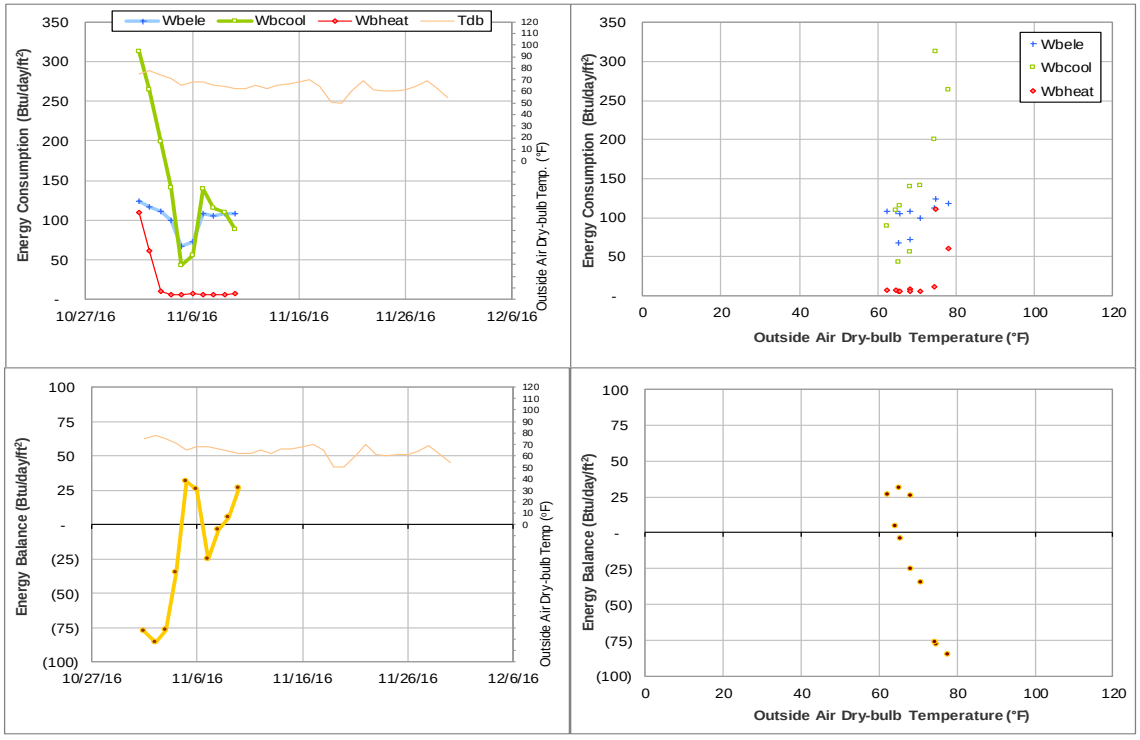


Figure IV-95 Thompson Hall TAMU BLDG # 483 Energy Balance Plot during November 2016

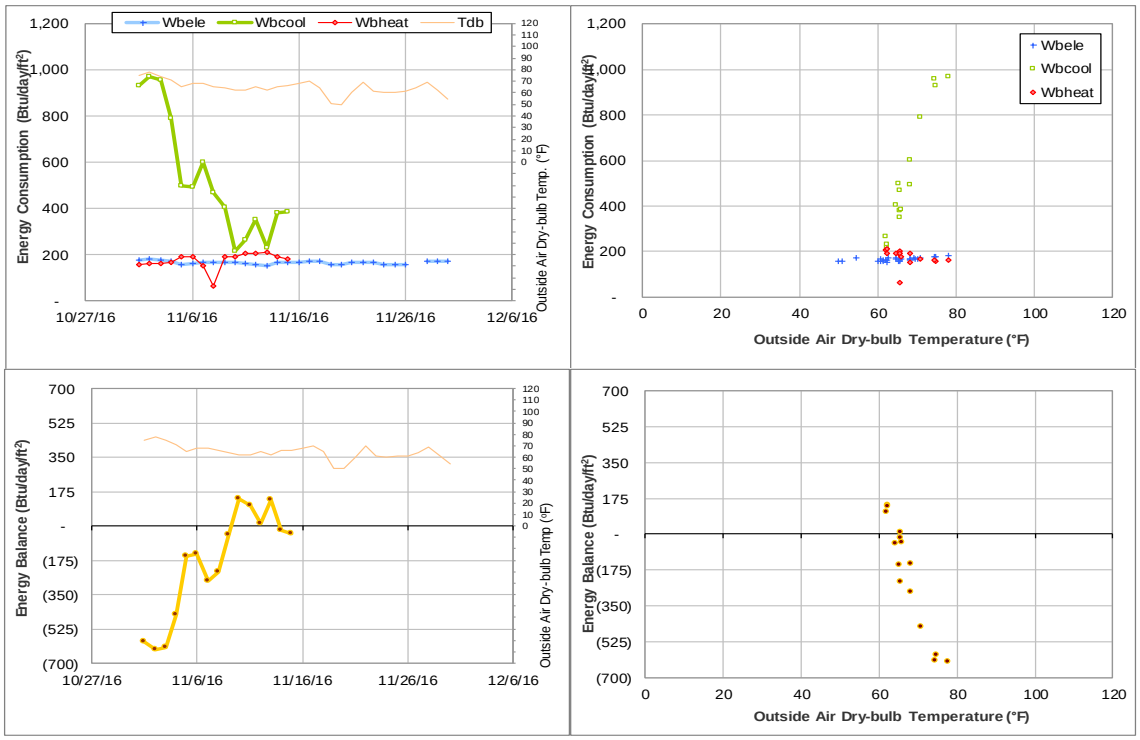


Figure IV-96 Chemistry Building TAMU BLDG # 484 Energy Balance Plot during November 2016

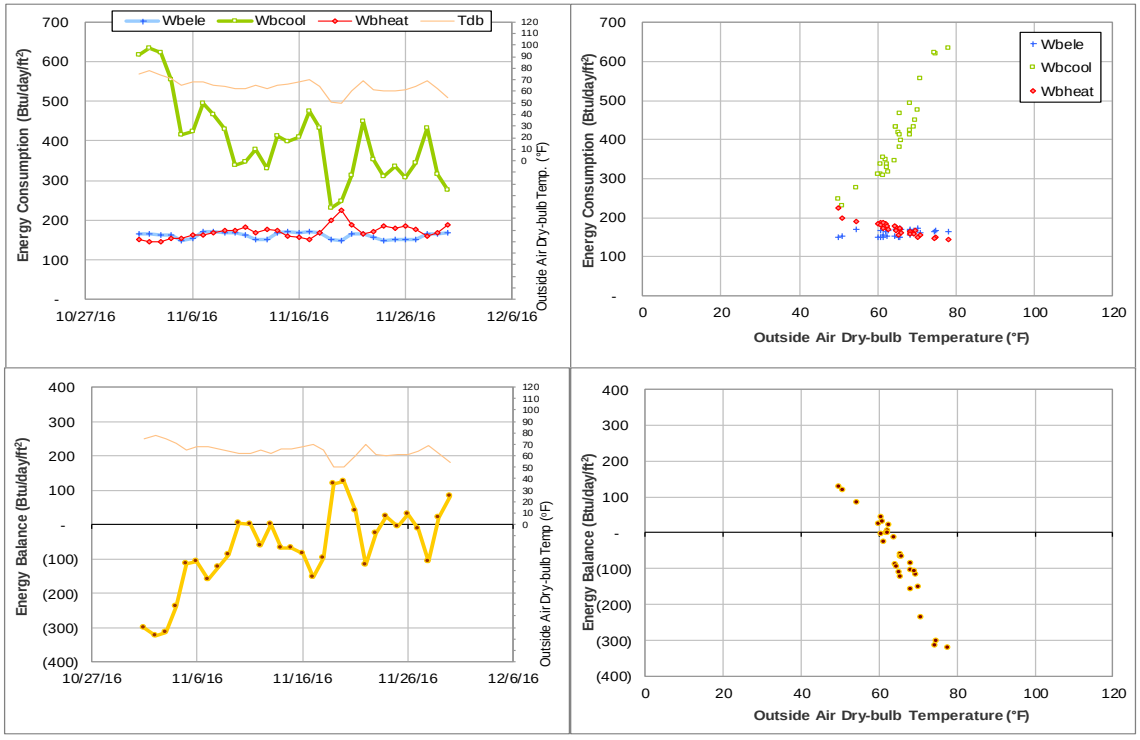


Figure IV-97 Halbouty Geosciences Building TAMU BLDG # 490 Energy Balance Plot during November 2016

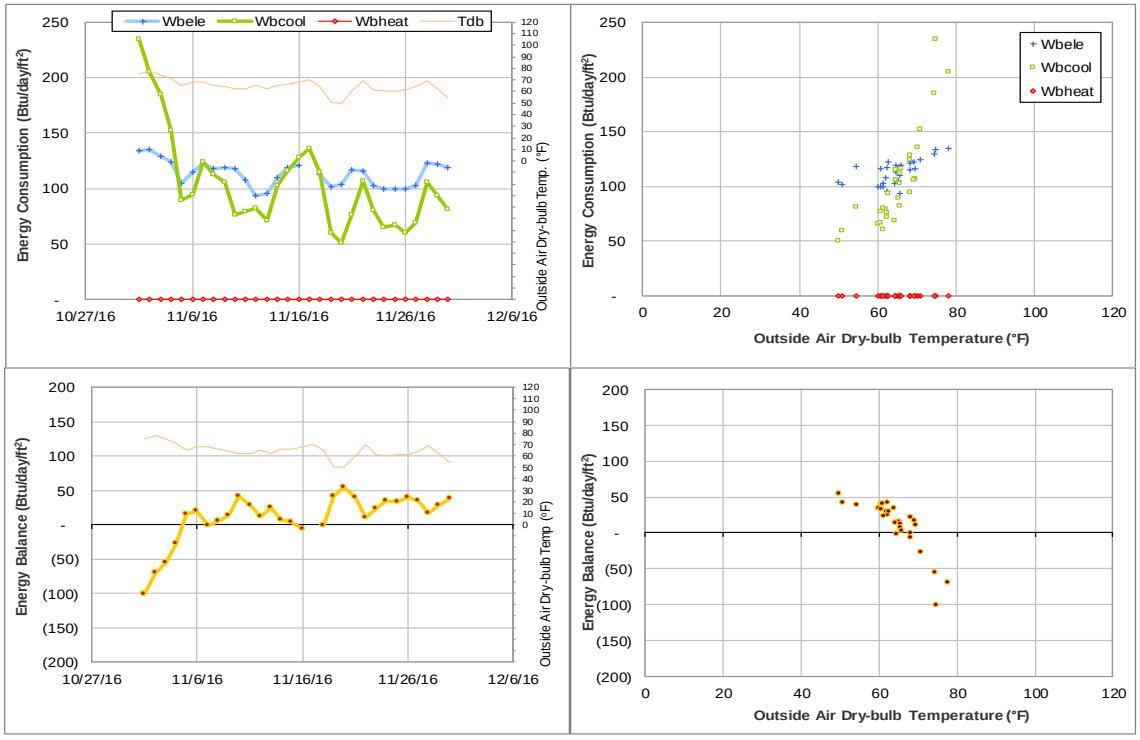


Figure IV-98 Civil Engineering Building TAMU BLDG # 492 Energy Balance Plot during November 2016

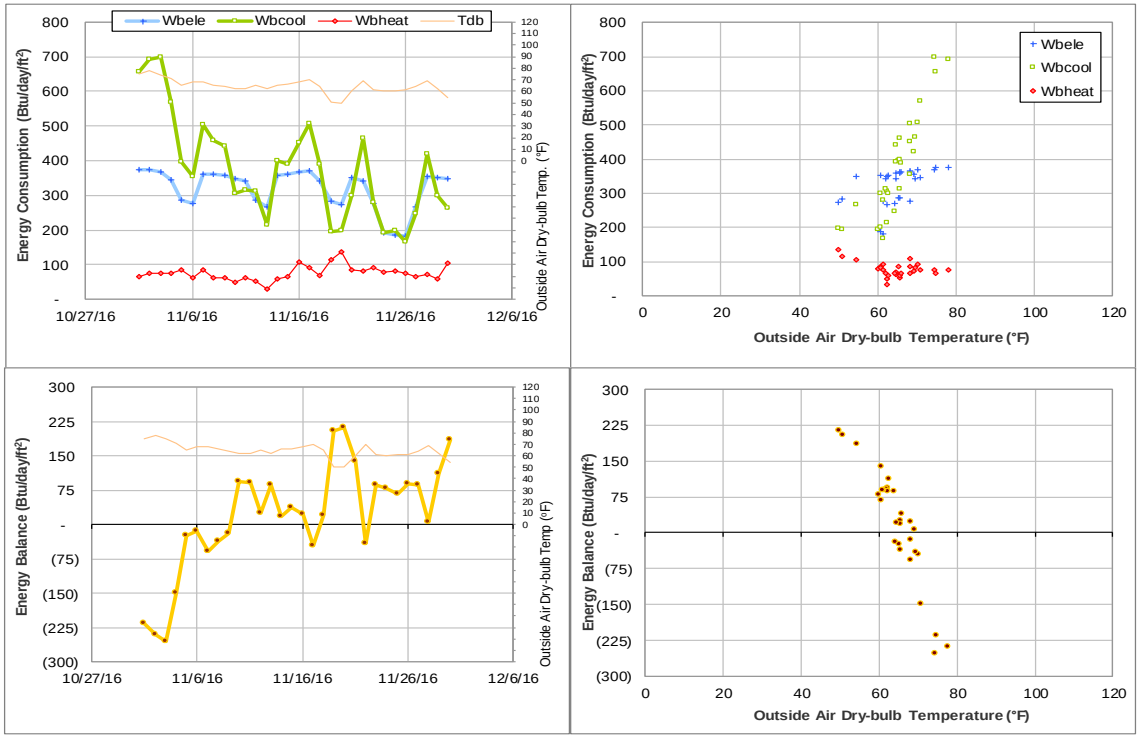


Figure IV-99 Sbisa Dining Hall TAMU BLDG # 495 Energy Balance Plot during November 2016

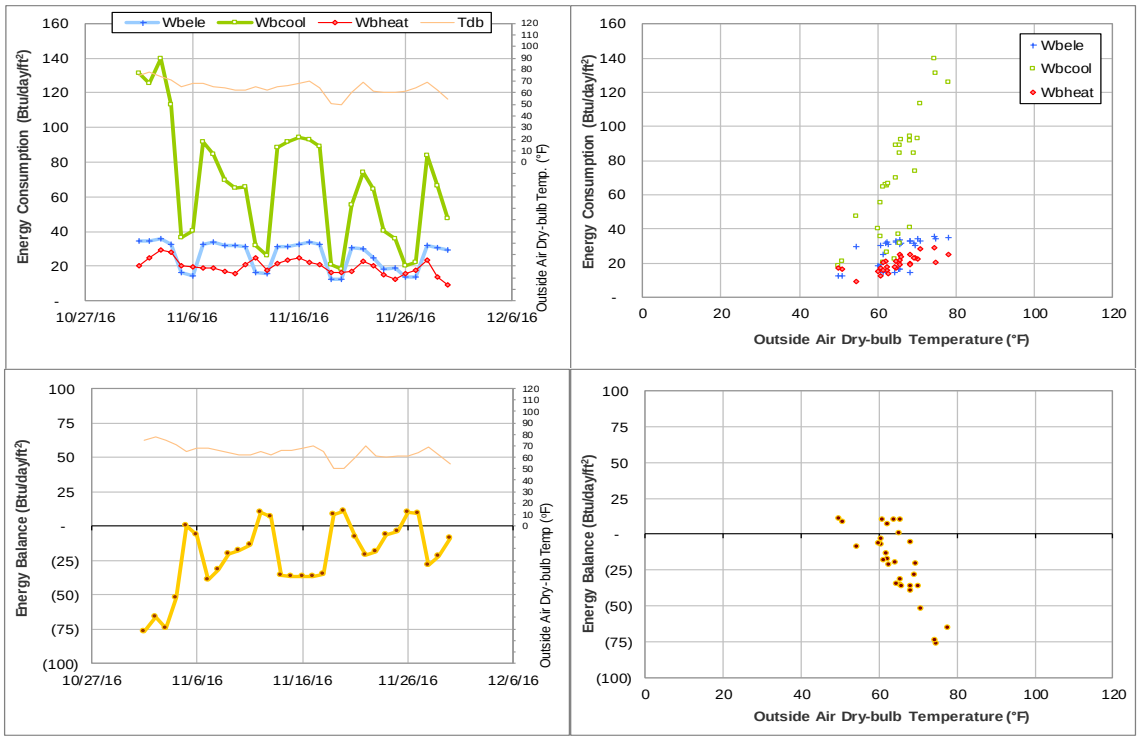


Figure IV-100 Utilities & Energy Services Central Office TAMU BLDG # 496 Energy Balance Plot during November 2016

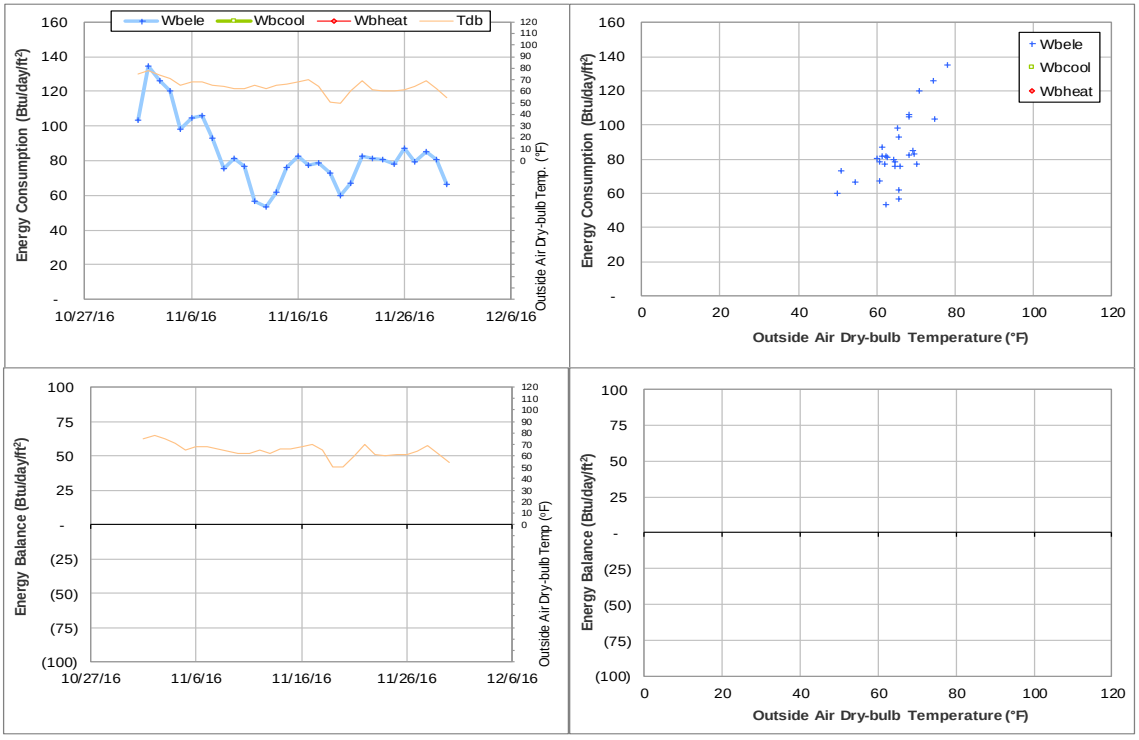


Figure IV-101 Concrete Materials Laboratory TAMU BLDG # 501 Energy Balance Plot during November 2016

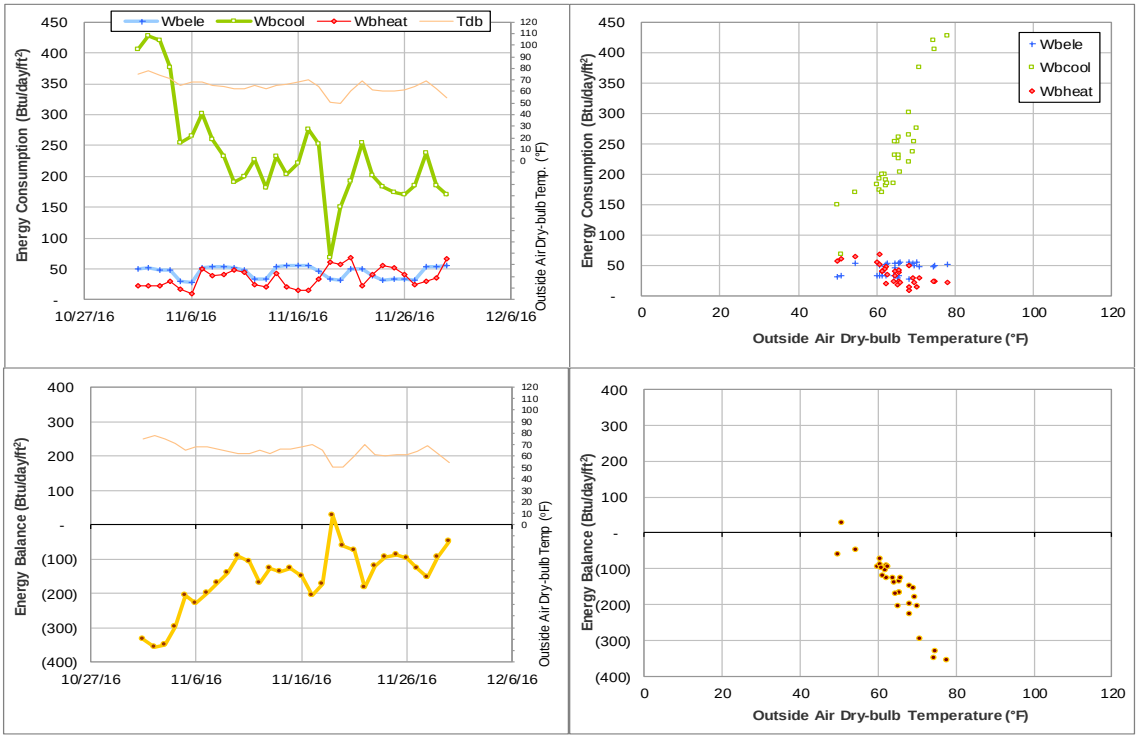


Figure IV-102 Nagle Hall TAMU BLDG # 506 Energy Balance Plot during November 2016

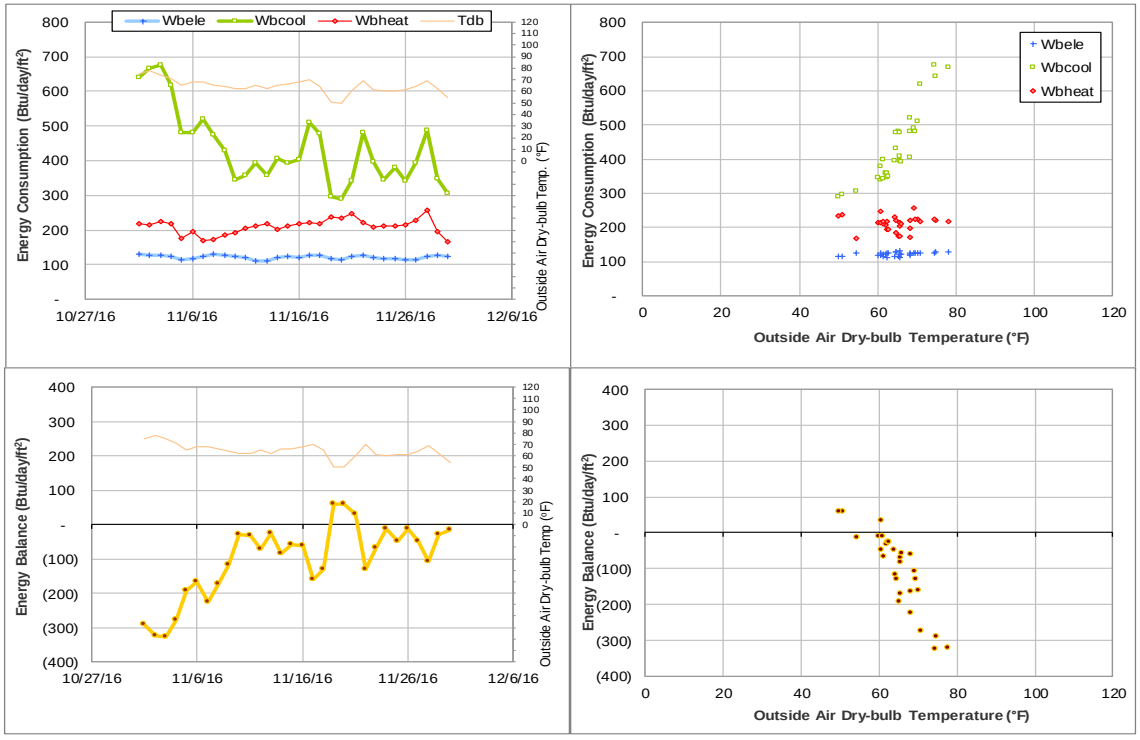


Figure IV-103 Veterinary Medical Science Building TAMU BLDG # 507 Energy Balance Plot during November 2016

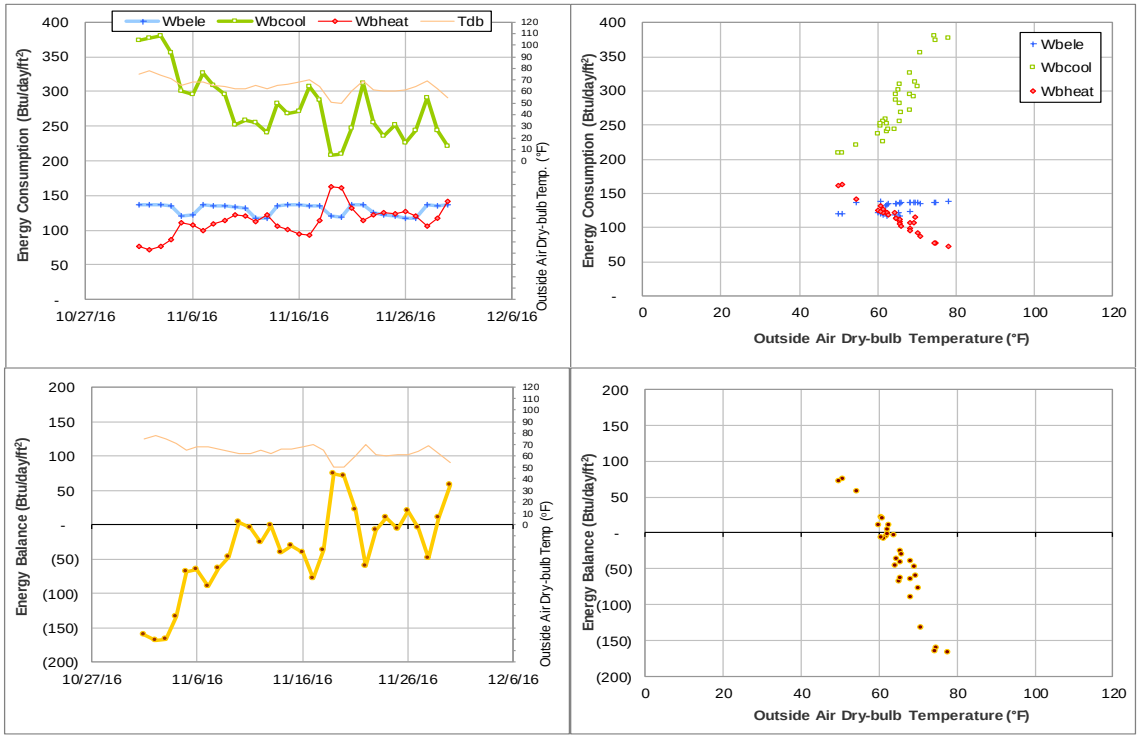


Figure IV-104 Veterinary Teaching Hospital and Med Adm TAMU BLDG # 508 and 1026 Energy Balance Plot during November 2016

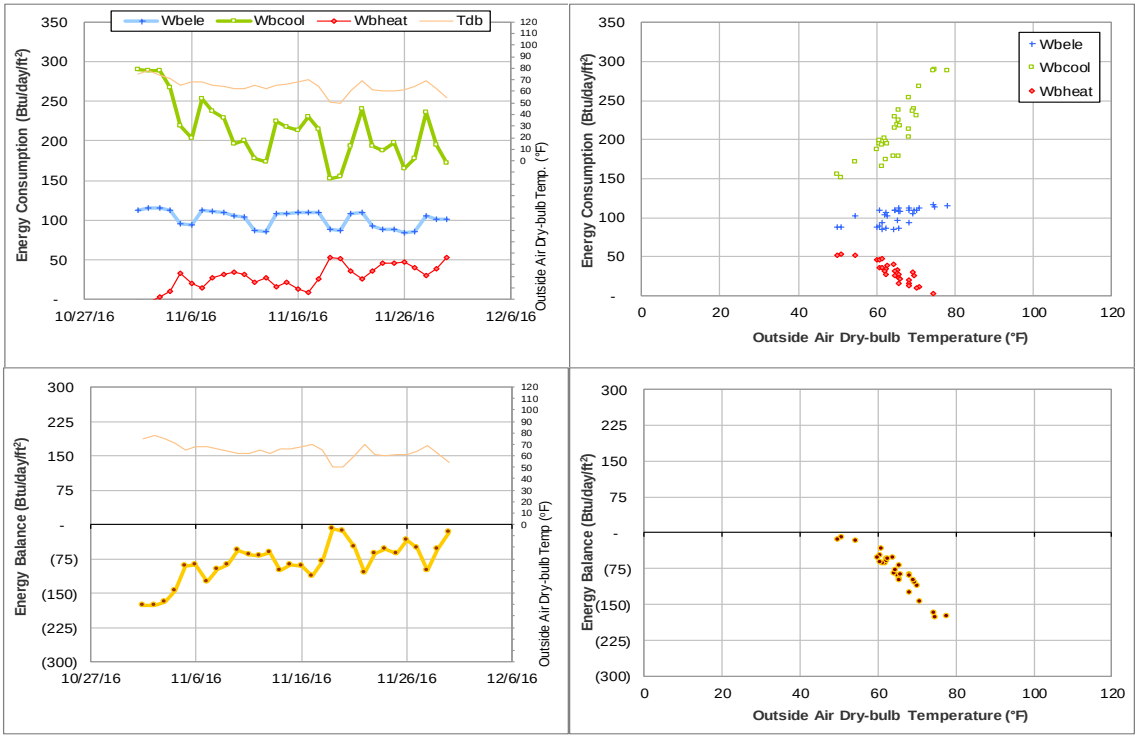


Figure IV-105 Veterinary Teaching Hospital TAMU BLDG # 508 Energy Balance Plot during November 2016

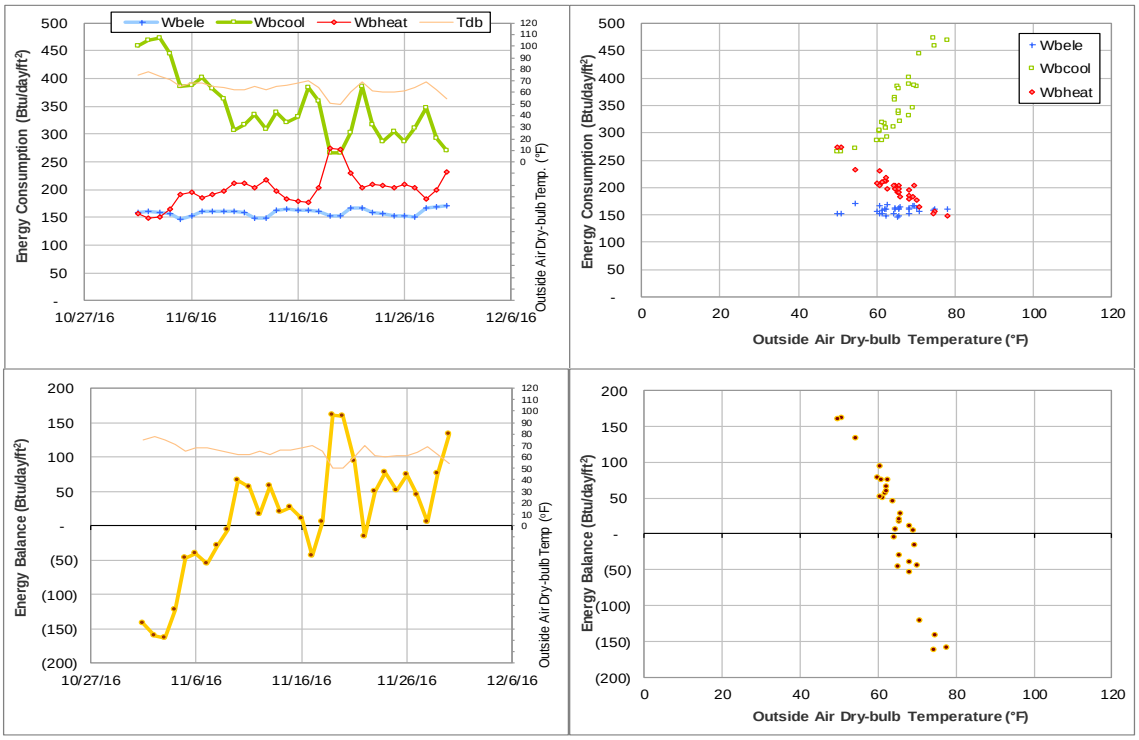


Figure IV-106 Veterinary Medicine Administration TAMU BLDG # 1026 Energy Balance Plot during November 2016

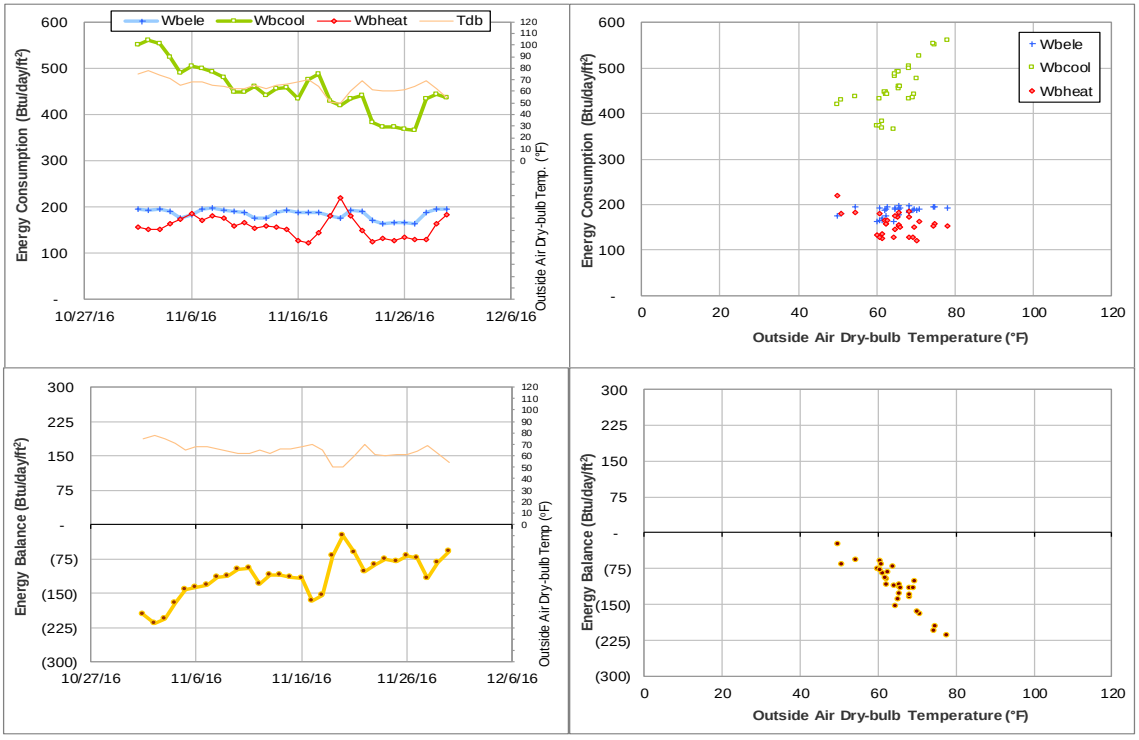


Figure IV-107 Heep Laboratory Building TAMU BLDG # 511 Energy Balance Plot during November 2016

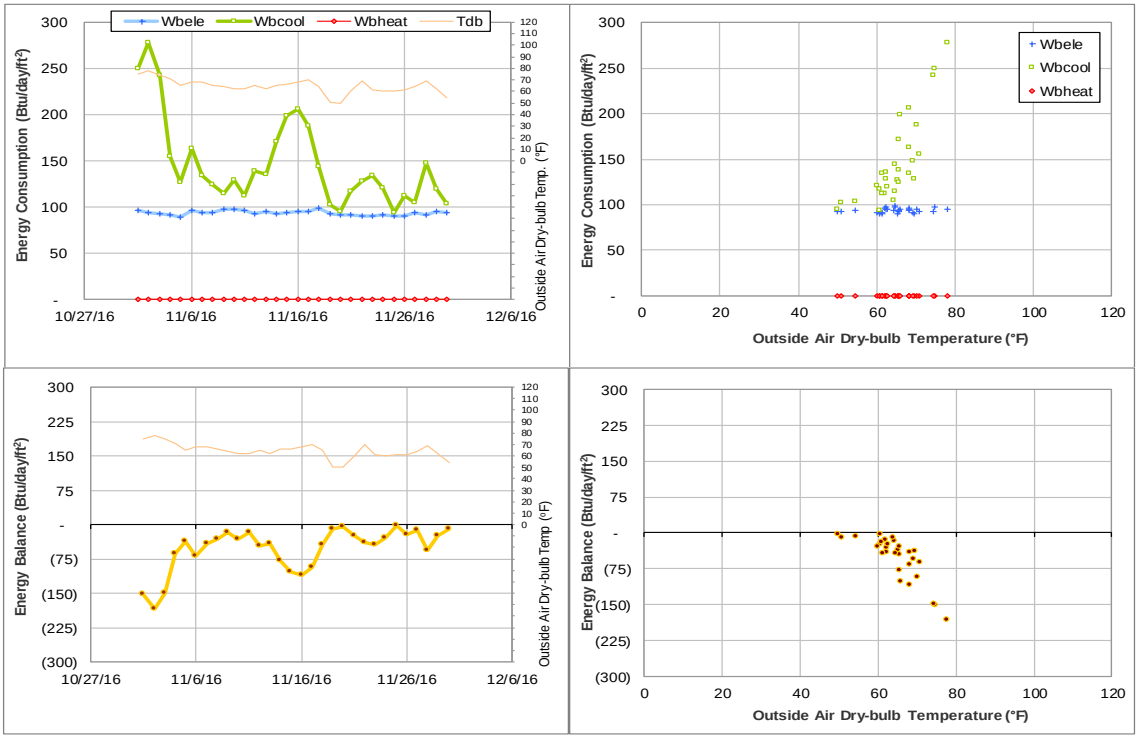


Figure IV-108 All Faiths Chapel TAMU BLDG # 512 Energy Balance Plot during November 2016

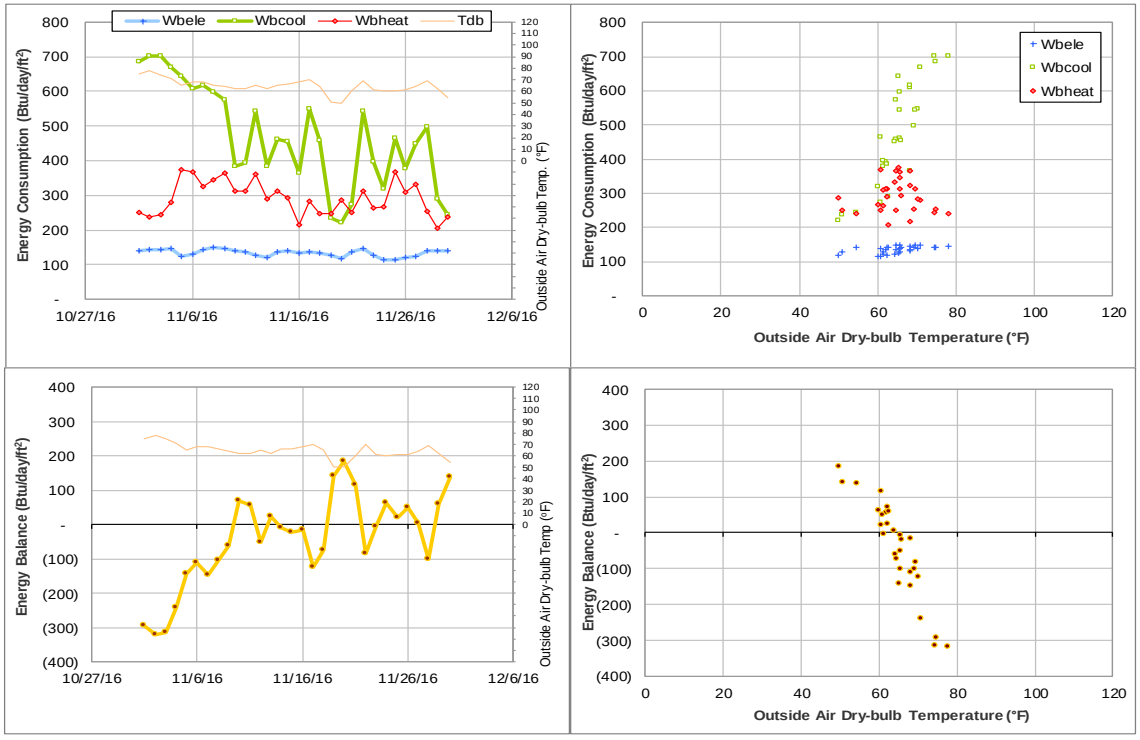


Figure IV-109 Doherty Building TAMU BLDG # 513 Energy Balance Plot during November 2016

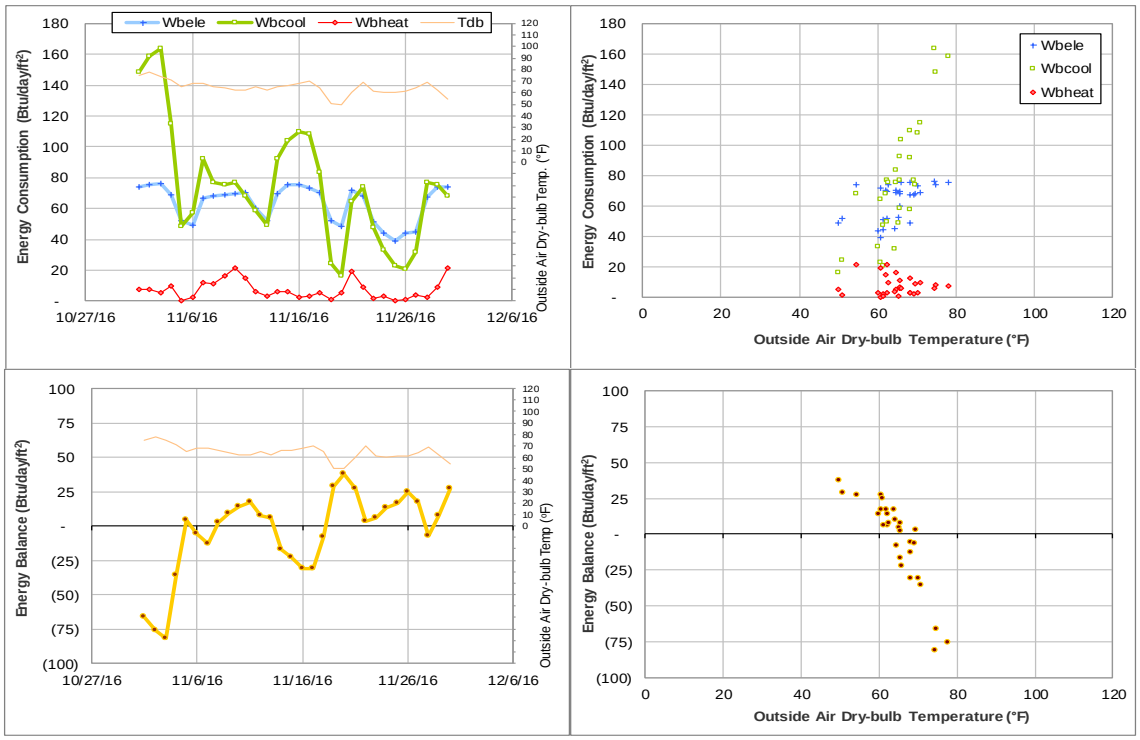


Figure IV-110 Munnerlyn Astronomy & Space Sciences Engineering TAMU BLDG # 514 Energy Balance Plot during November 2016

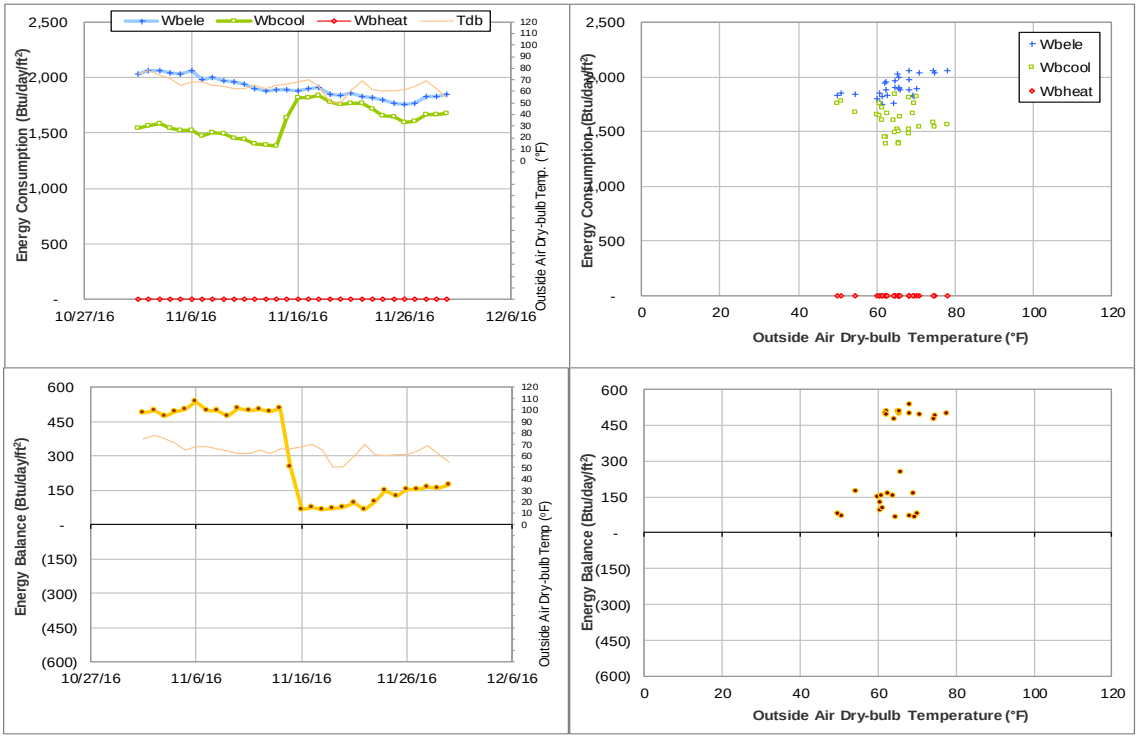


Figure IV-111 Computing Services Center TAMU BLDG # 516 Energy Balance Plot during November 2016

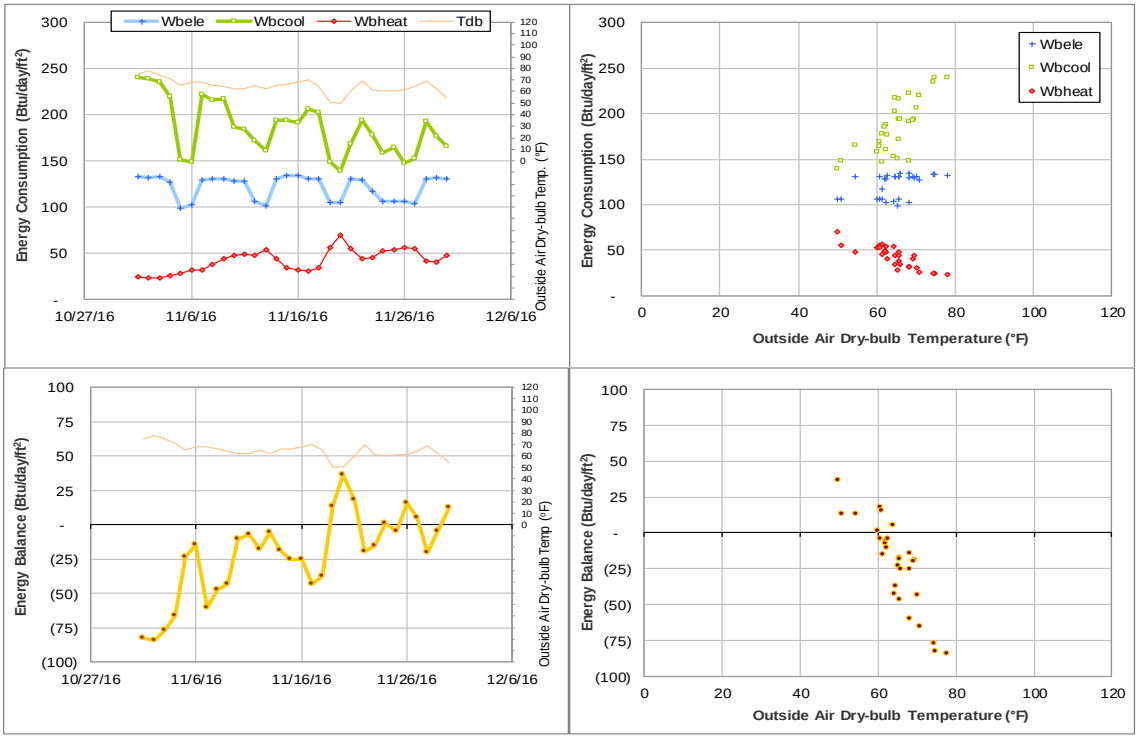


Figure IV-112 Beutel Health Center TAMU BLDG # 520 Energy Balance Plot during November 2016

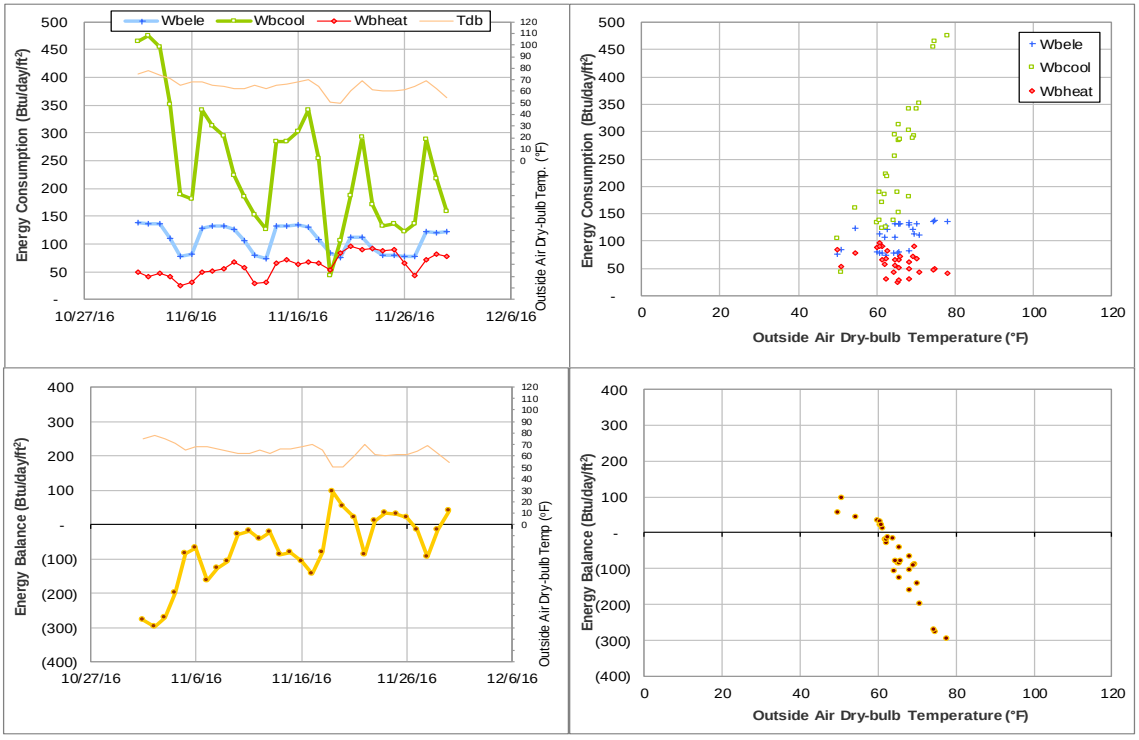


Figure IV-113 Heldenfels Hall TAMU BLDG # 521 Energy Balance Plot during November 2016

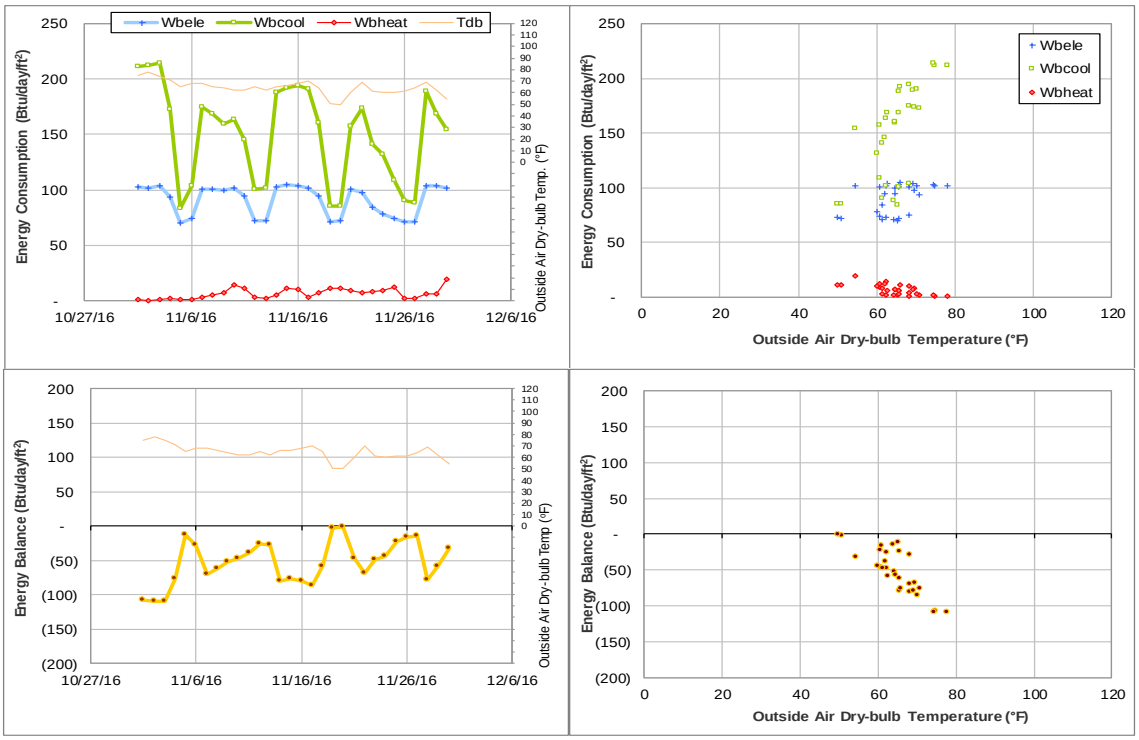


Figure IV-114 Blocker building TAMU BLDG # 524 Energy Balance Plot during November 2016

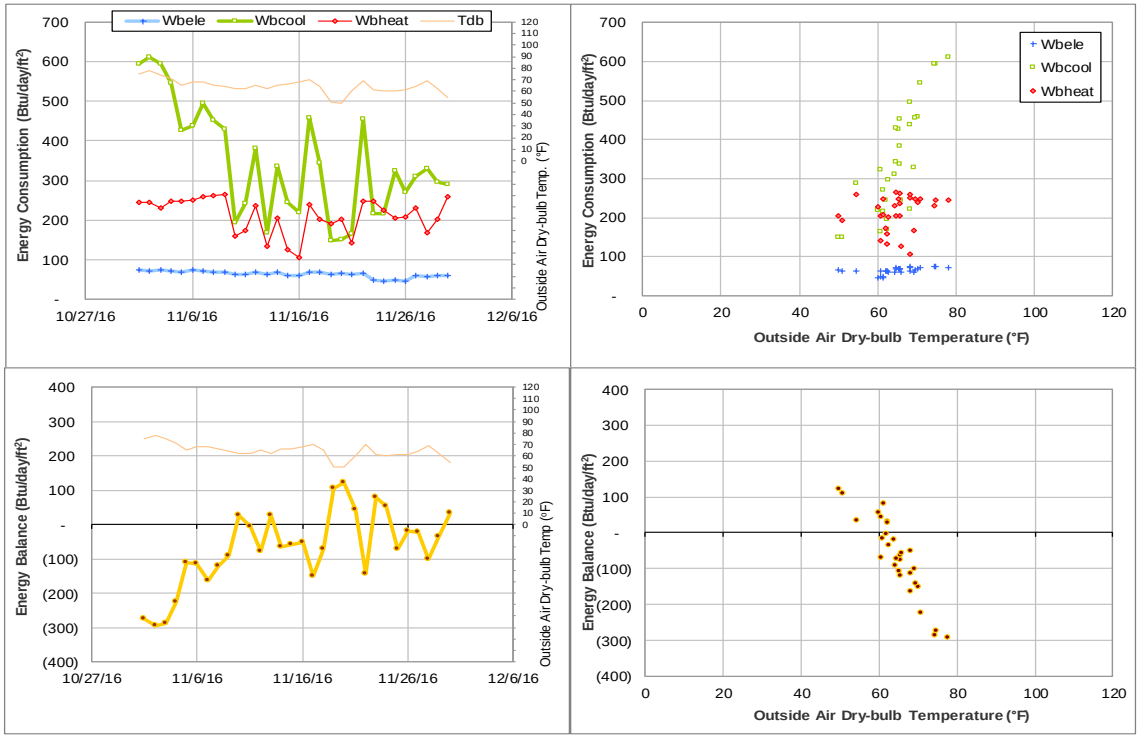


Figure IV-115 Clements Residence Hall TAMU BLDG # 548 Energy Balance Plot during November 2016

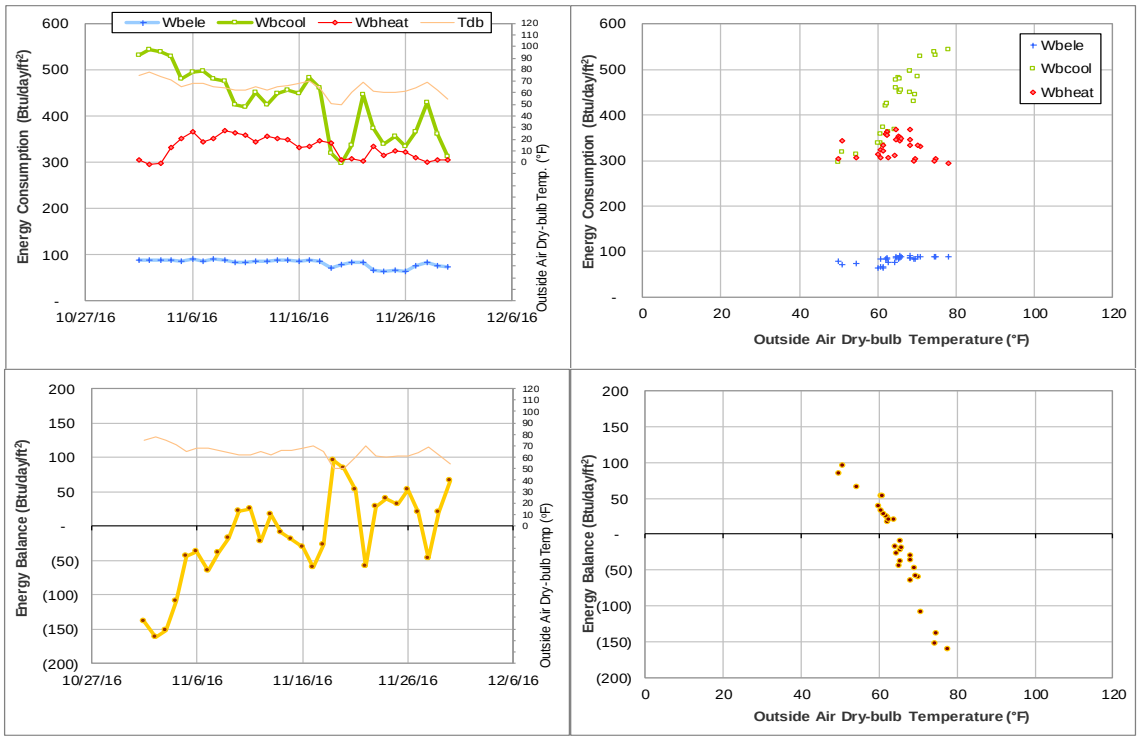


Figure IV-116 Haas Residence Hall TAMU BLDG # 549 Energy Balance Plot during November 2016

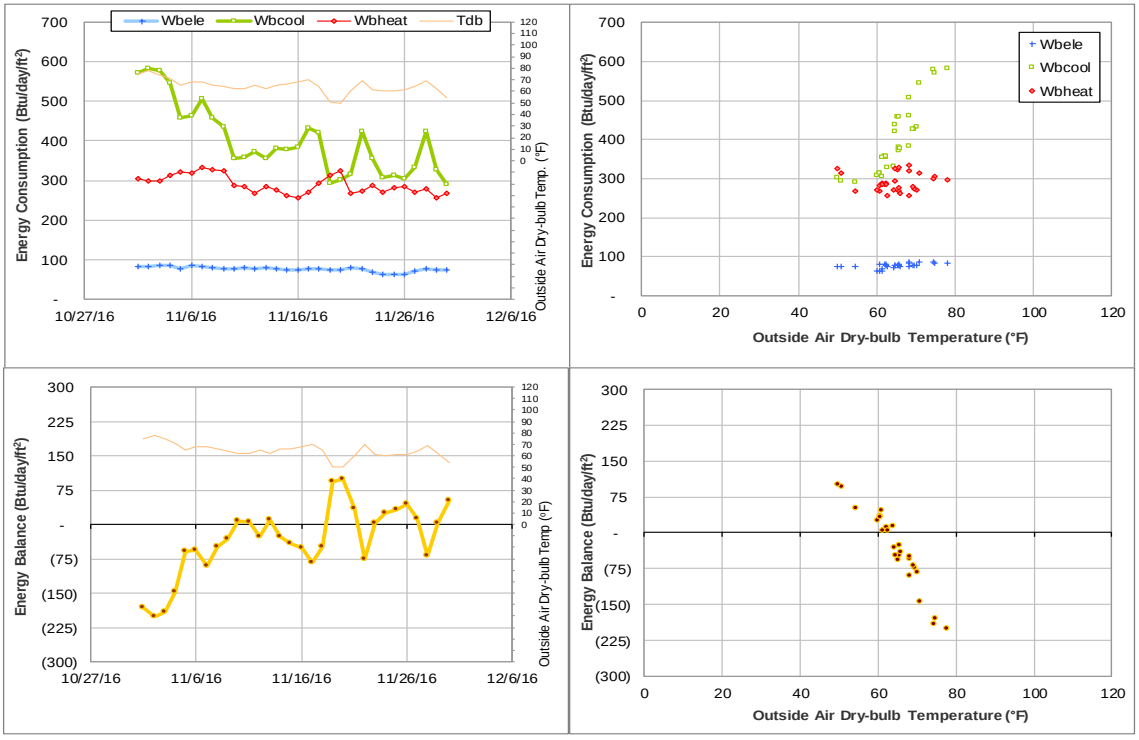


Figure IV-117 McFadden Residence Hall TAMU BLDG # 550 Energy Balance Plot during November 2016

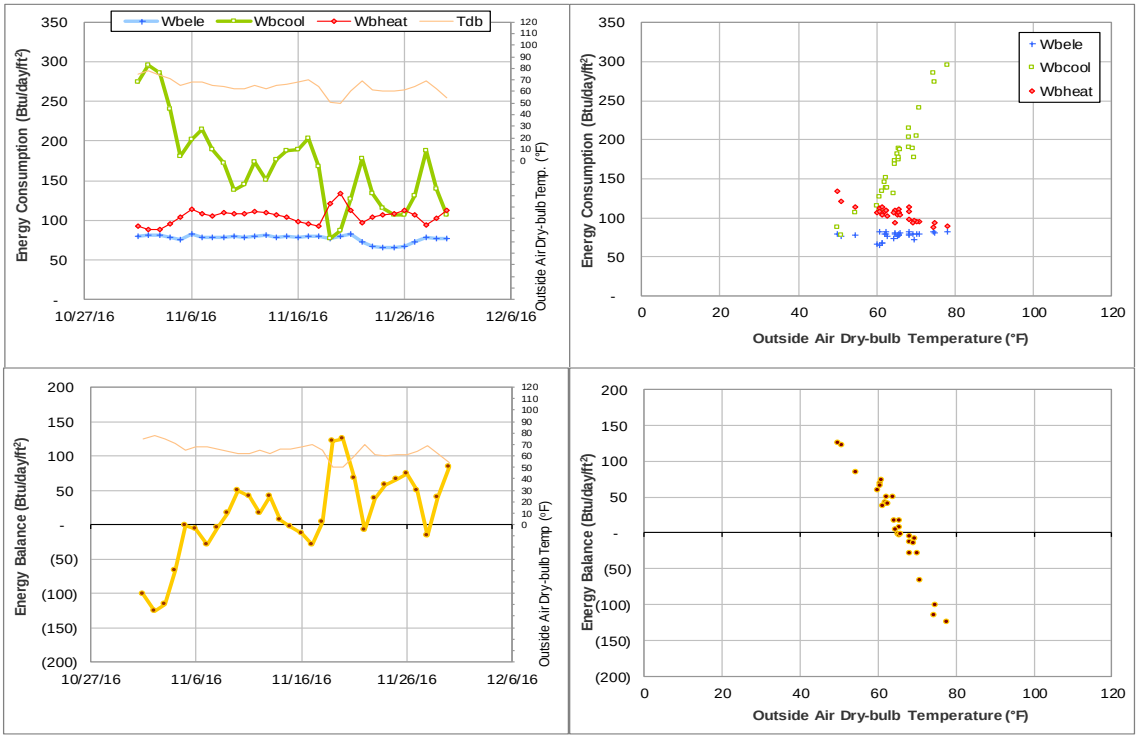


Figure IV-118 Neeley Residence Hall TAMU BLDG # 652 Energy Balance Plot during November 2016

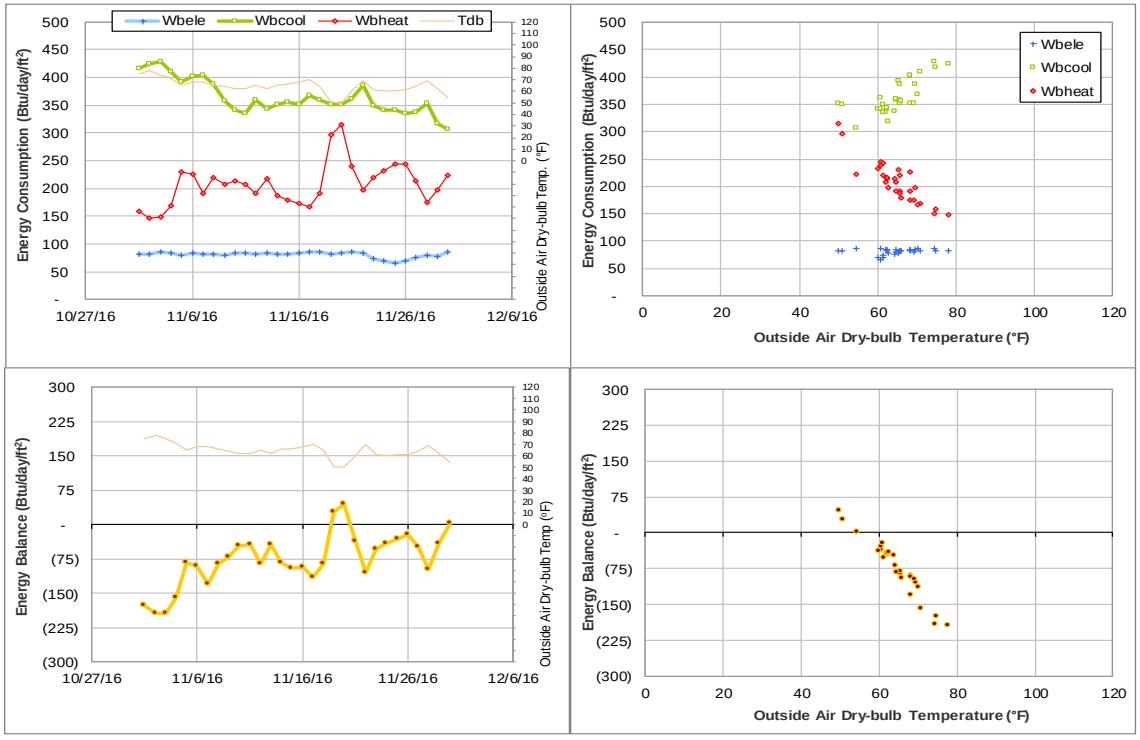


Figure IV-119 Hobby Residence Hall TAMU BLDG # 653 Energy Balance Plot during November 2016

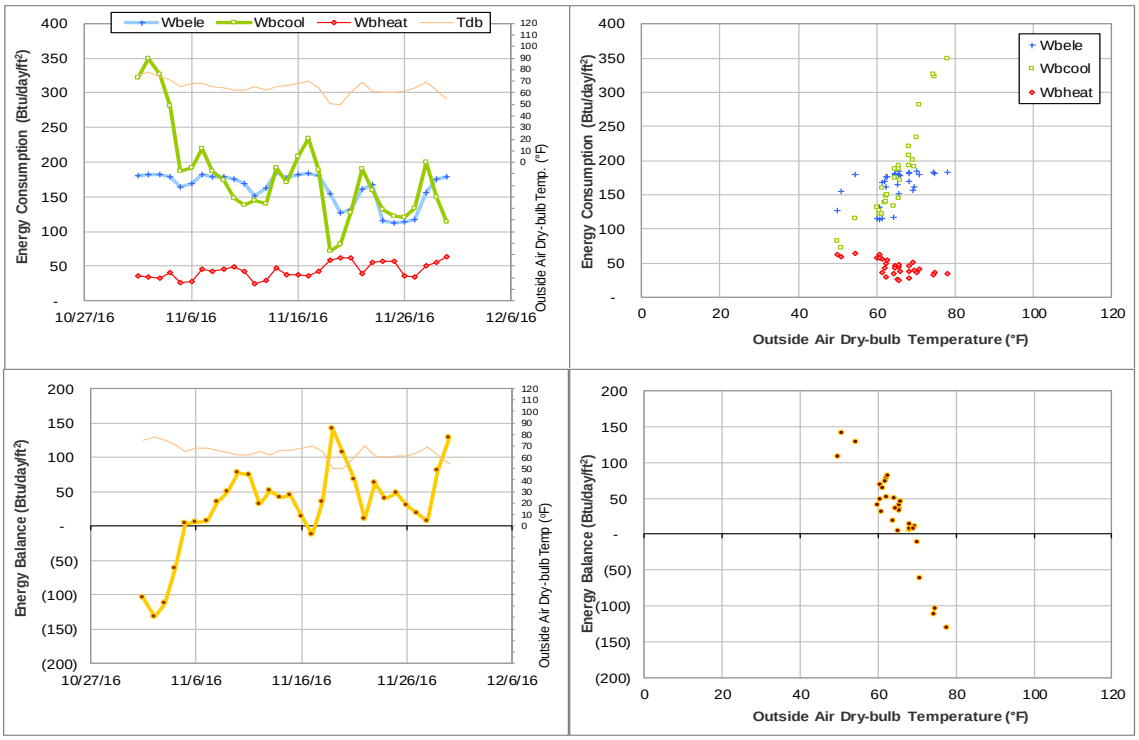


Figure IV-120 Wisenbaker Engineering Research Center TAMU BLDG # 682 Energy Balance Plot during November 2016

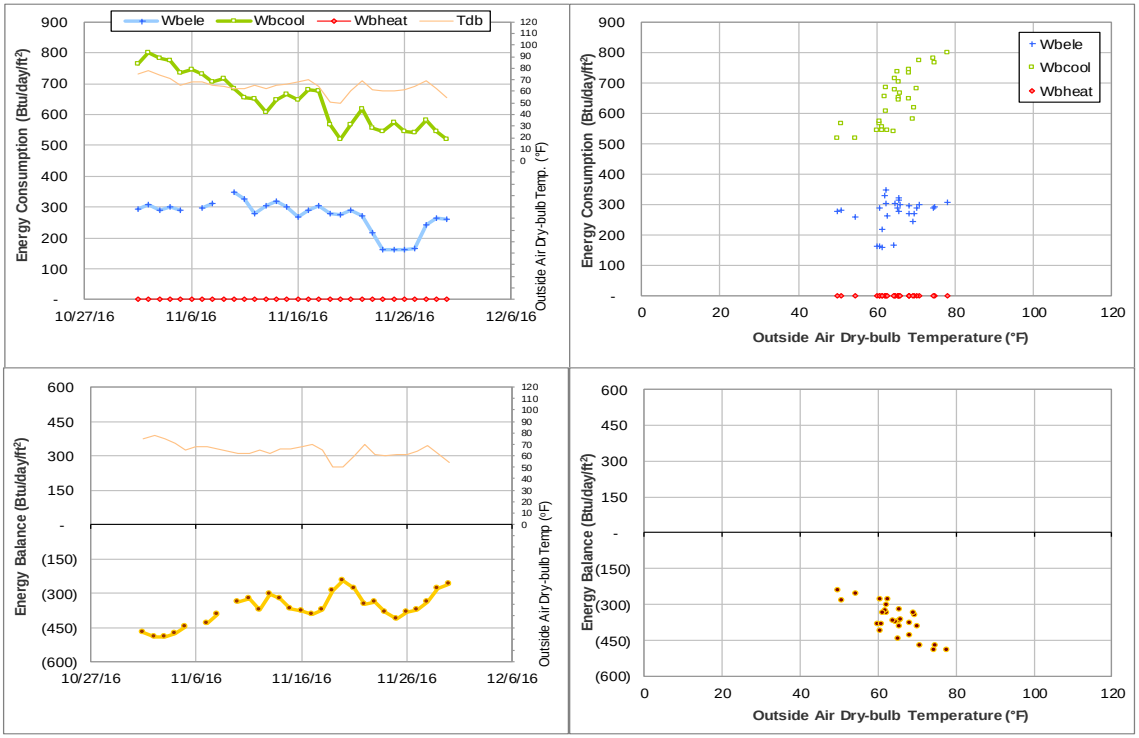


Figure IV-121 McNew Laboratory TAMU BLDG # 740 Energy Balance Plot during November 2016

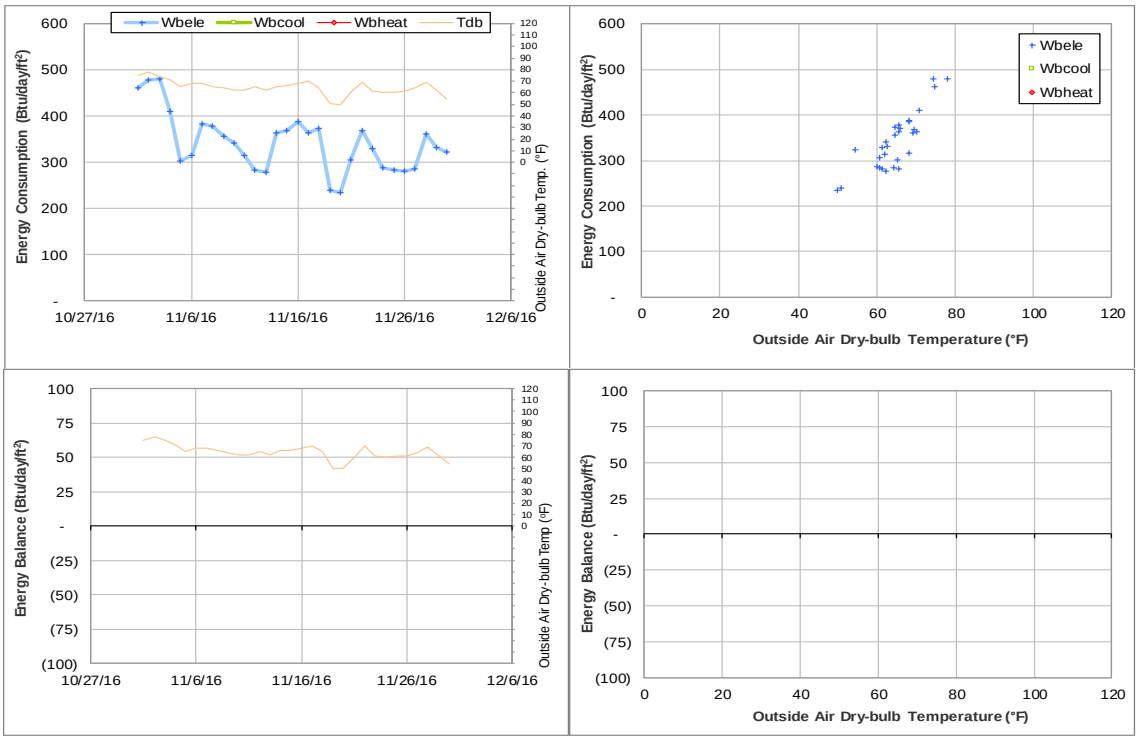


Figure IV-122 Soil Testing Labs TAMU BLDG # 806 Energy Balance Plot during November 2016

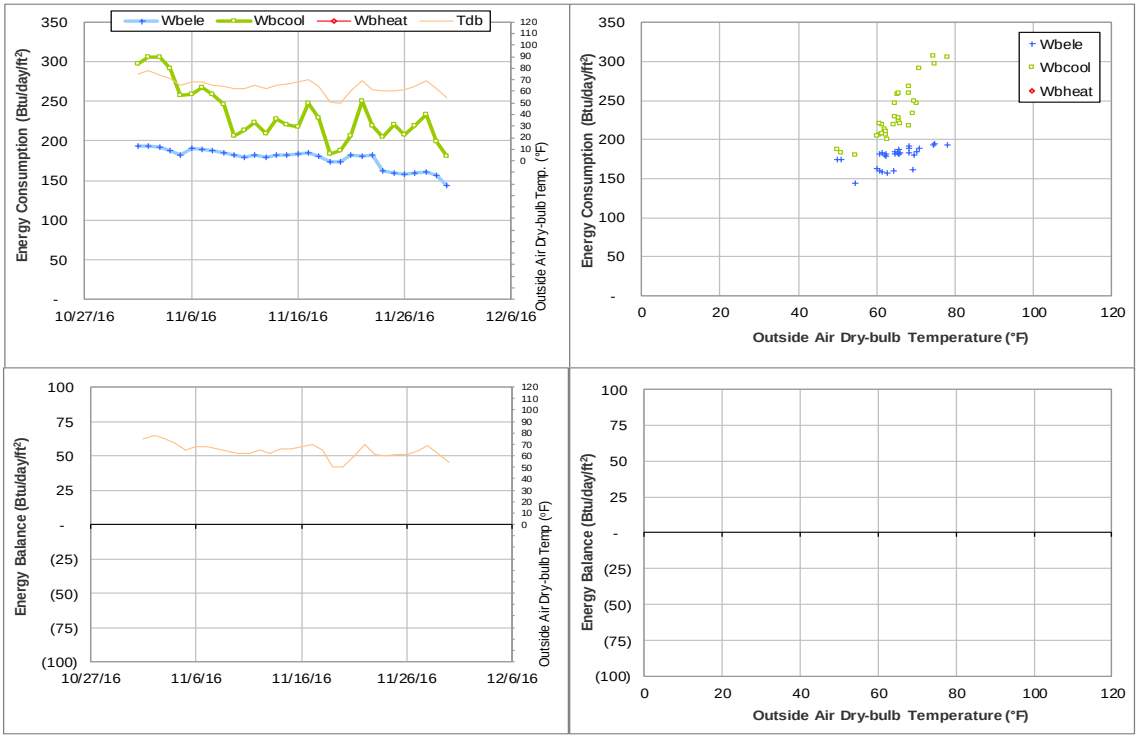


Figure IV-123 Entomology Research Lab TAMU BLDG # 815 Energy Balance Plot during November 2016

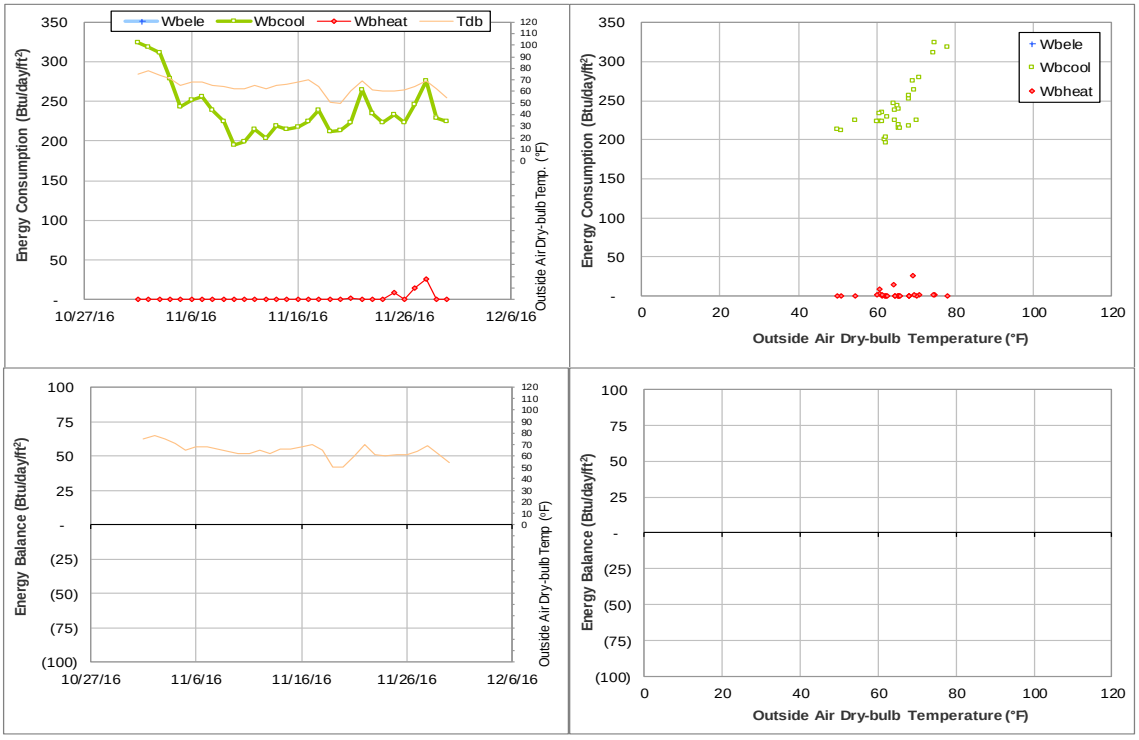


Figure IV-124 TVMC-Small Animal Building TAMU BLDG # 880 Energy Balance Plot during November 2016

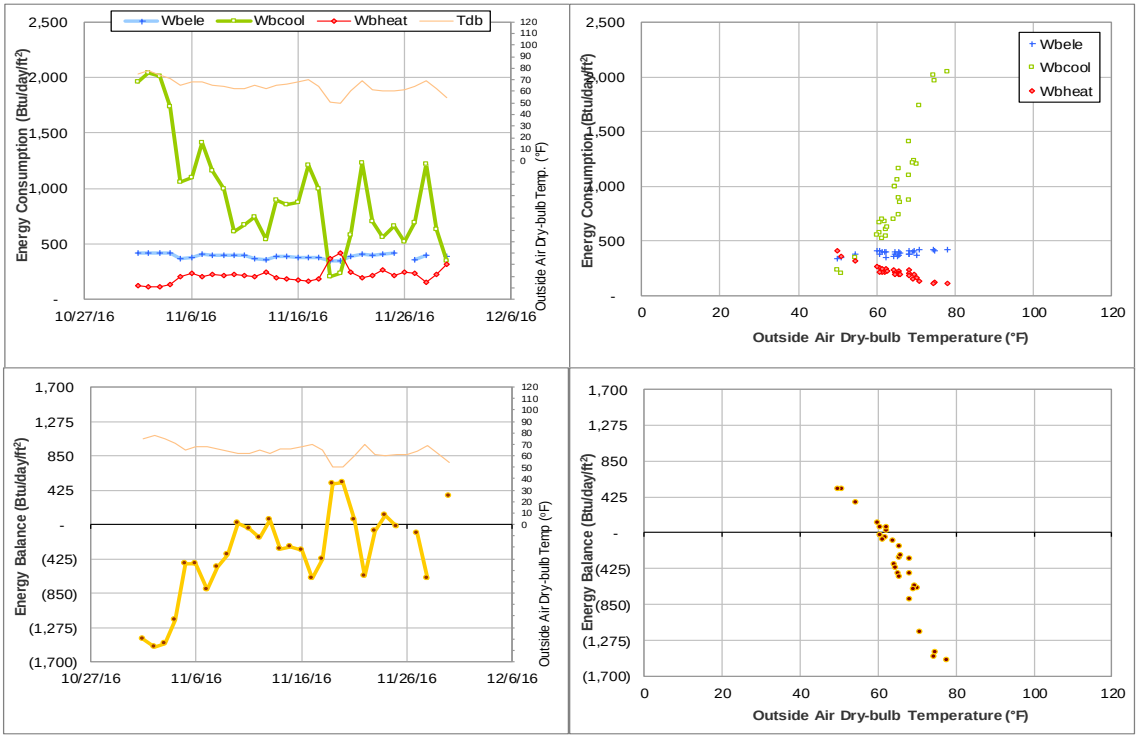


Figure IV-125 Laboratory Animal Care Building TAMU BLDG # 972 Energy Balance Plot during November 2016

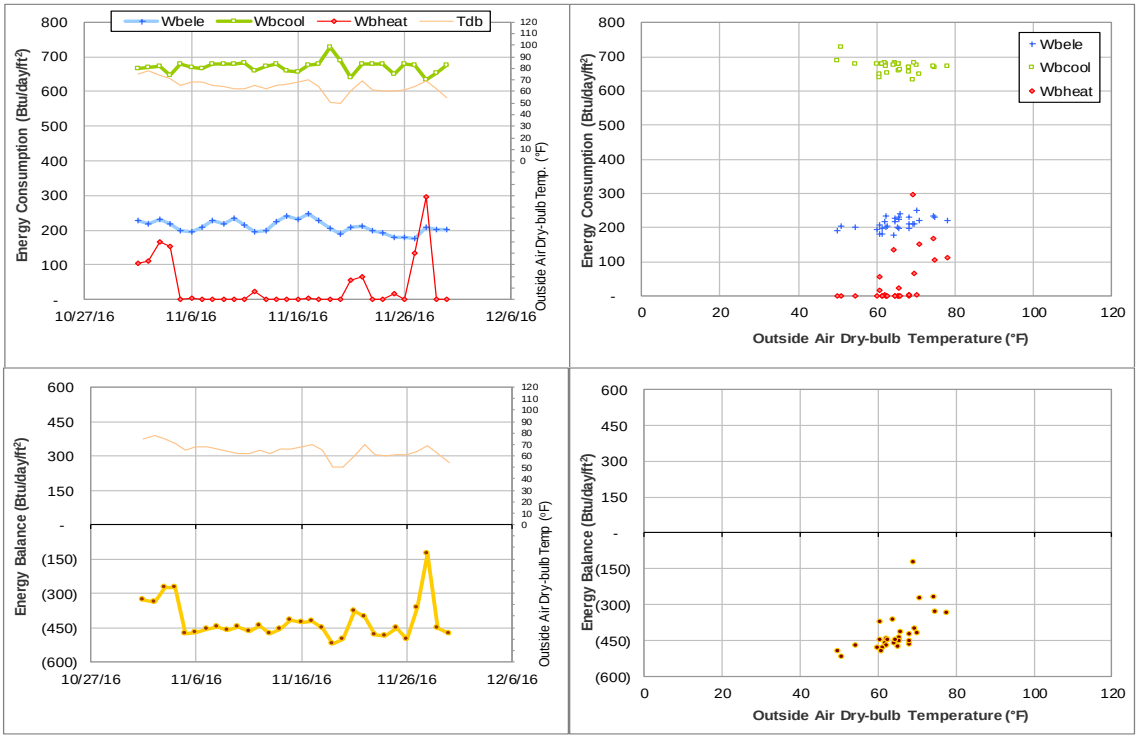


Figure IV-126 Vivarium III TAMU BLDG # 1020 Energy Balance Plot during November 2016

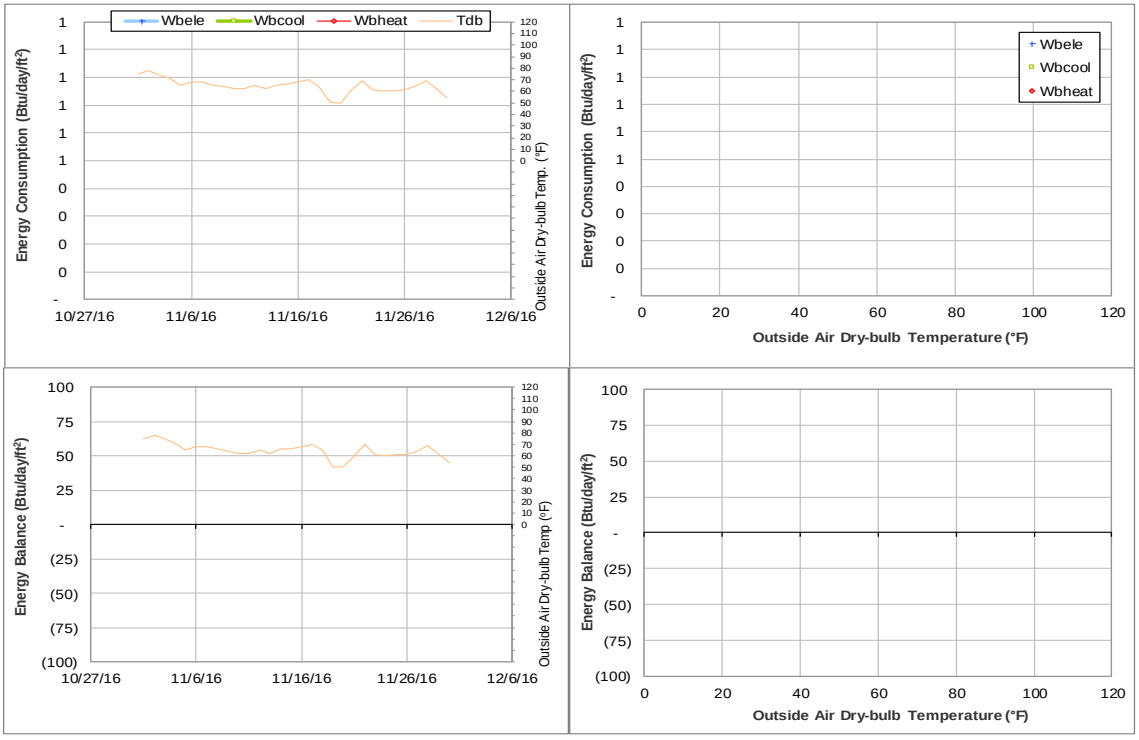


Figure IV-127 Texas Vet Med Diagnostic Lab TAMU BLDG # 1041 Energy Balance Plot during November 2016

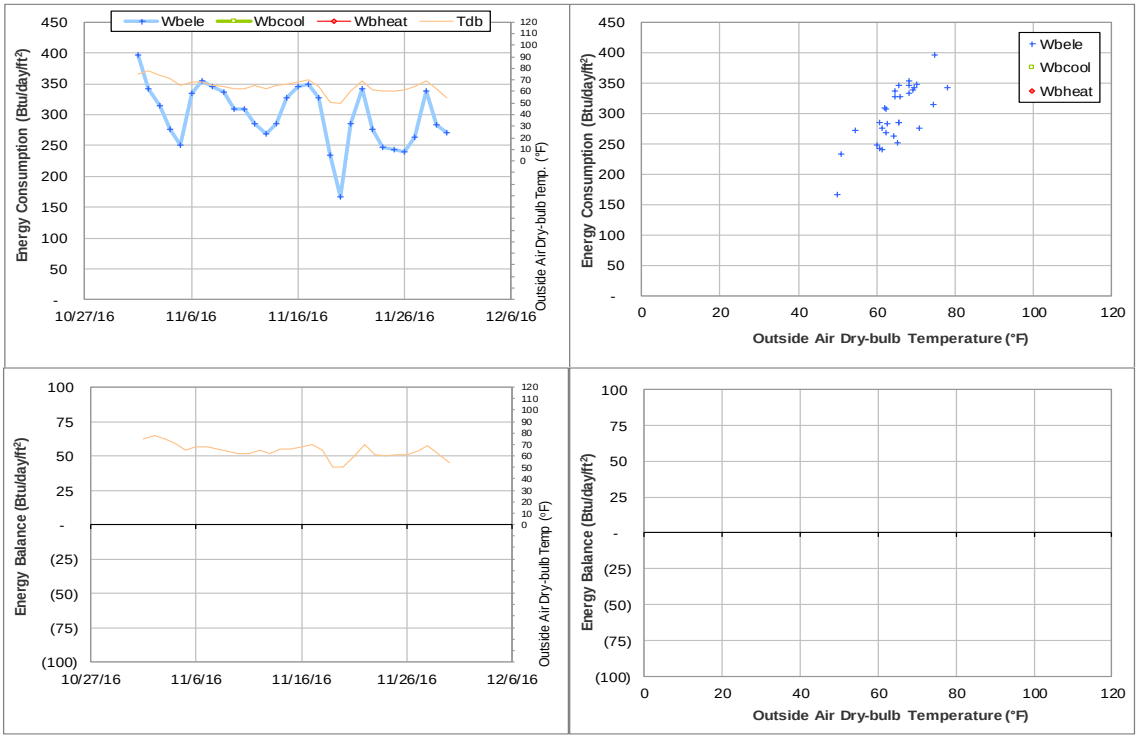


Figure IV-128 Forest Science Laboratory Building TAMU BLDG # 1042 Energy Balance Plot during November 2016

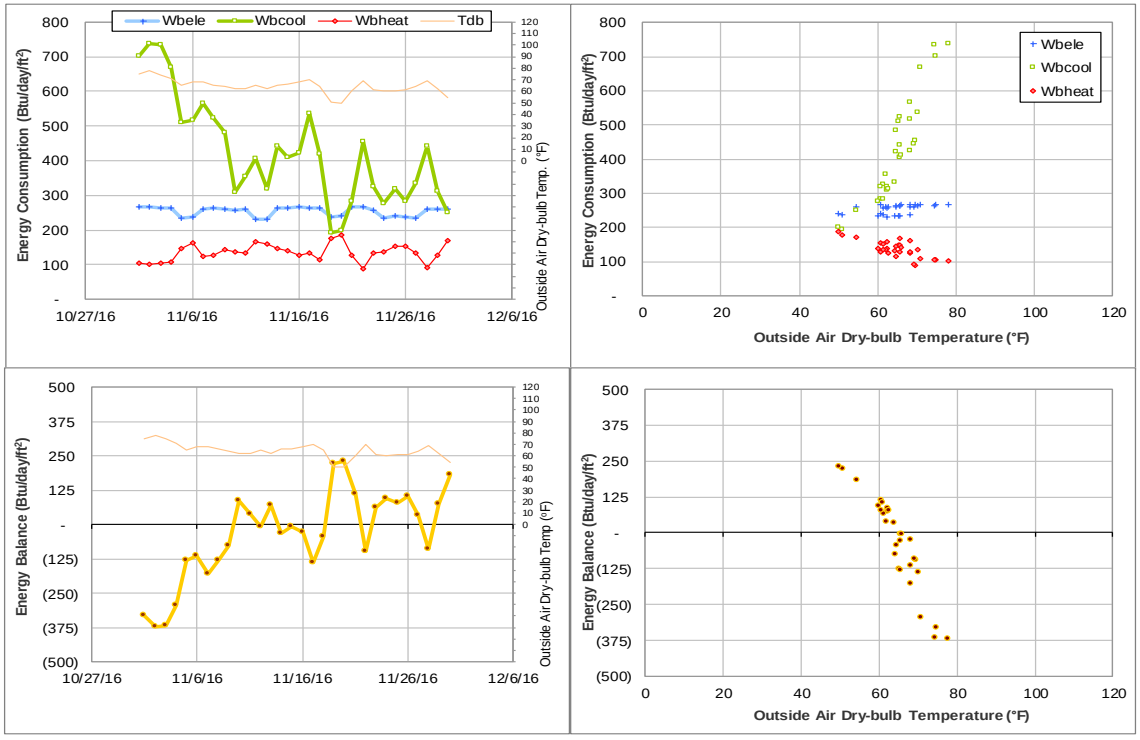


Figure IV-129 Veterinary Small Animal Hospital TAMU BLDG # 1085 Energy Balance Plot during November 2016

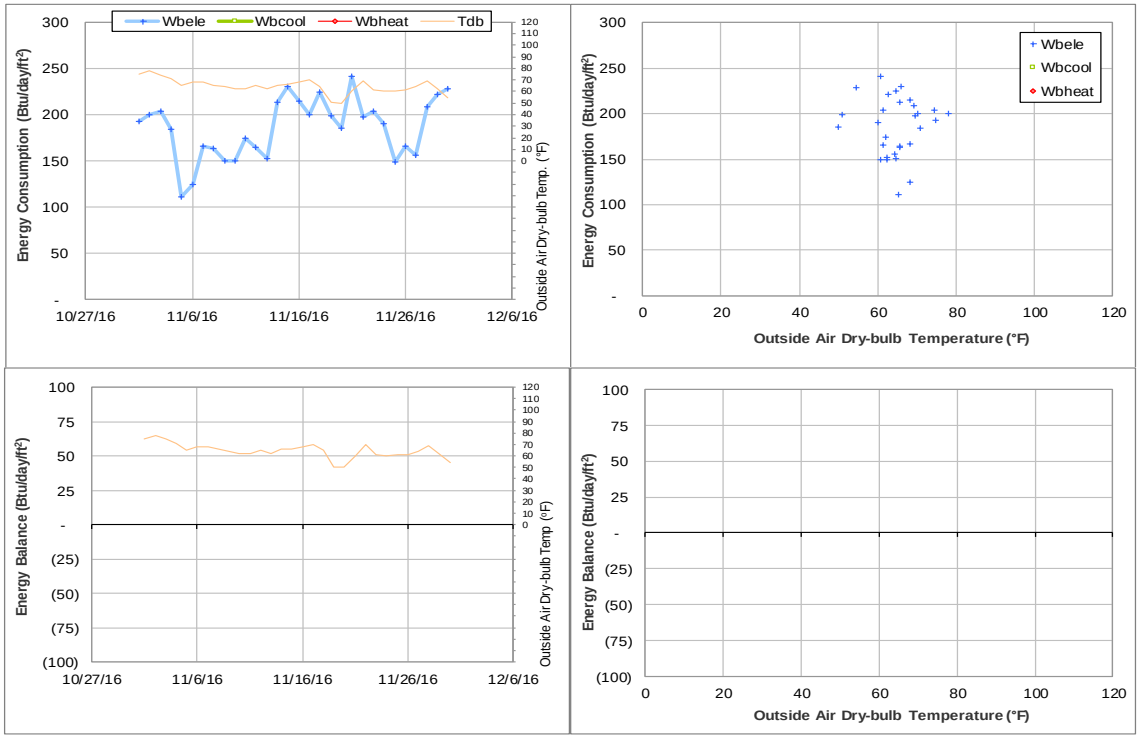


Figure IV-130 Utilities Energy Office Annex TAMU BLDG # 1089 Energy Balance Plot during November 2016

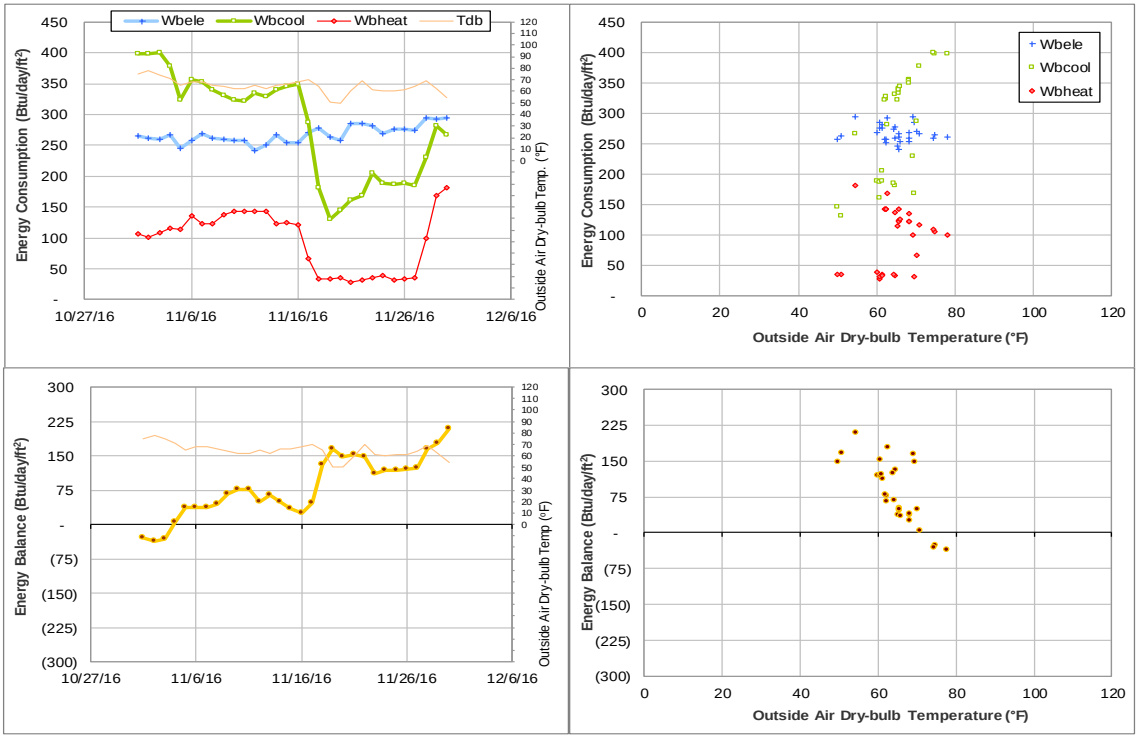


Figure IV-131 Biological Control Facility TAMU BLDG # 1146 Energy Balance Plot during November 2016

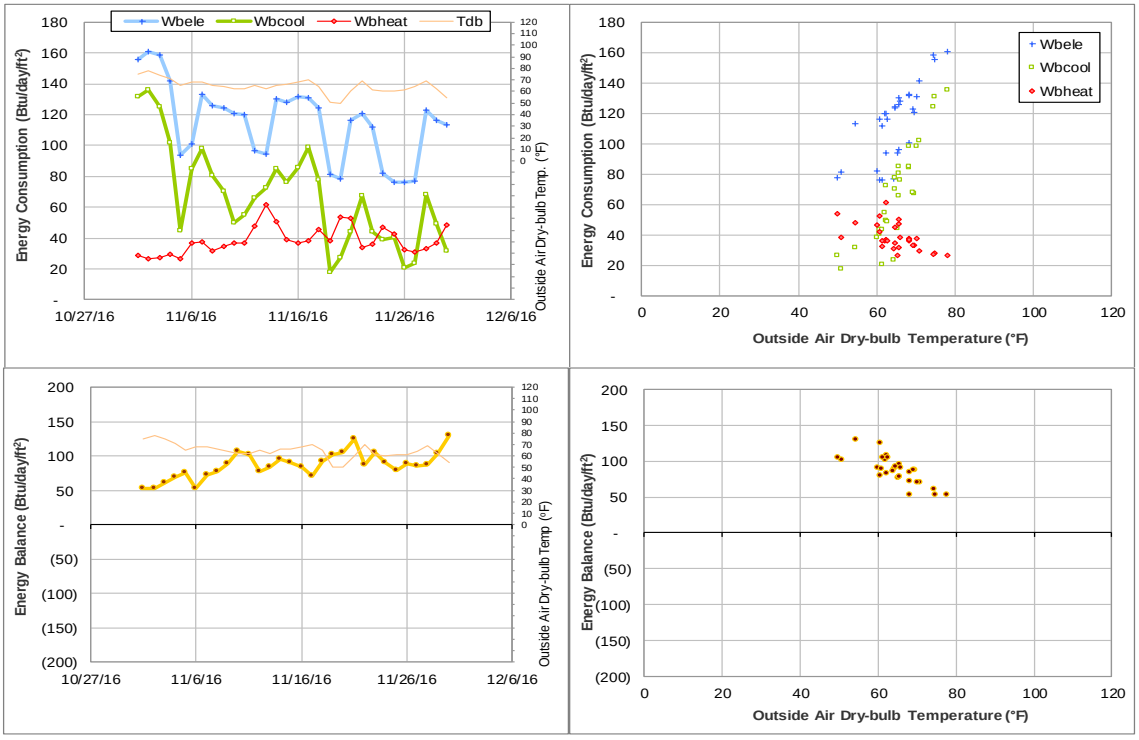


Figure IV-132 Physical Plant Administration & Shops TAMU BLDG # 1156 Energy Balance Plot during November 2016

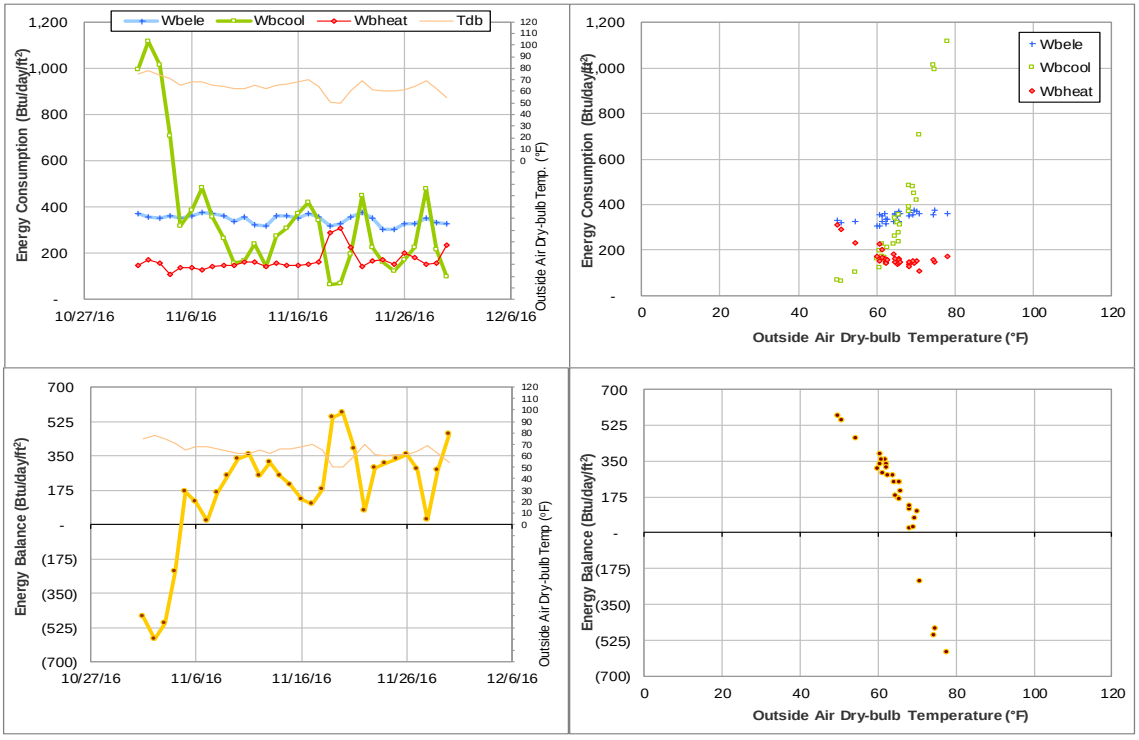


Figure IV-133 Veterinary Anatomic Pathology TAMU BLDG # 1184 Energy Balance Plot during November 2016

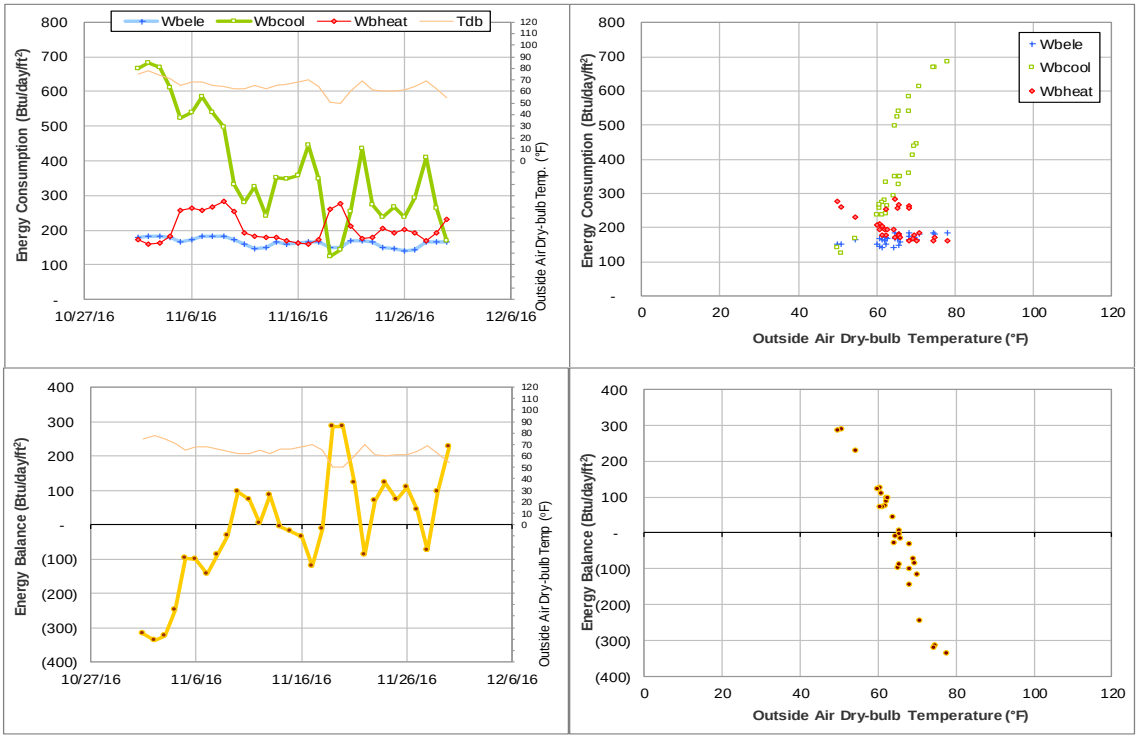


Figure IV-134 Veterinary Large Animal Hospital TAMU BLDG # 1194 Energy Balance Plot during November 2016

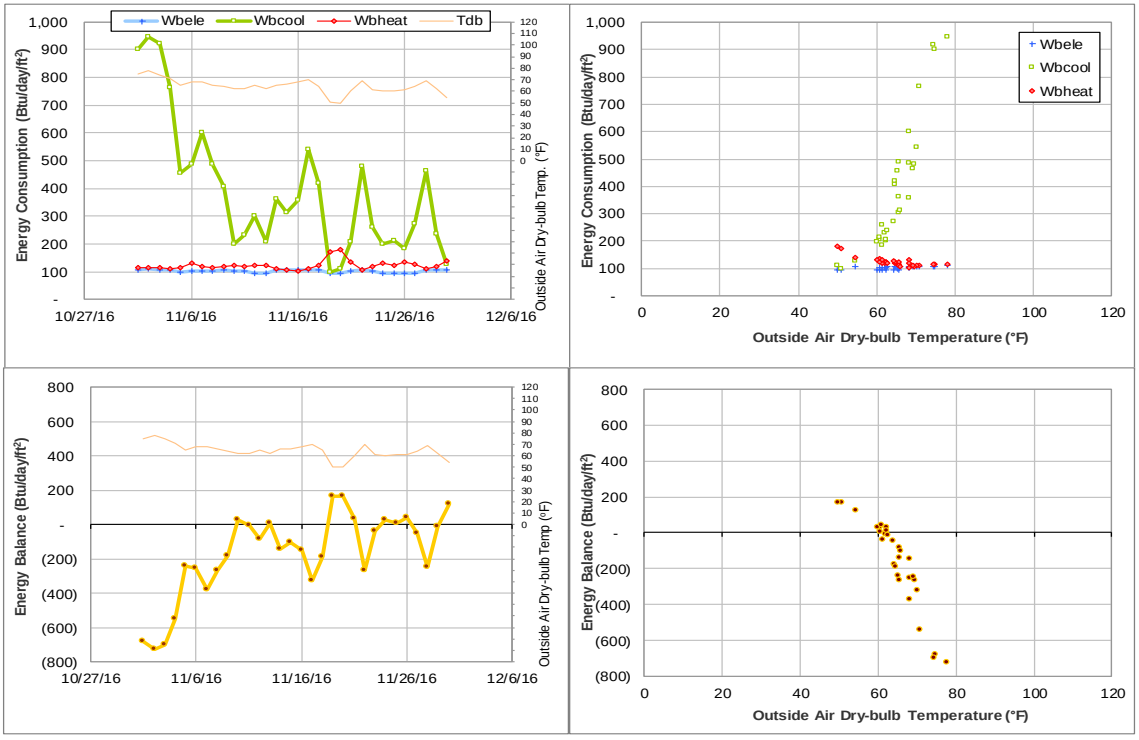


Figure IV-135 Veterinary Research Building TAMU BLDG # 1197 Energy Balance Plot during November 2016

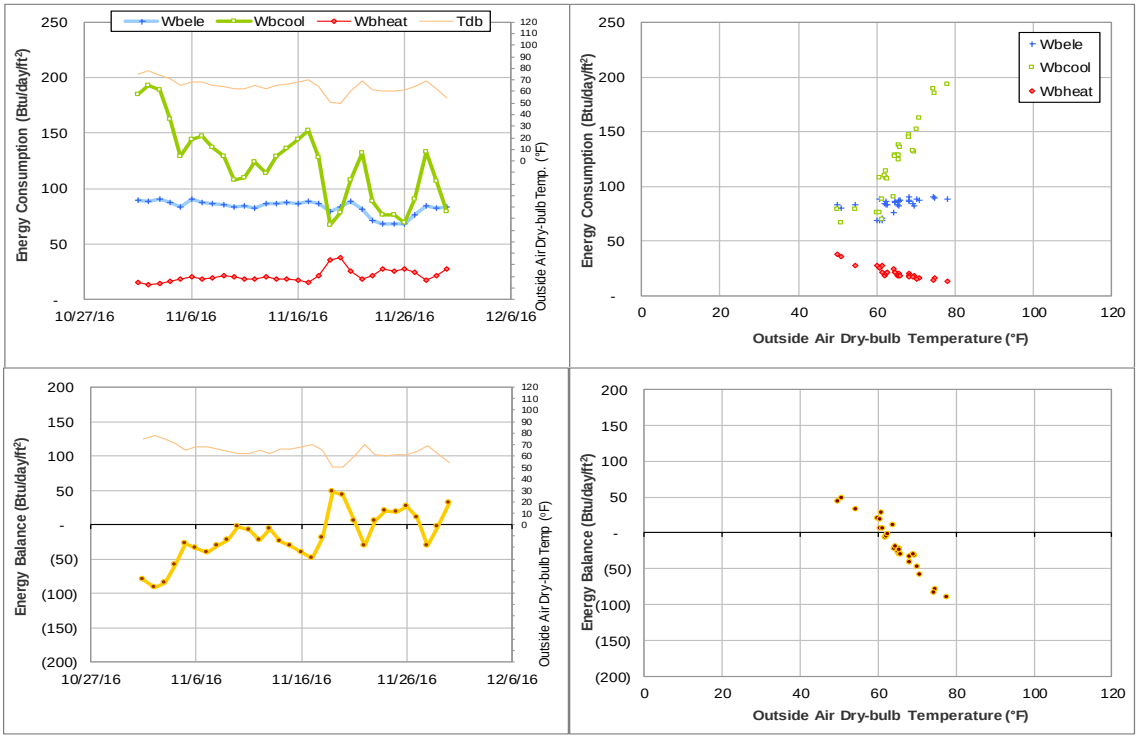


Figure IV-136 Hullabaloo Residence Hall TAMU BLDG # 1416 Energy Balance Plot during November 2016

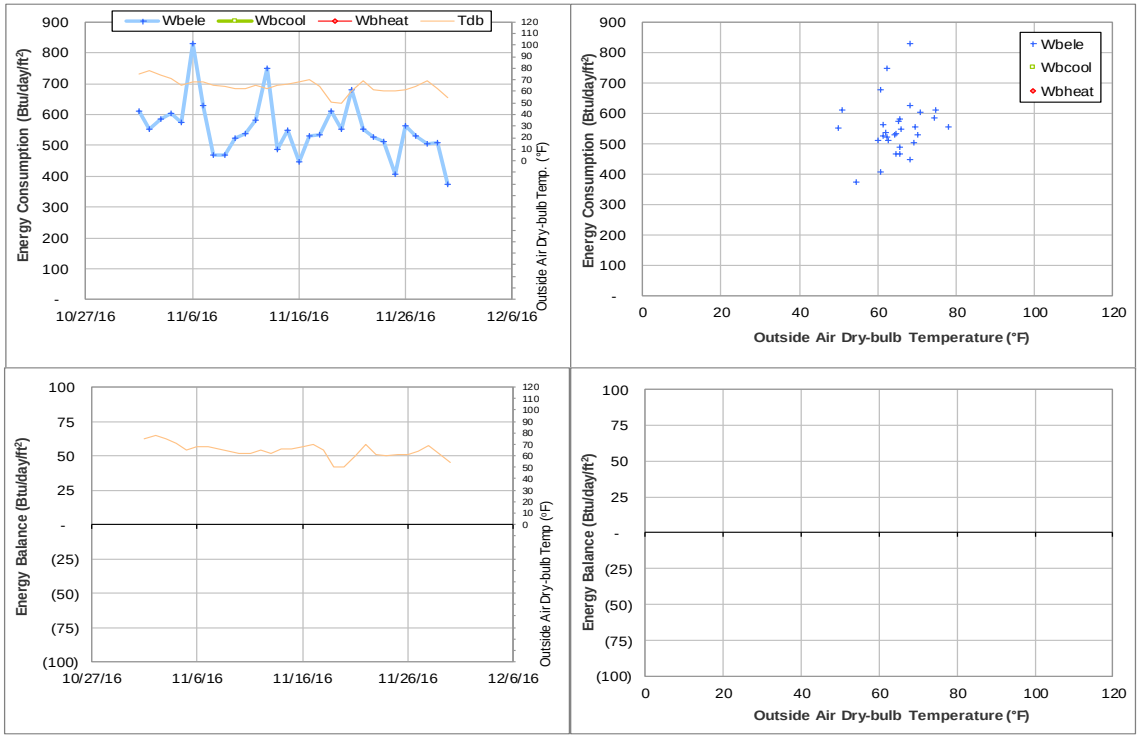


Figure IV-137 University Apartments - Laundry at the Gardens TAMU BLDG # 1450 Energy Balance Plot during November 2016

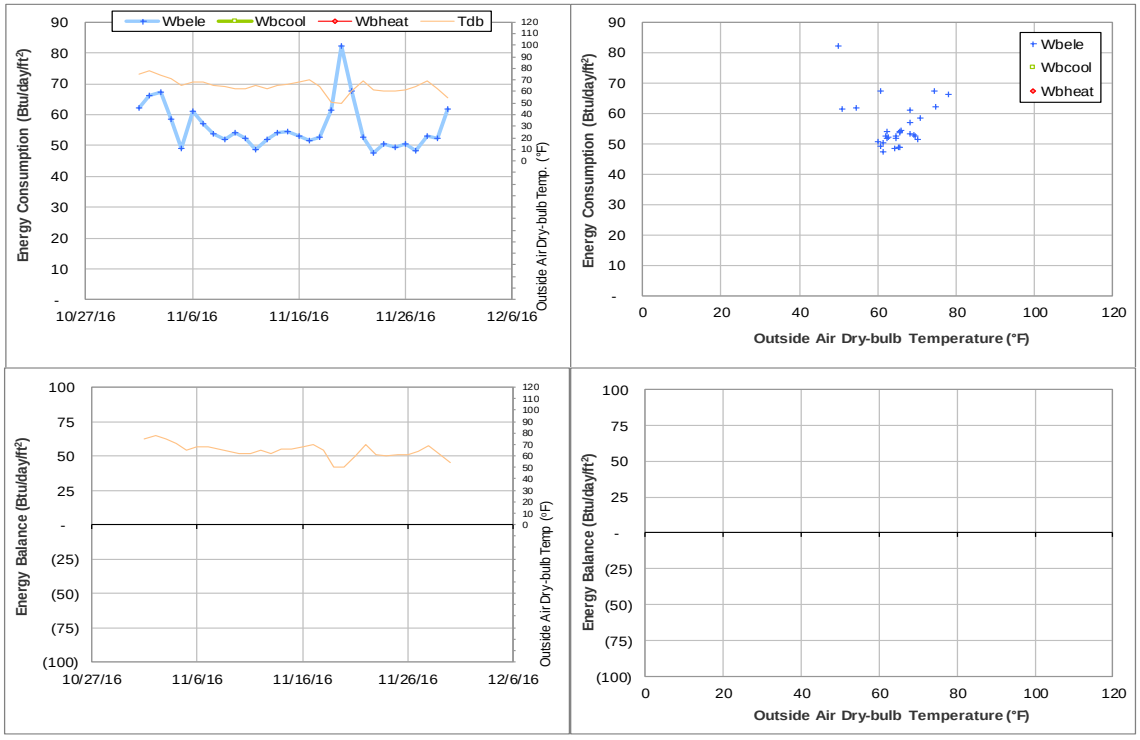


Figure IV-138 University Apartments - The Gardens J TAMU BLDG # 1451 Energy Balance Plot during November 2016

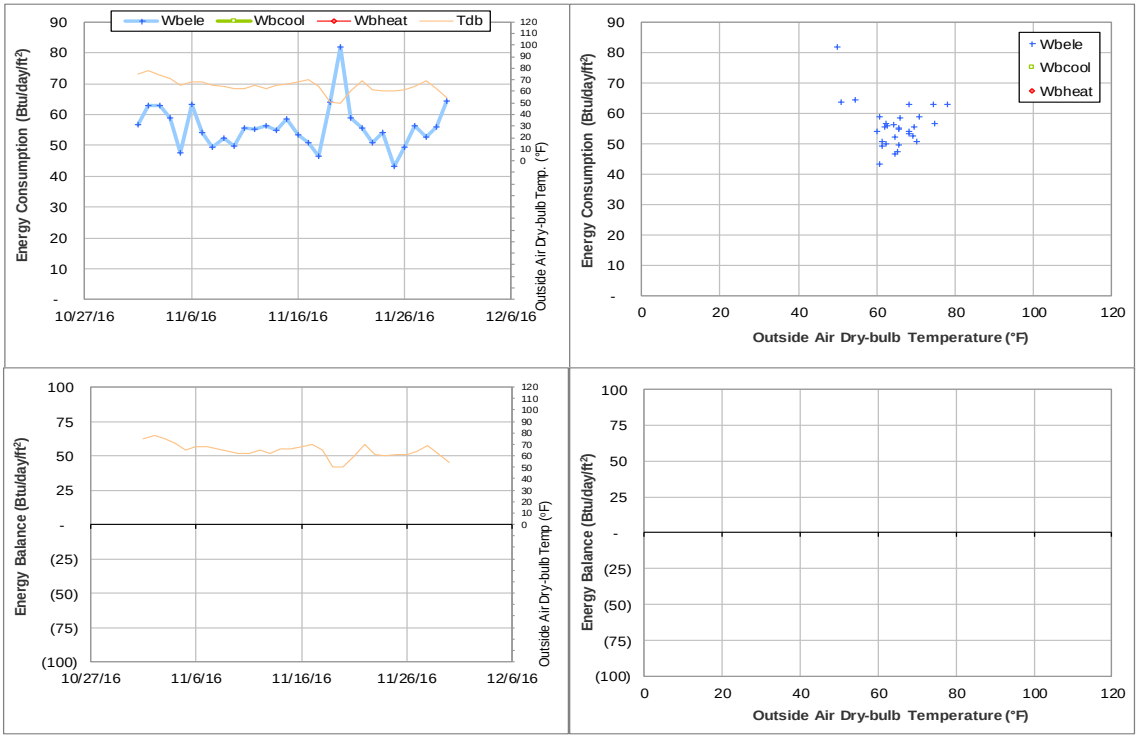


Figure IV-139 University Apartments - The Gardens K TAMU BLDG # 1452 Energy Balance Plot during November 2016

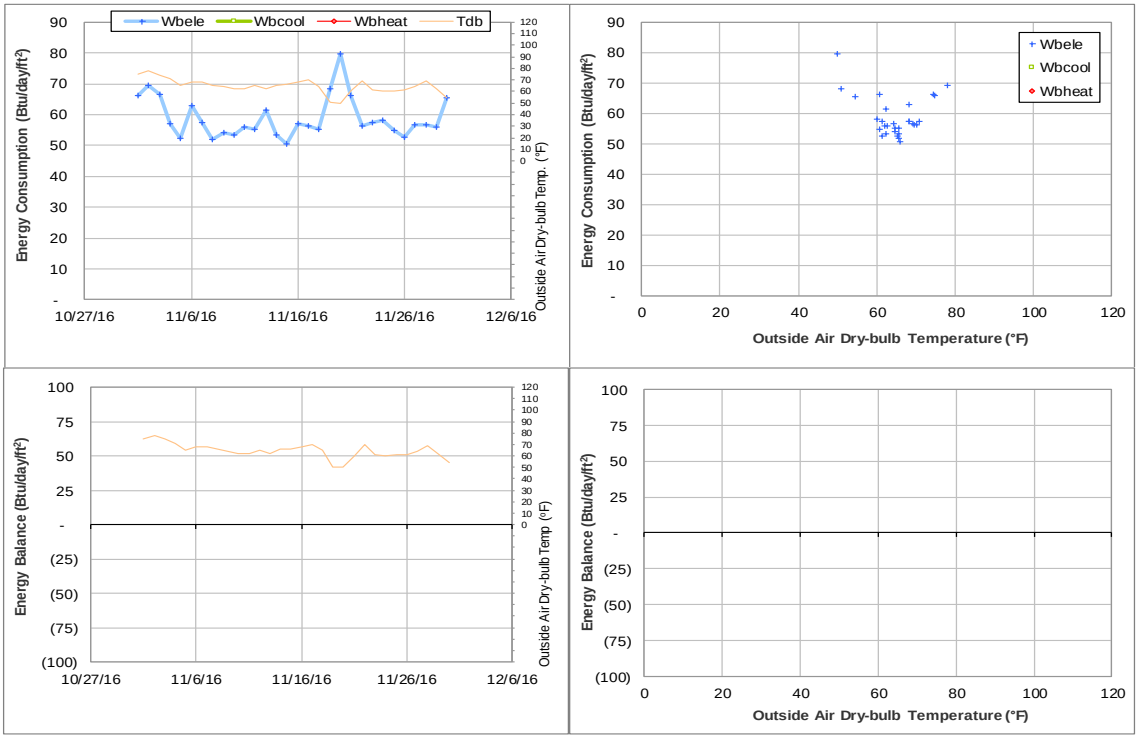


Figure IV-140 University Apartments - The Gardens L TAMU BLDG # 1453 Energy Balance Plot during November 2016

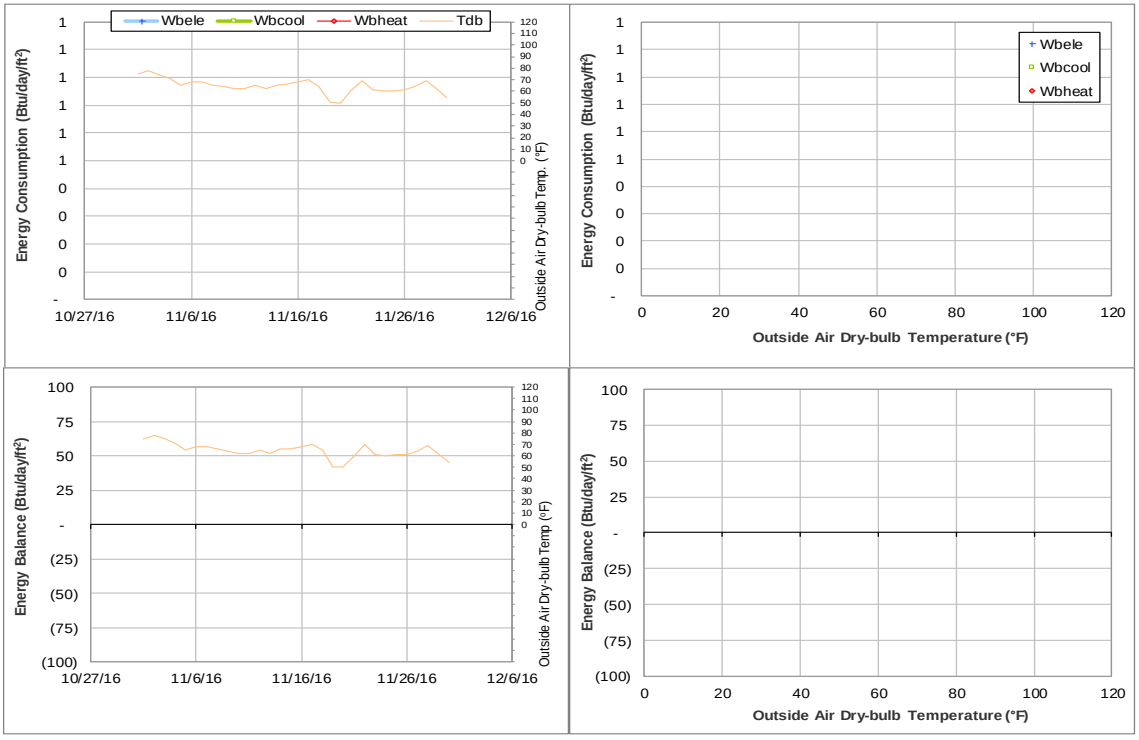


Figure IV-141 University Apartments - The Gardens F TAMU BLDG # 1454 Energy Balance Plot during November 2016

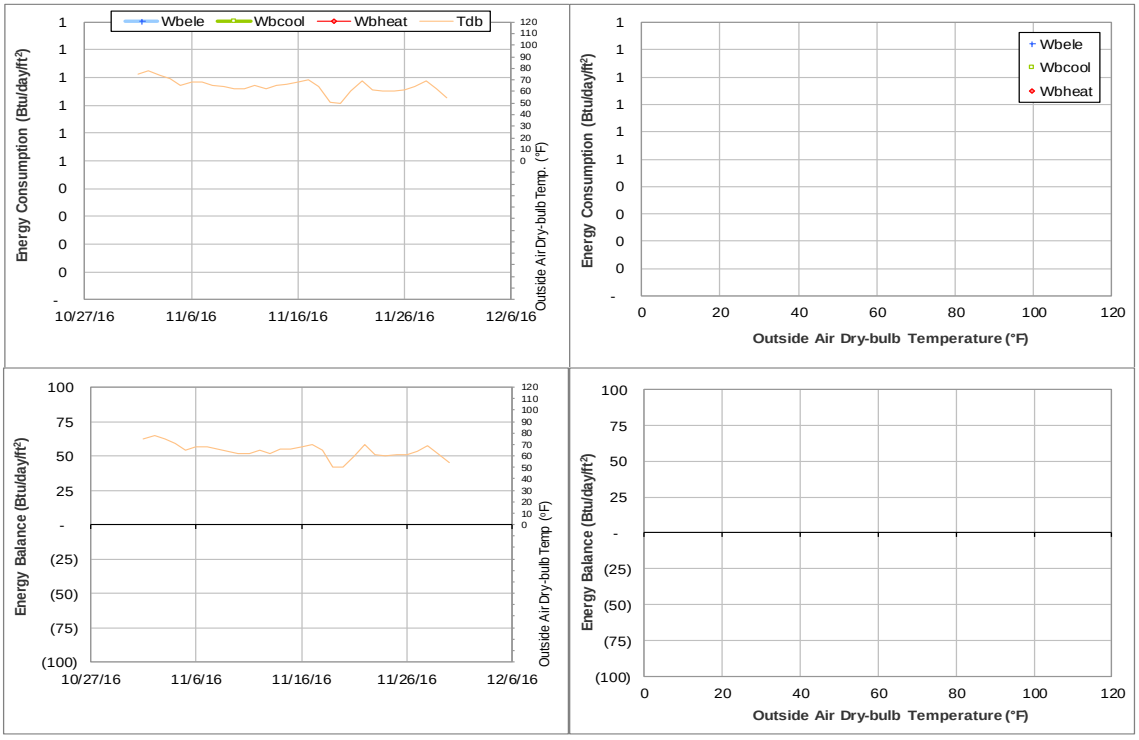


Figure IV-142 University Apartments - The Gardens G TAMU BLDG # 1455 Energy Balance Plot during November 2016

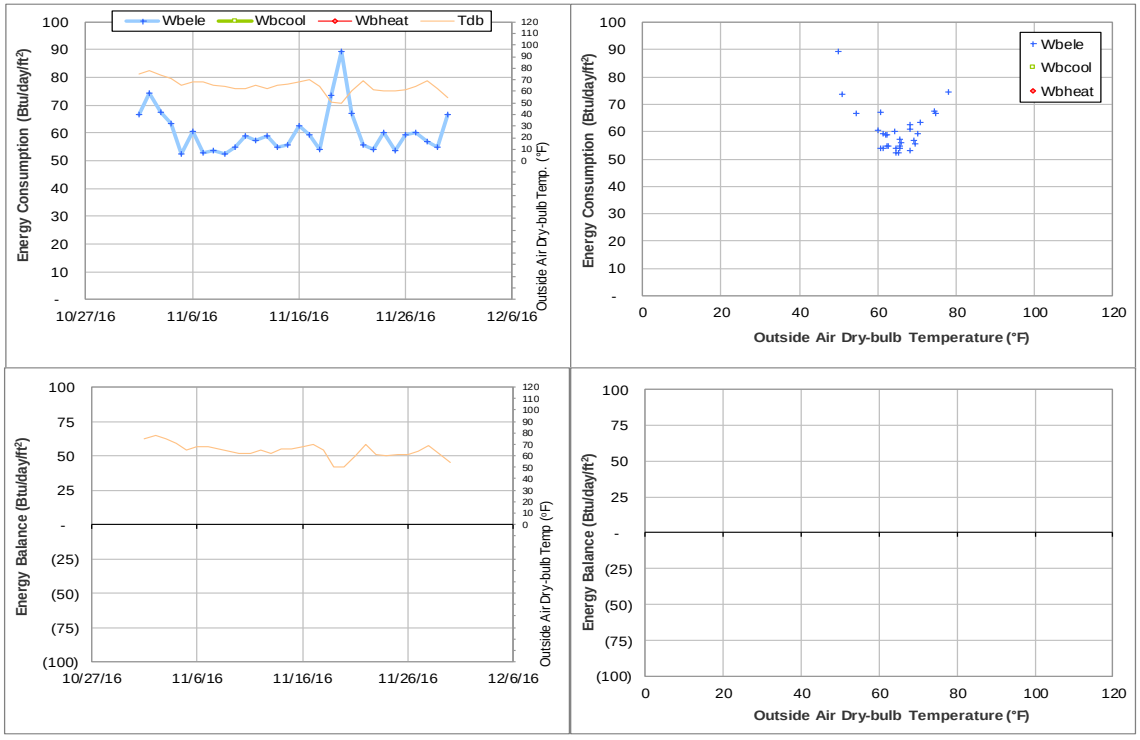


Figure IV-143 University Apartments - The Gardens H TAMU BLDG # 1456 Energy Balance Plot during November 2016

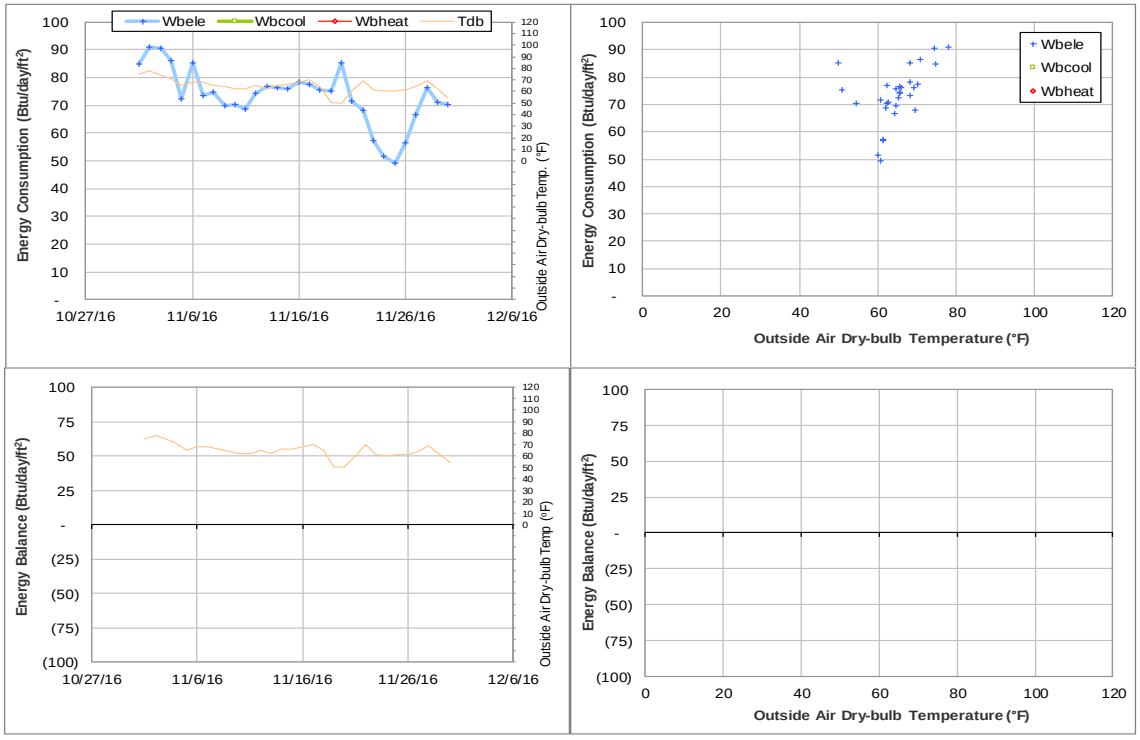


Figure IV-144 University Apartments - The Gardens M TAMU BLDG # 1457 Energy Balance Plot during November 2016

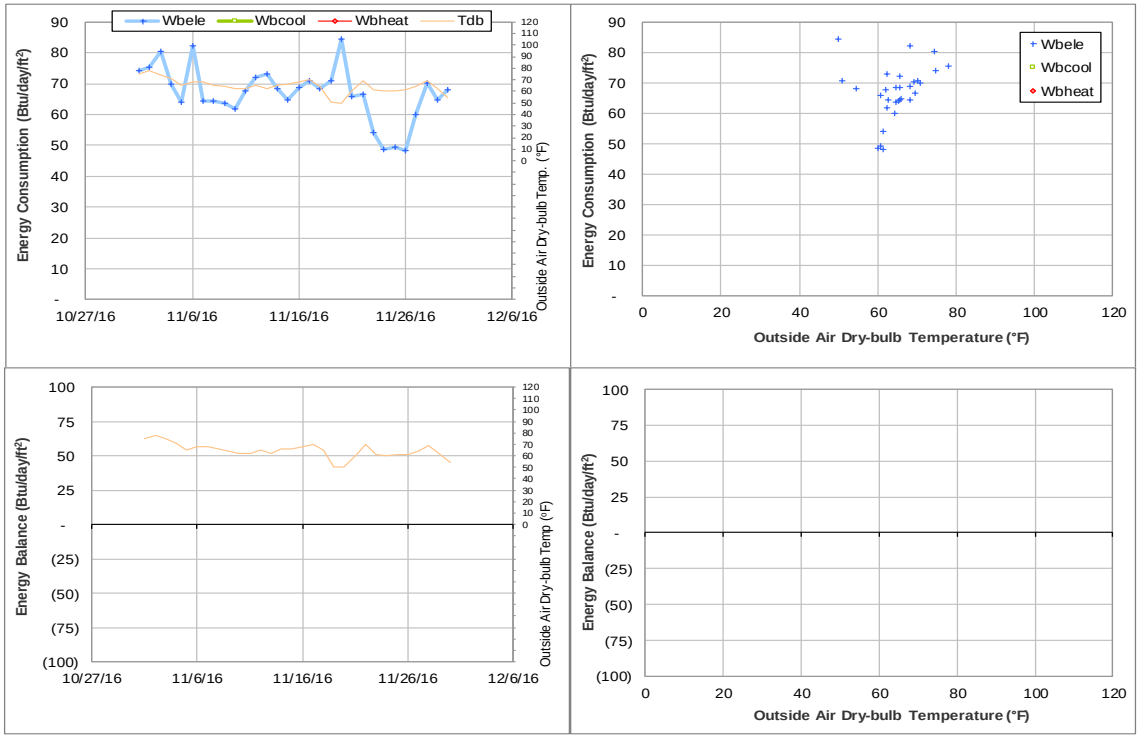


Figure IV-145 University Apartments - The Gardens N TAMU BLDG # 1458 Energy Balance Plot during November 2016

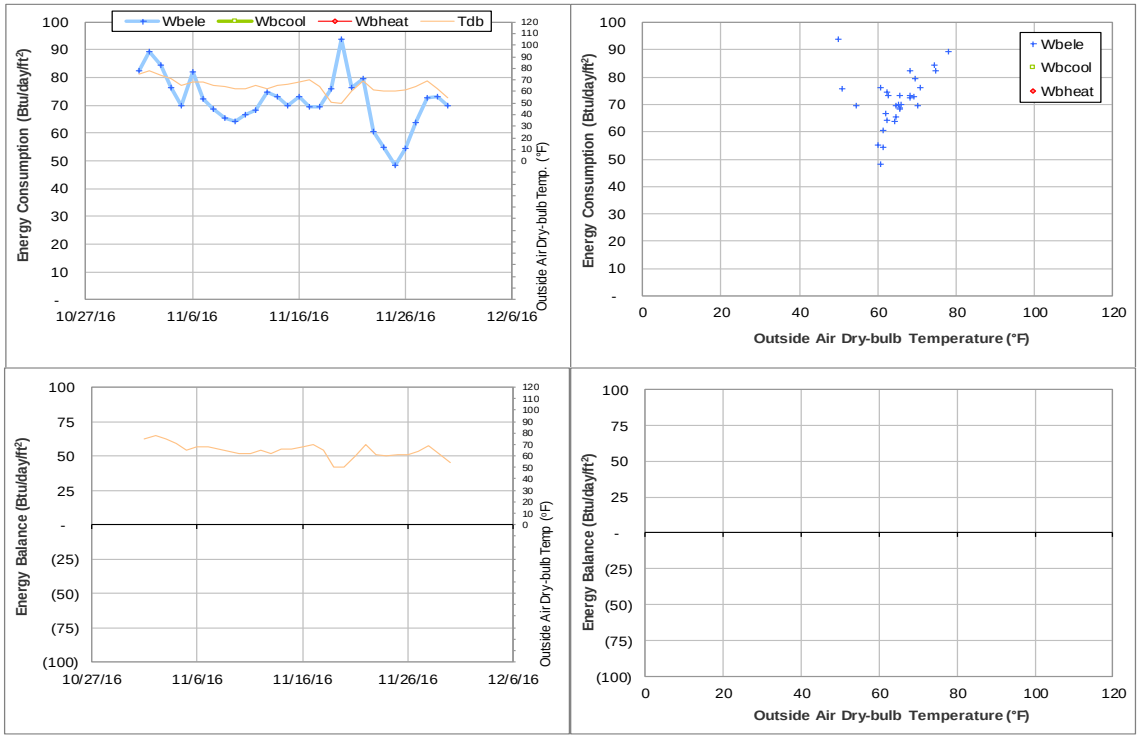


Figure IV-146 University Apartments - The Gardens P TAMU BLDG # 1459 Energy Balance Plot during November 2016

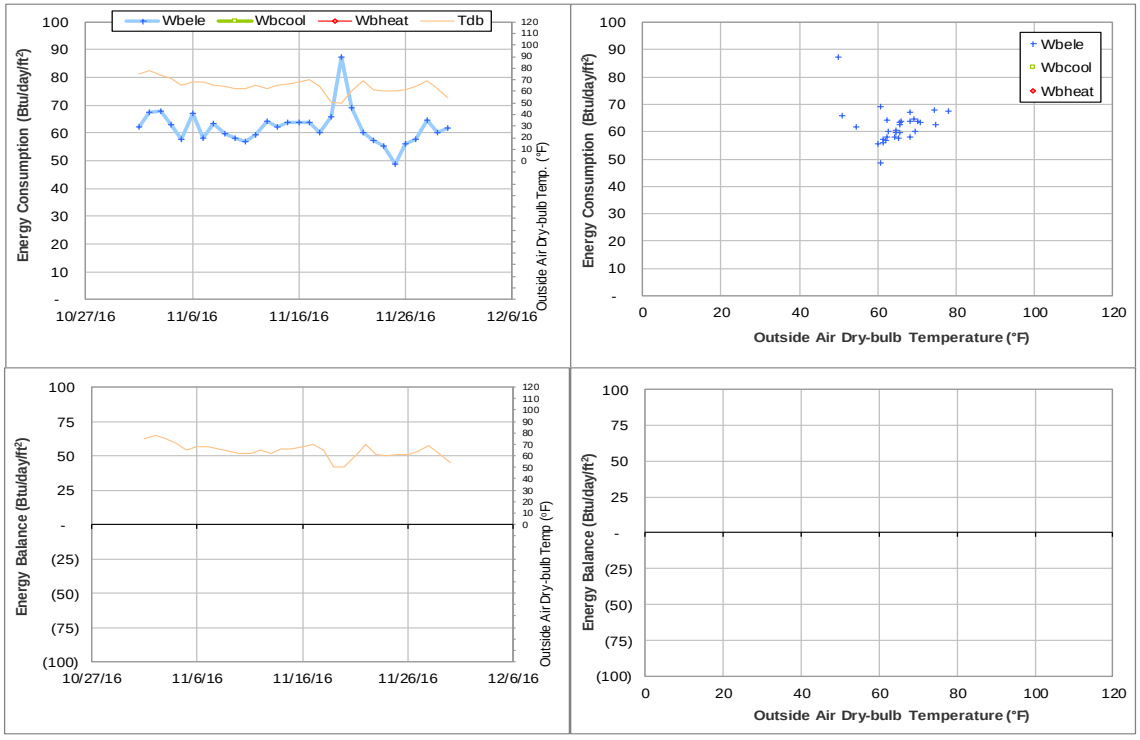


Figure IV-147 University Apartments - The Gardens Q TAMU BLDG # 1460 Energy Balance Plot during November 2016

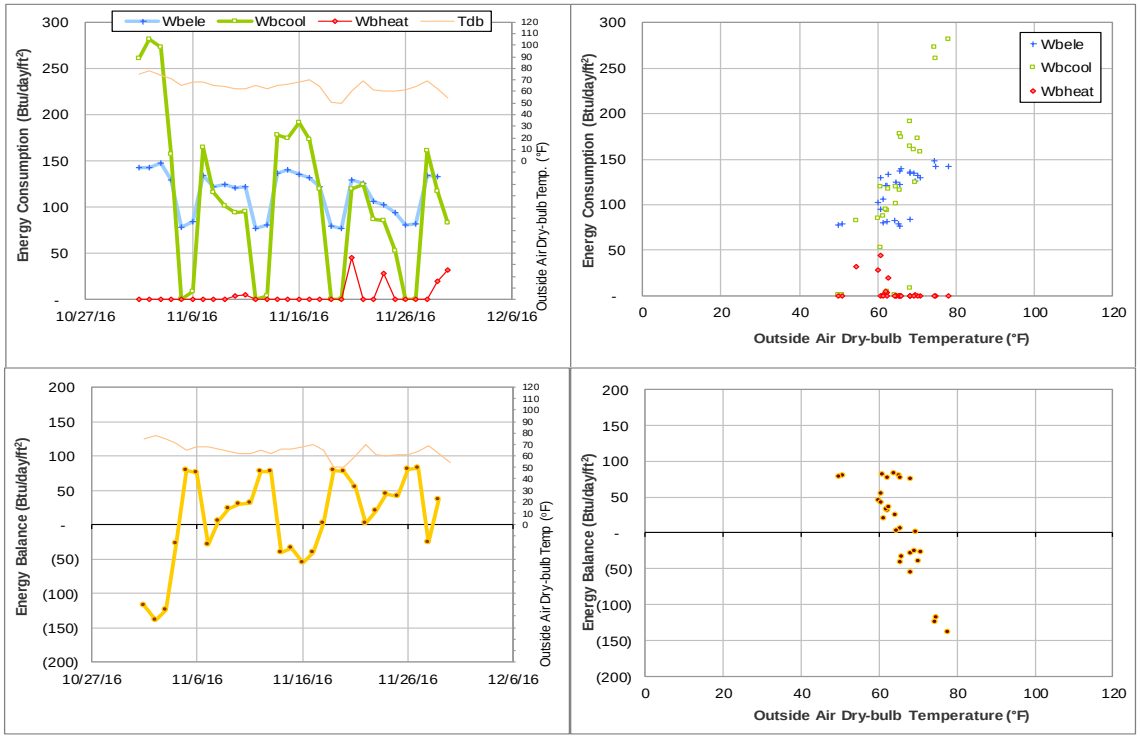


Figure IV-148 Utilities & Energy Services Business Office TAMU BLDG # 1497 Energy Balance Plot during November 2016

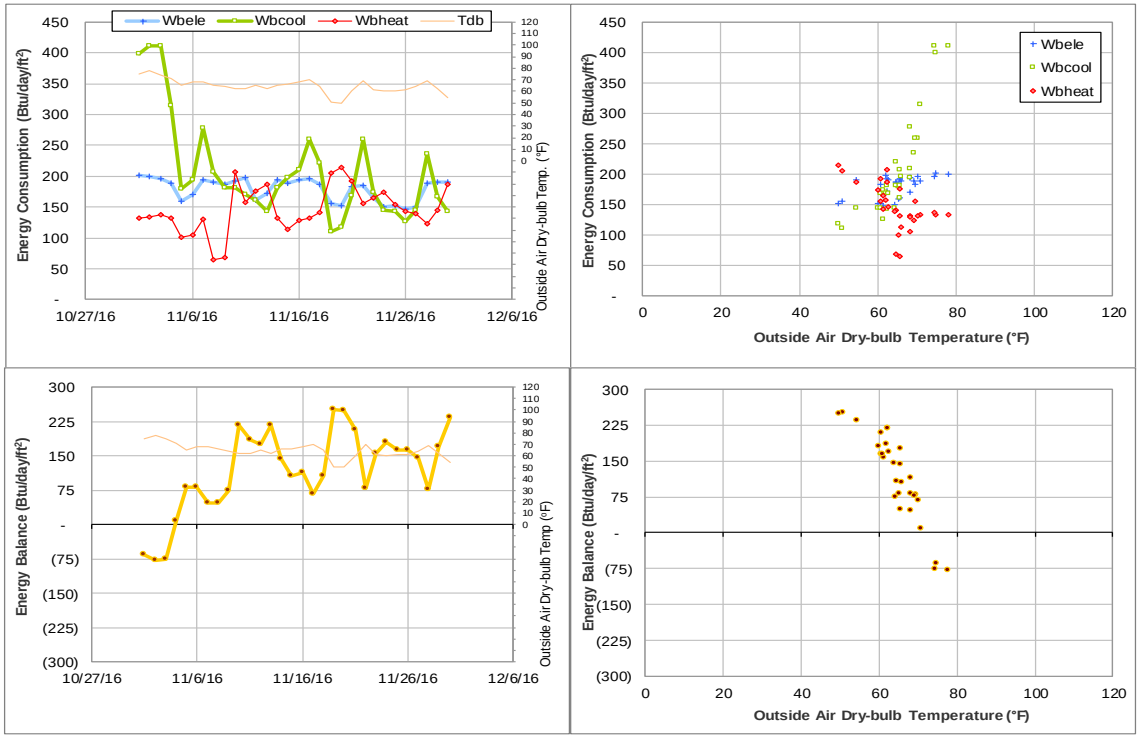


Figure IV-149 Kleberg Center TAMU BLDG # 1501 Energy Balance Plot during November 2016

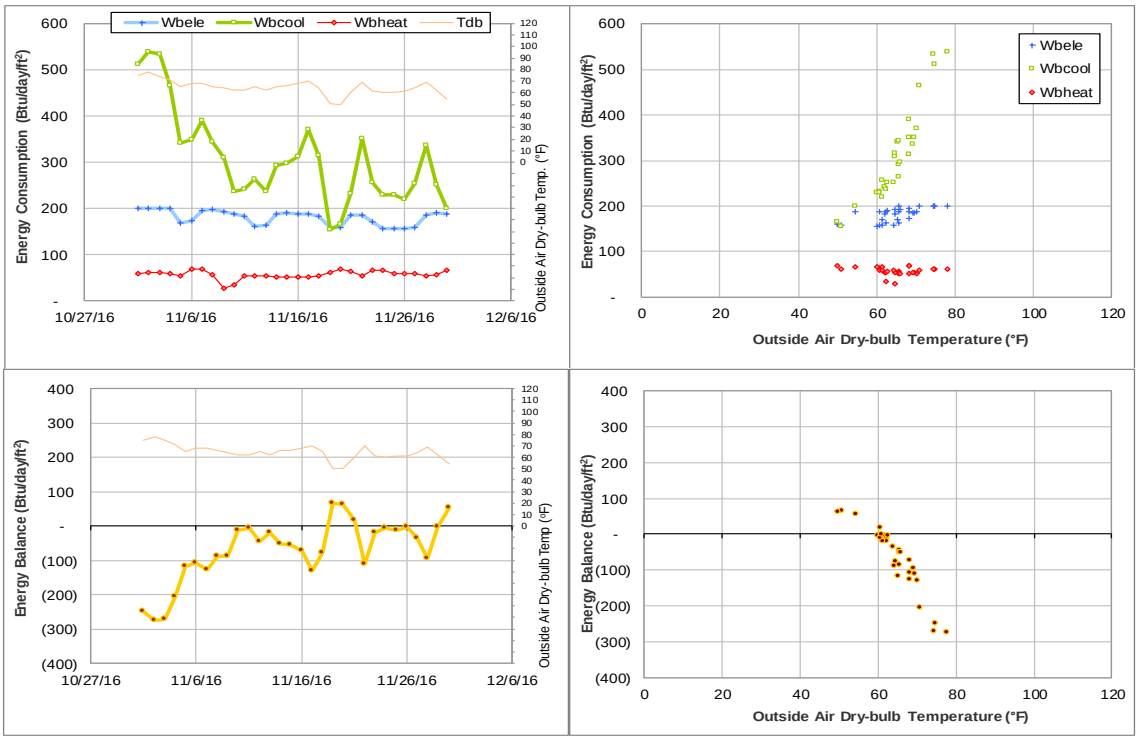


Figure IV-150 Heep Center TAMU BLDG # 1502 Energy Balance Plot during November 2016

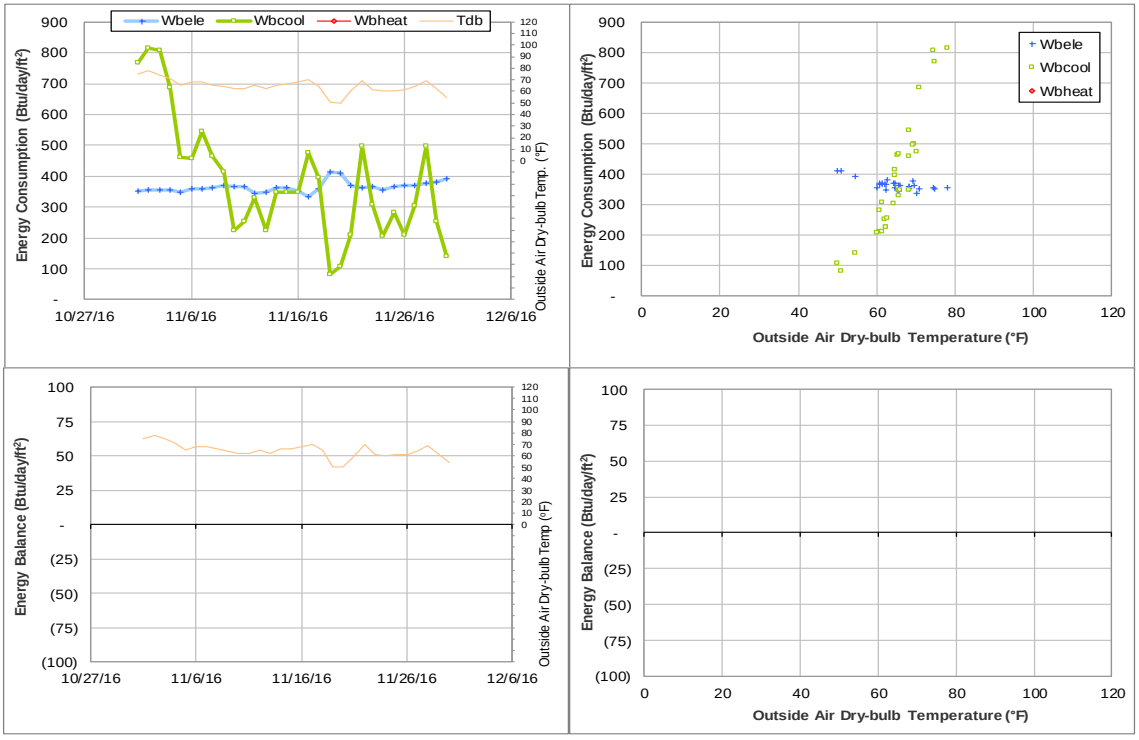


Figure IV-151 Cater-Mattil Hall TAMU BLDG # 1503 Energy Balance Plot during November 2016

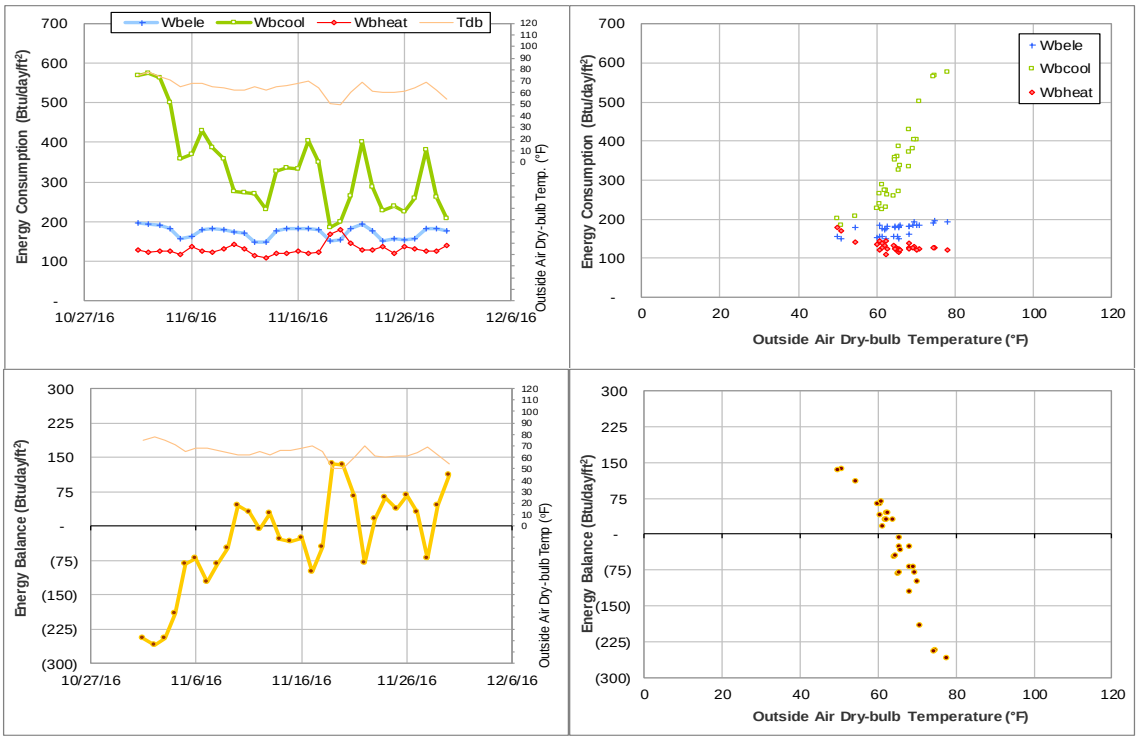


Figure IV-152 Reynolds Medical Sciences Building TAMU BLDG # 1504 Energy Balance Plot during November 2016

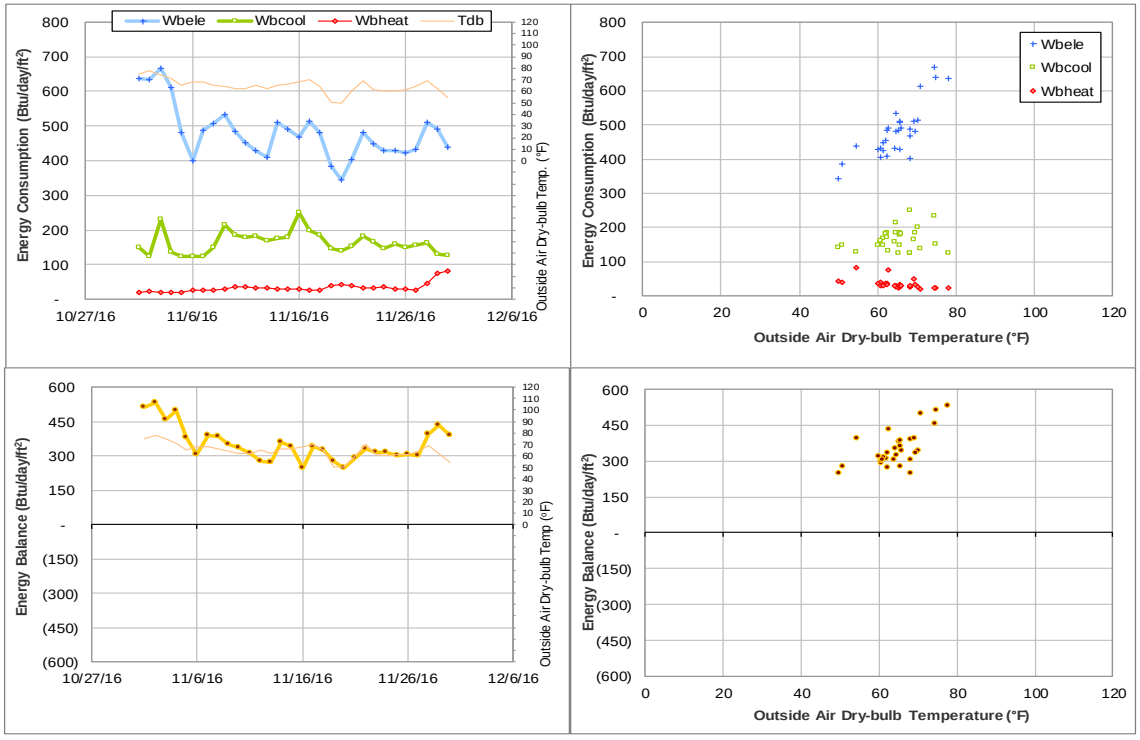


Figure IV-153 Rosenthal Meat Science & Technology Center TAMU BLDG # 1505 Energy Balance Plot during November 2016

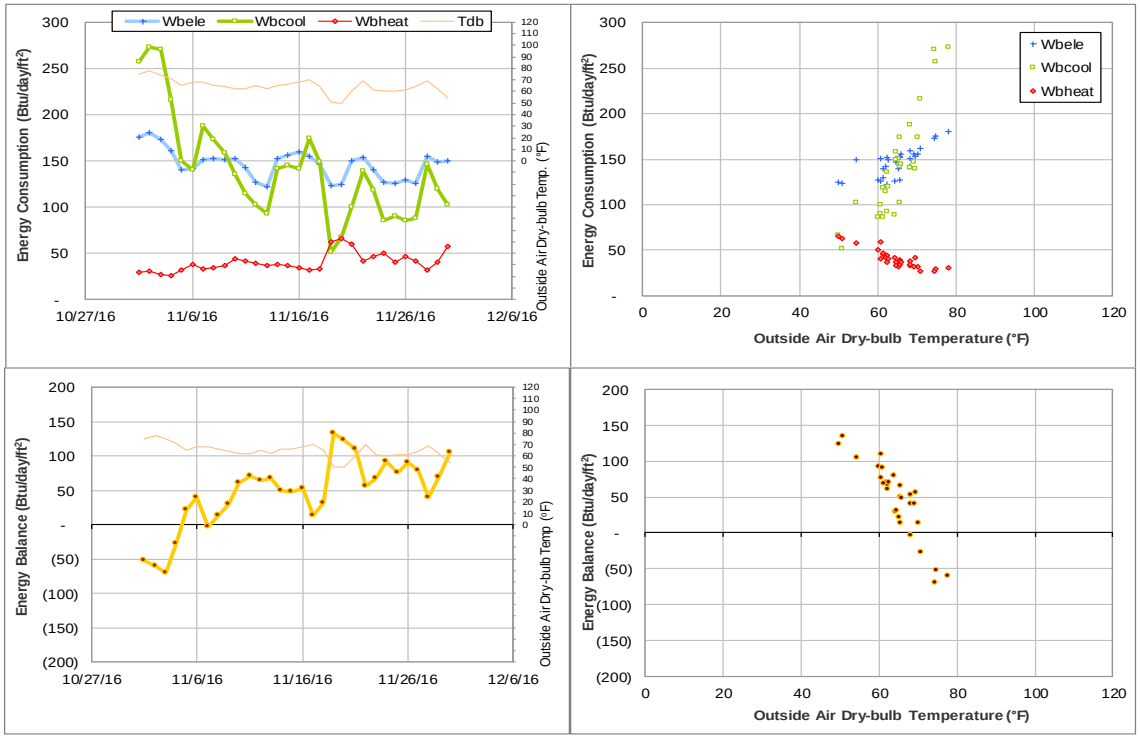


Figure IV-154 Horticulture-Forest Science Building TAMU BLDG # 1506 Energy Balance Plot during November 2016

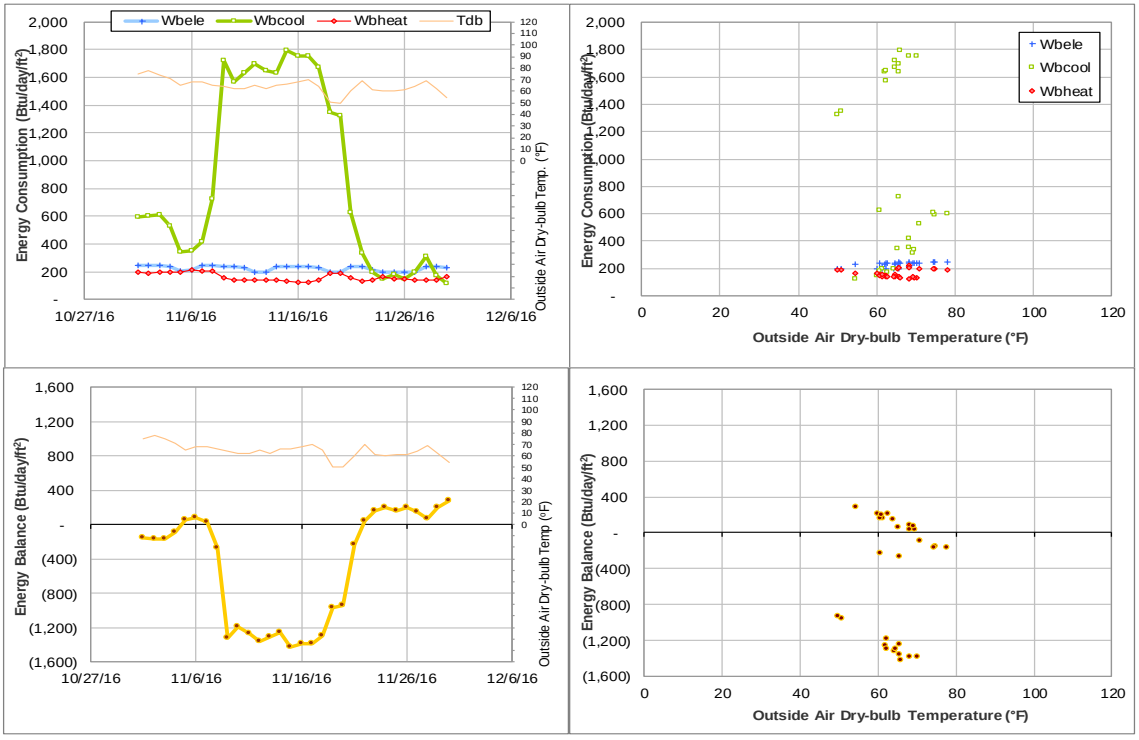


Figure IV-155 Biochemistry-Biophysics Building TAMU BLDG # 1507 Energy Balance Plot during November 2016

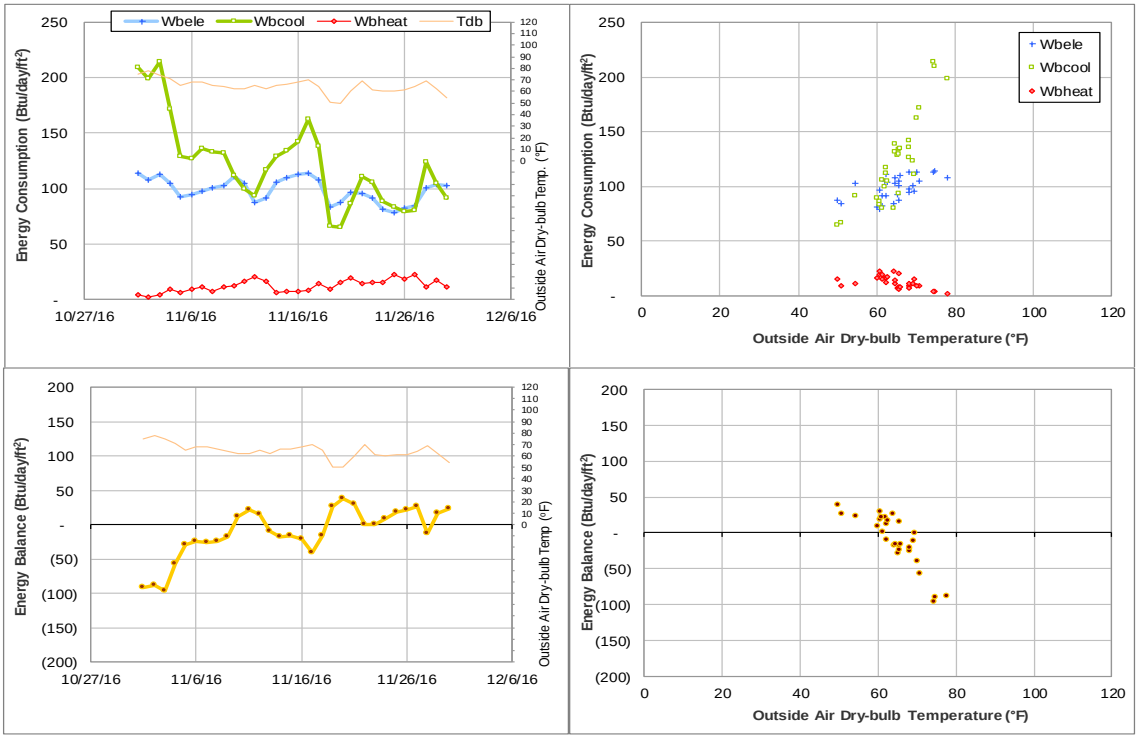


Figure IV-156 Price Hobgood Ag. Engineering Research Lab TAMU BLDG # 1508 Energy Balance Plot during November 2016

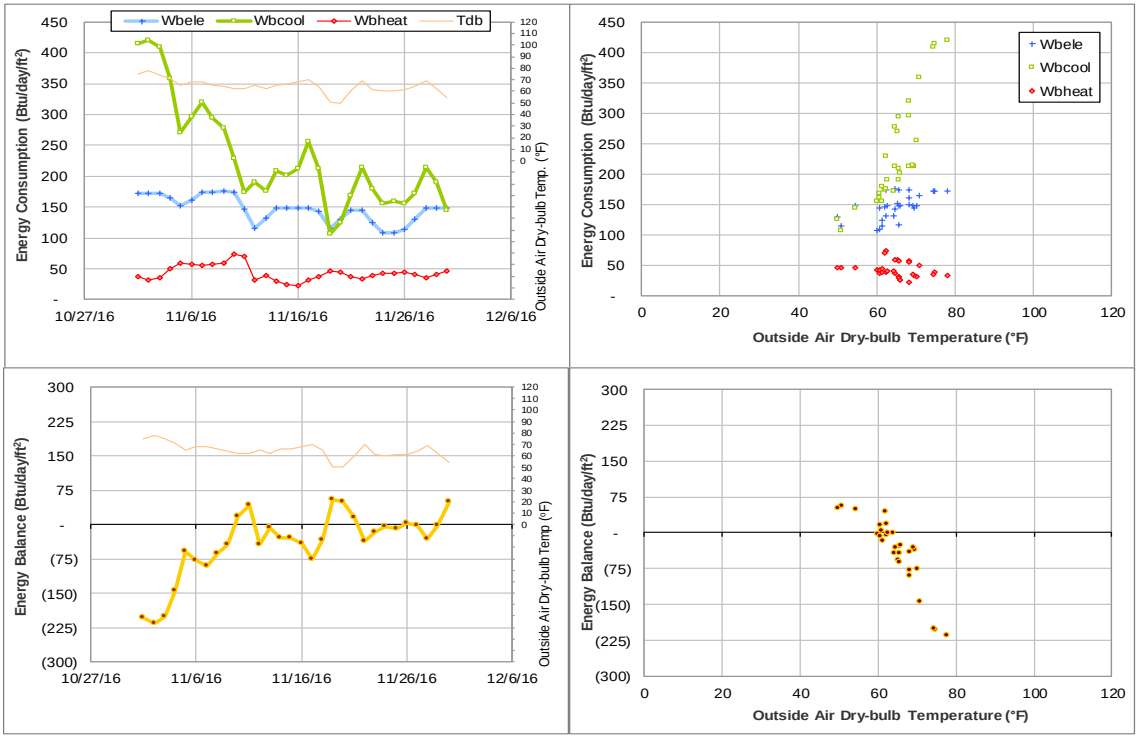


Figure IV-157 Medical Sciences Library TAMU BLDG # 1509 Energy Balance Plot during November 2016

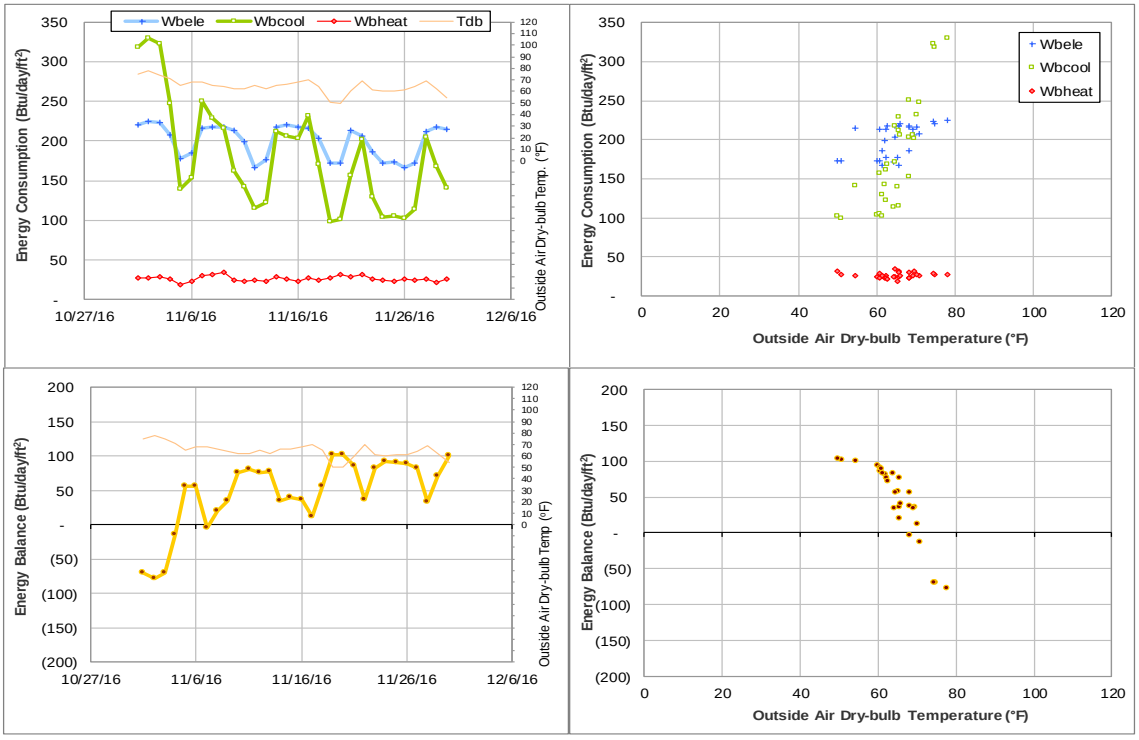


Figure IV-158 Wehner Building TAMU BLDG # 1510 Energy Balance Plot during November 2016

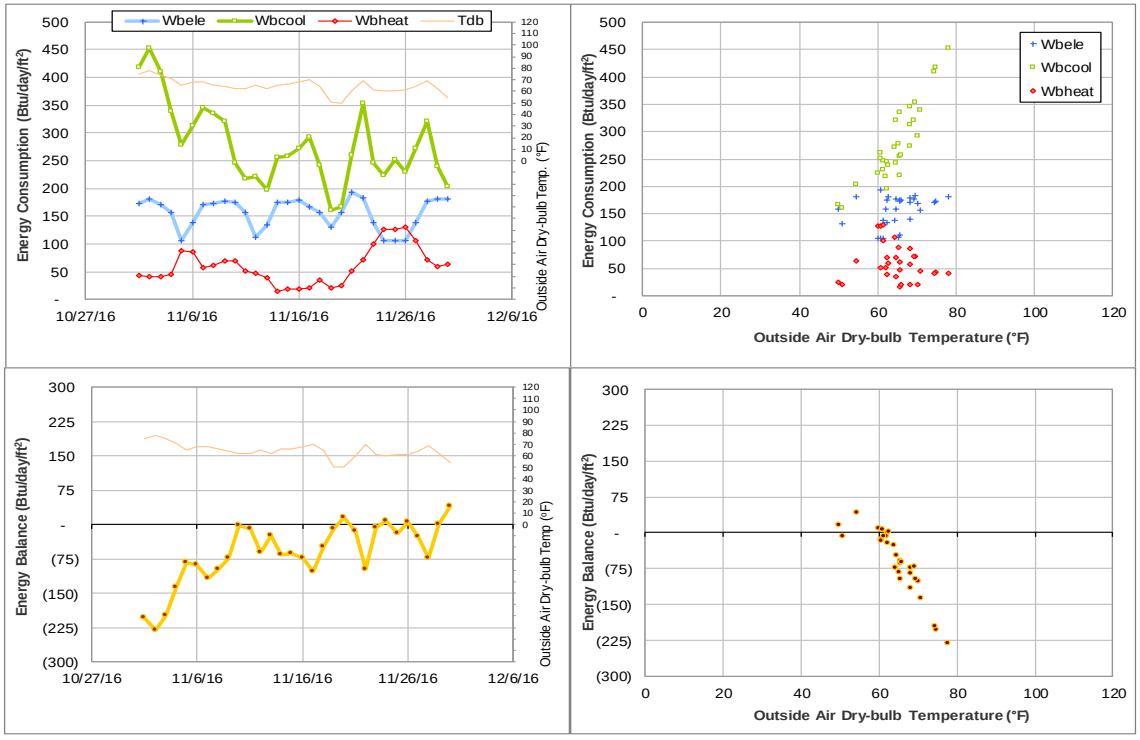


Figure IV-159 West Campus Library Facility TAMU BLDG # 1511 Energy Balance Plot during November 2016

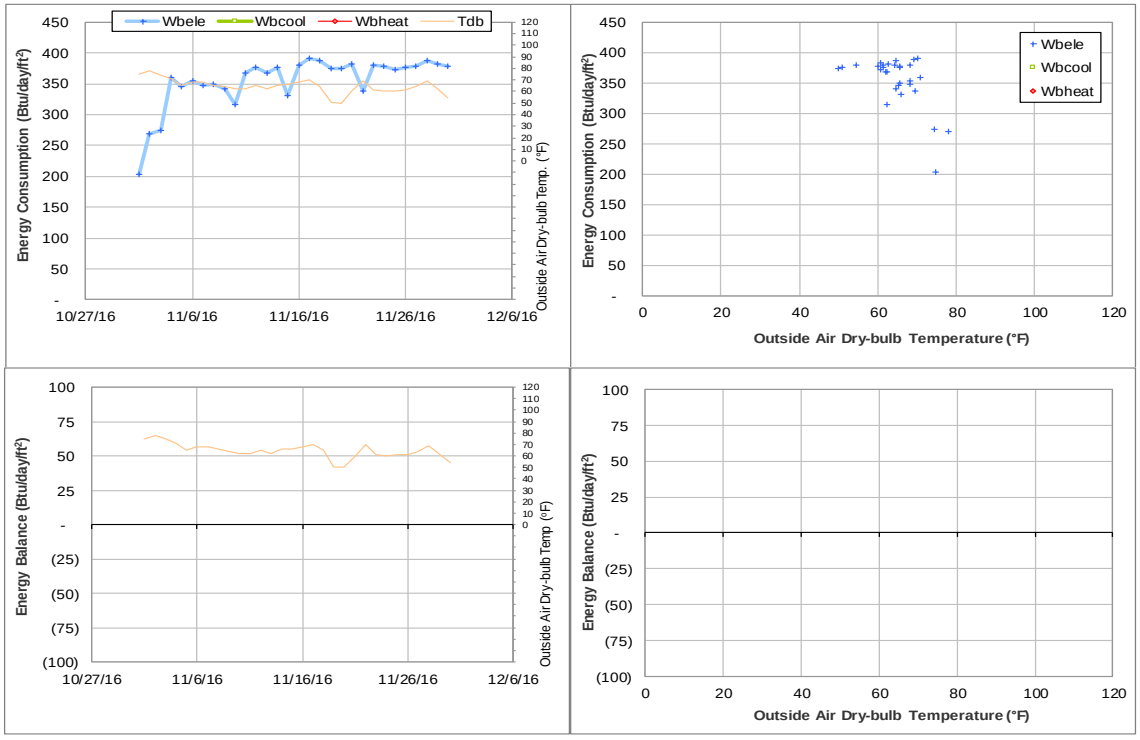


Figure IV-160 Southern Crop Improvement Greenhouse TAMU BLDG # 1512 Energy Balance Plot during November 2016

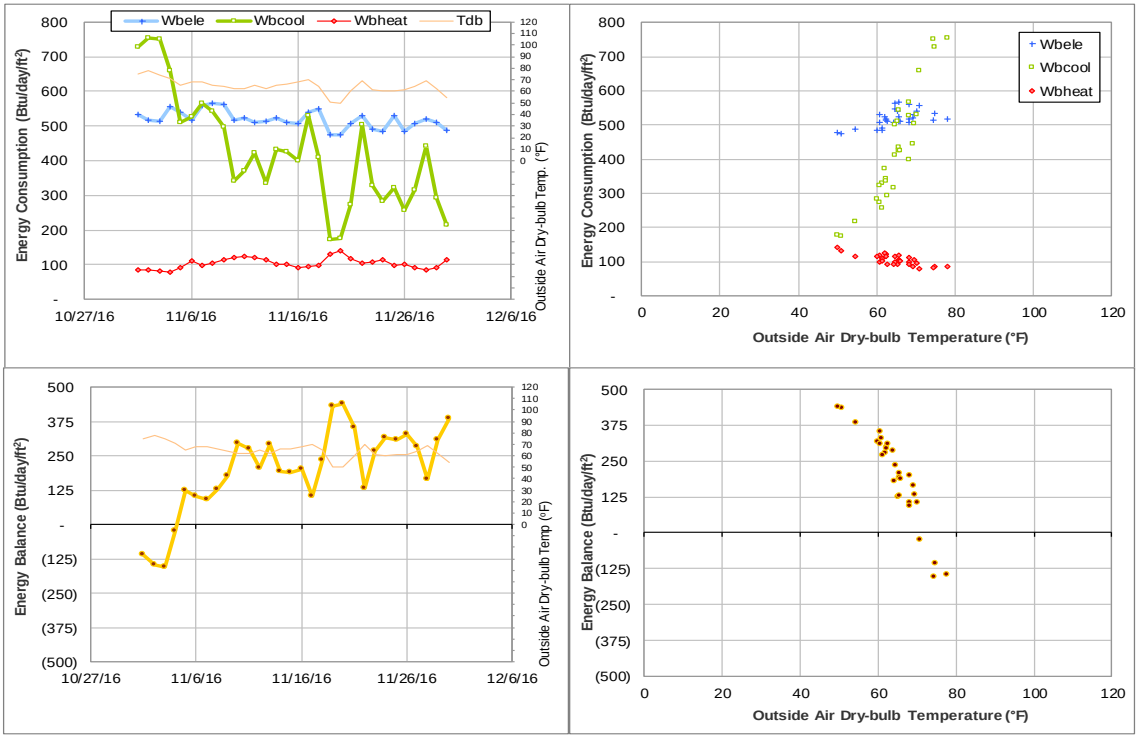


Figure IV-161 Borlaug Center for Southern Crop Improvement TAMU BLDG # 1513 Energy Balance Plot during November 2016

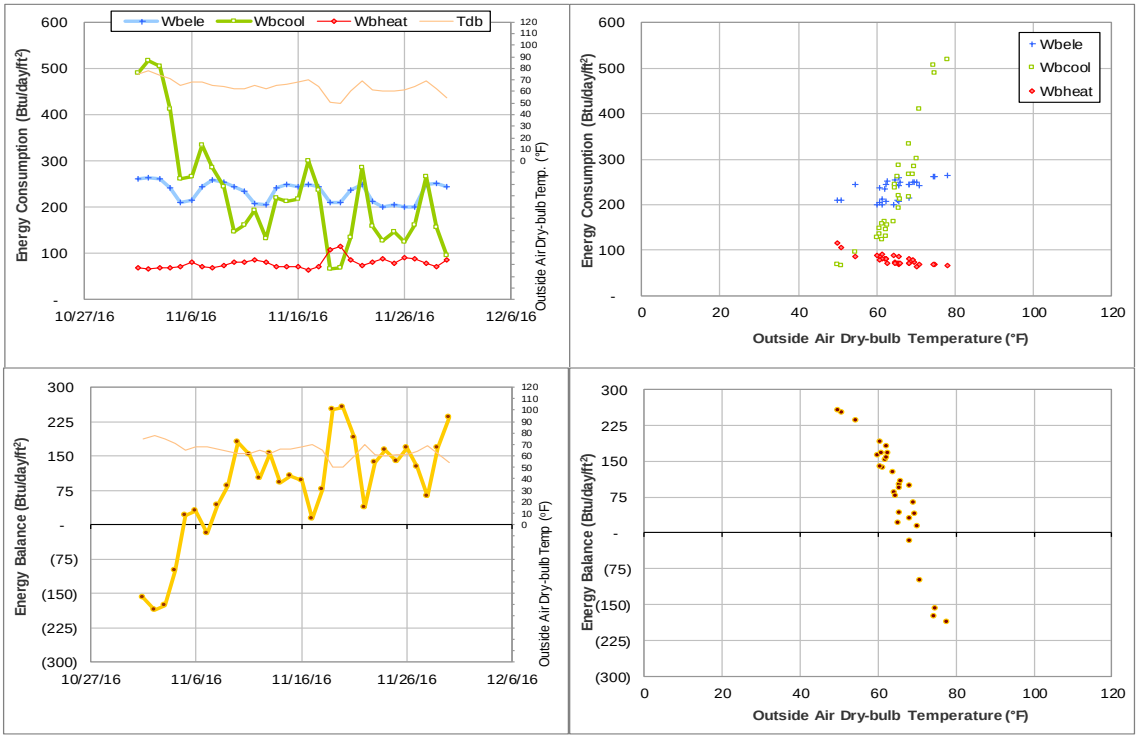


Figure IV-162 TX School of Rural Public Health TAMU BLDG # 1518 Energy Balance Plot during November 2016

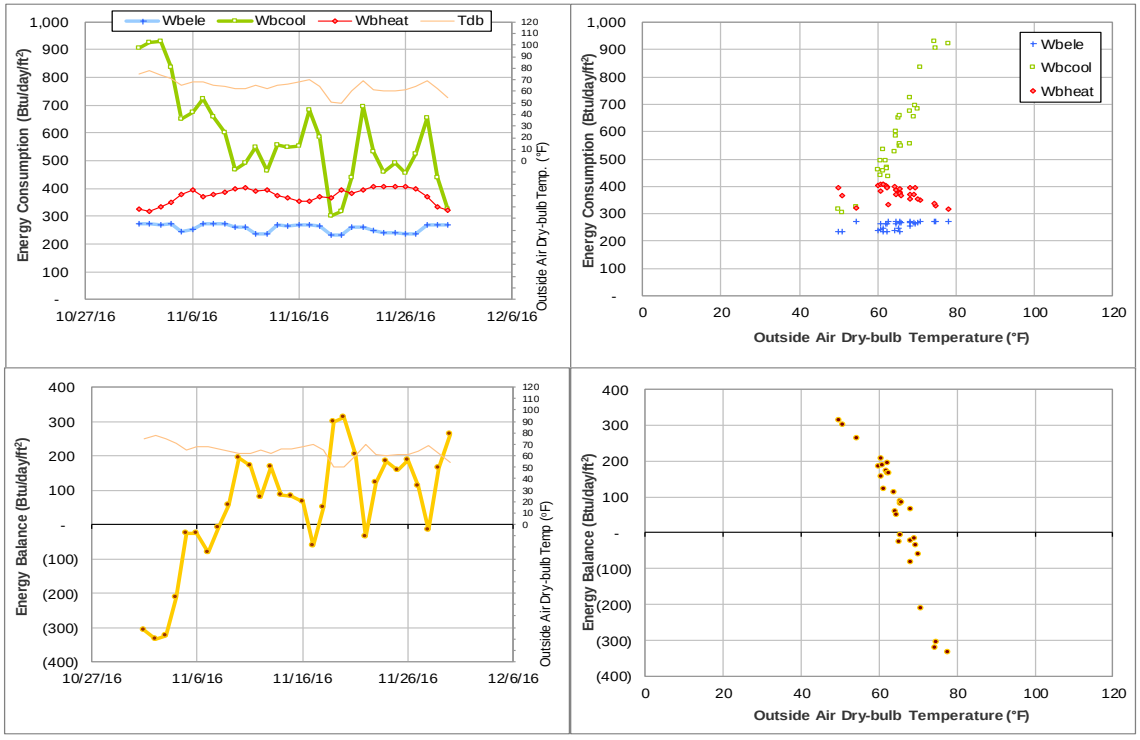


Figure IV-163 Nuclear Magnetic Resonance Facility TAMU BLDG # 1525 Energy Balance Plot during November 2016

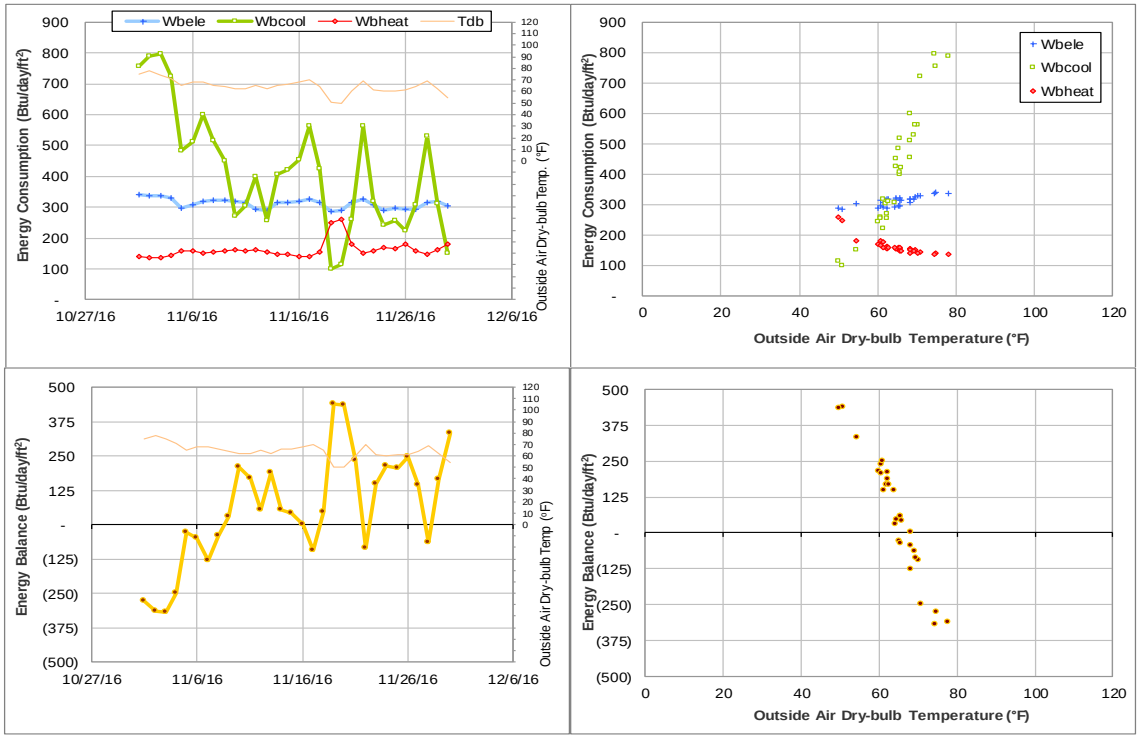


Figure IV-164 Interdisciplinary Life Sciences Building TAMU BLDG # 1530 Energy Balance Plot during November 2016

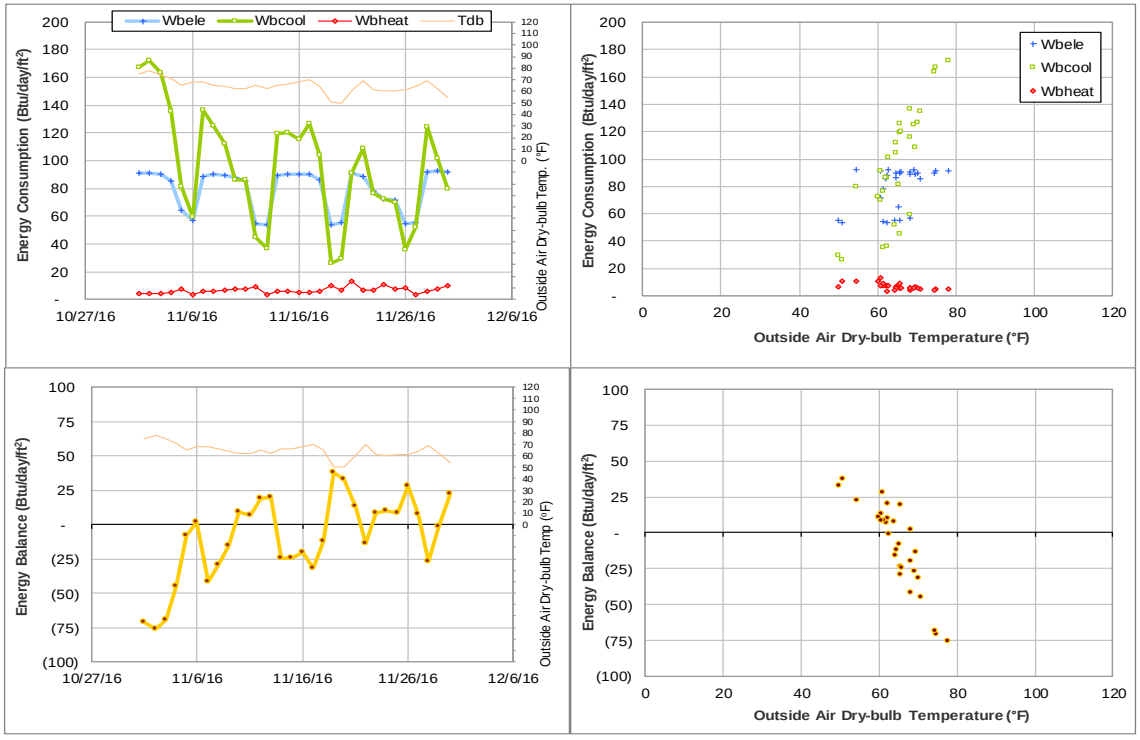


Figure IV-165 Agriculture and Life Sciences Building TAMU BLDG # 1535 Energy Balance Plot during November 2016

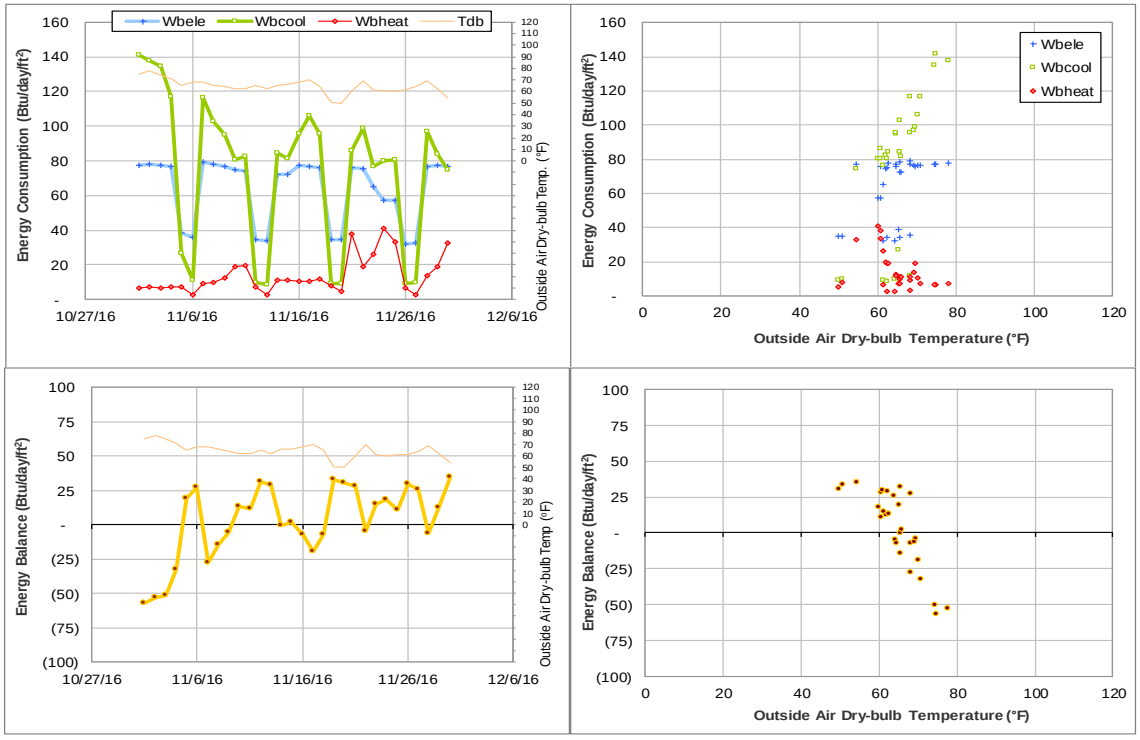


Figure IV-166 AgriLife Services Building TAMU BLDG # 1536 Energy Balance Plot during November 2016

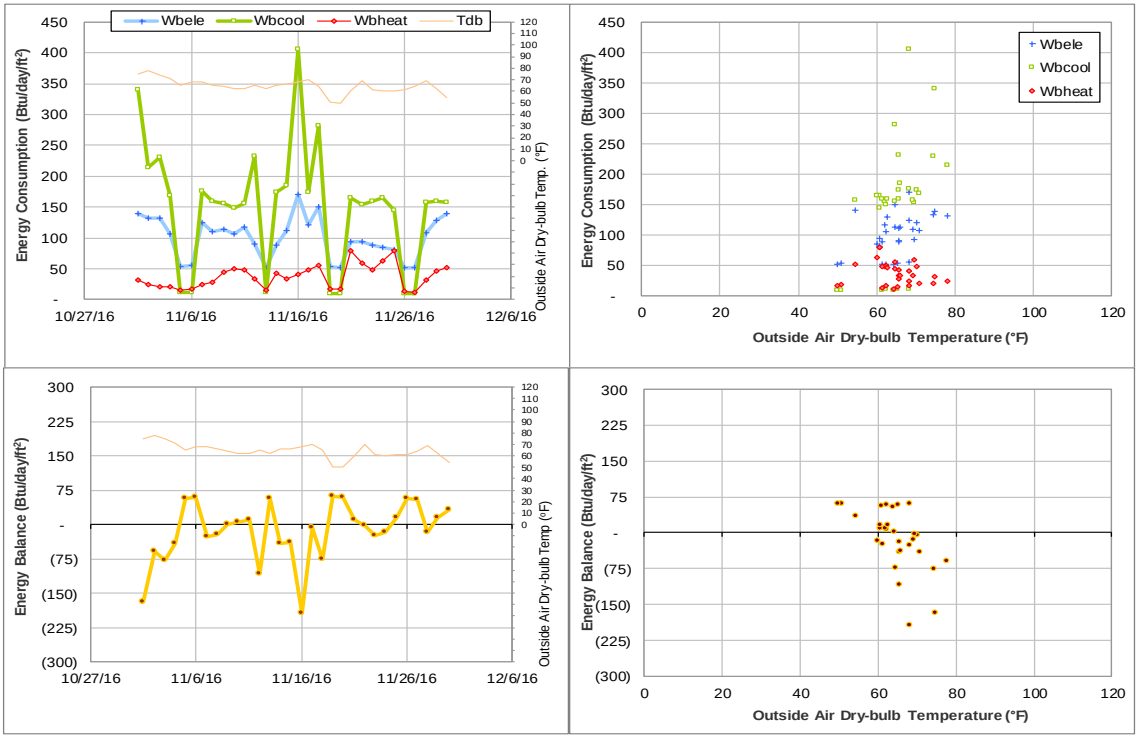


Figure IV-167 Agriculture Program Visitors Center TAMU BLDG # 1538 Energy Balance Plot during November 2016

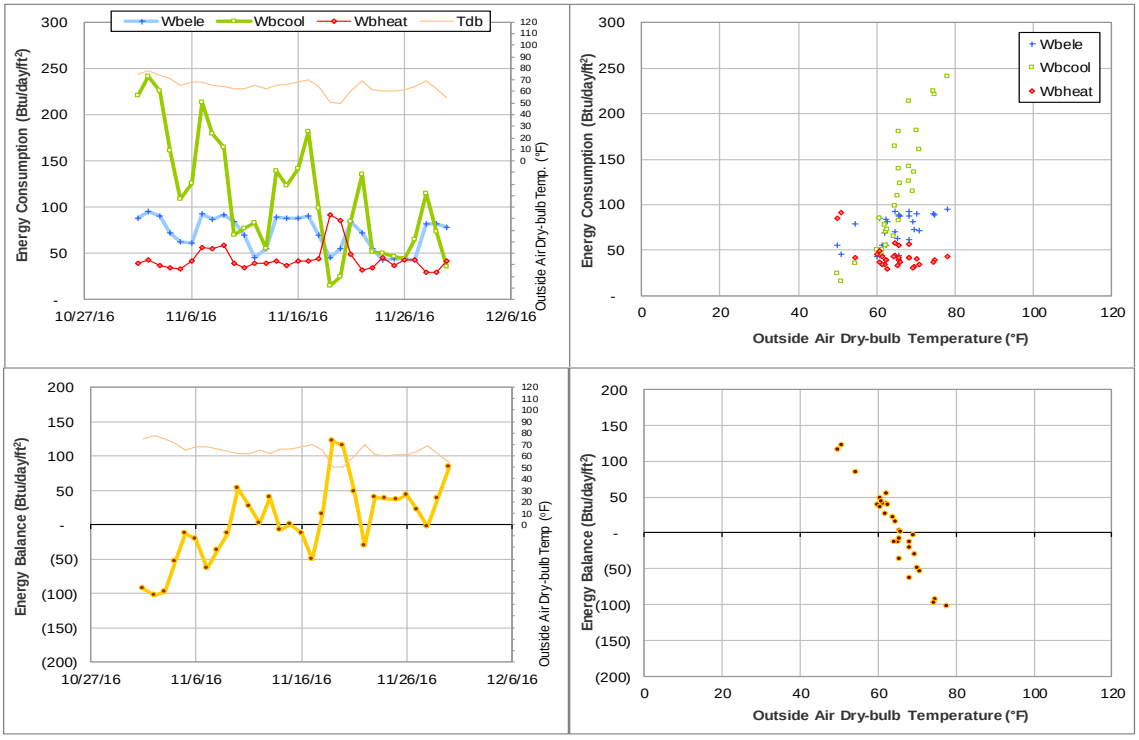


Figure IV-168 Physical Education Activity Program Building TAMU BLDG # 1540 Energy Balance Plot during November 2016

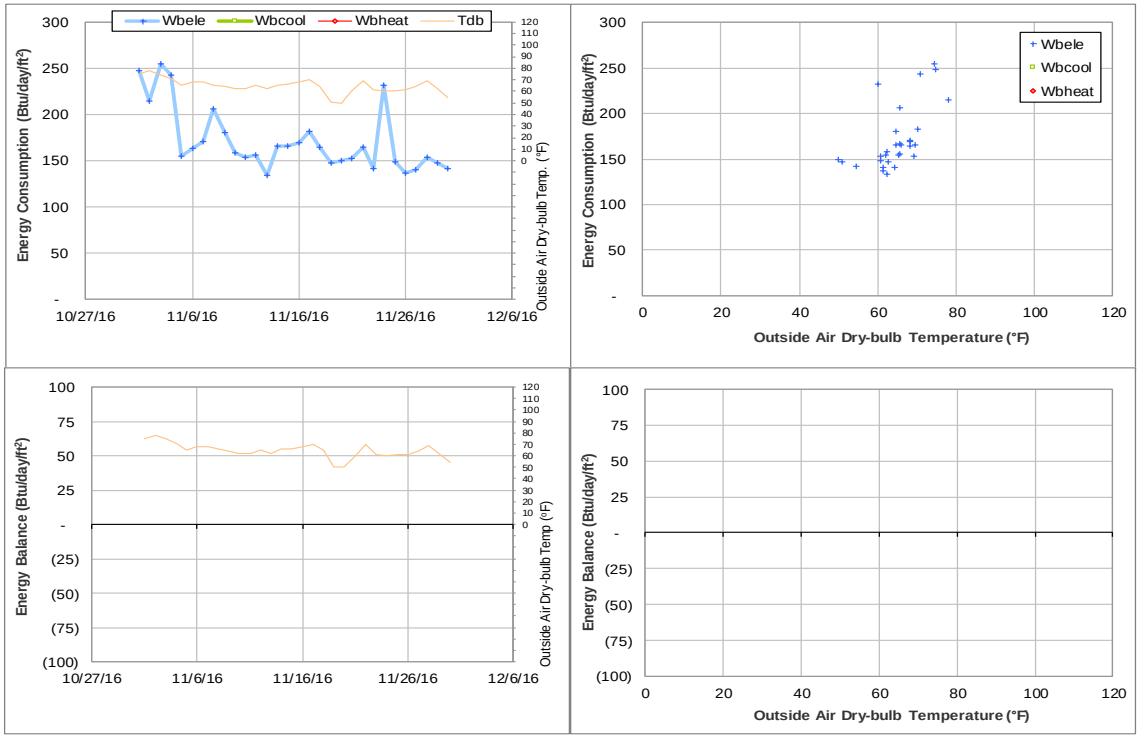


Figure IV-169 Olsen Field at Bluebell Park TAMU BLDG # 1550 Energy Balance Plot during November 2016

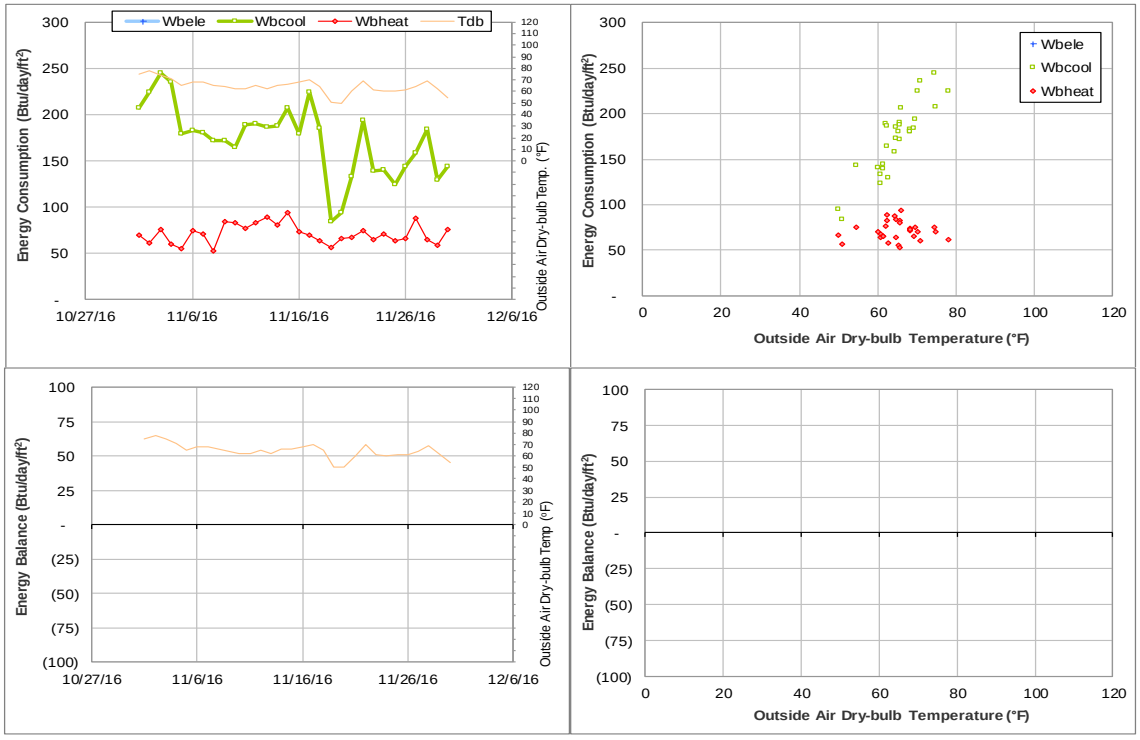


Figure IV-170 Reed Arena and Cox-McFerrin Center TAMU BLDG # 1554 and 1558 Energy Balance Plot during November 2016

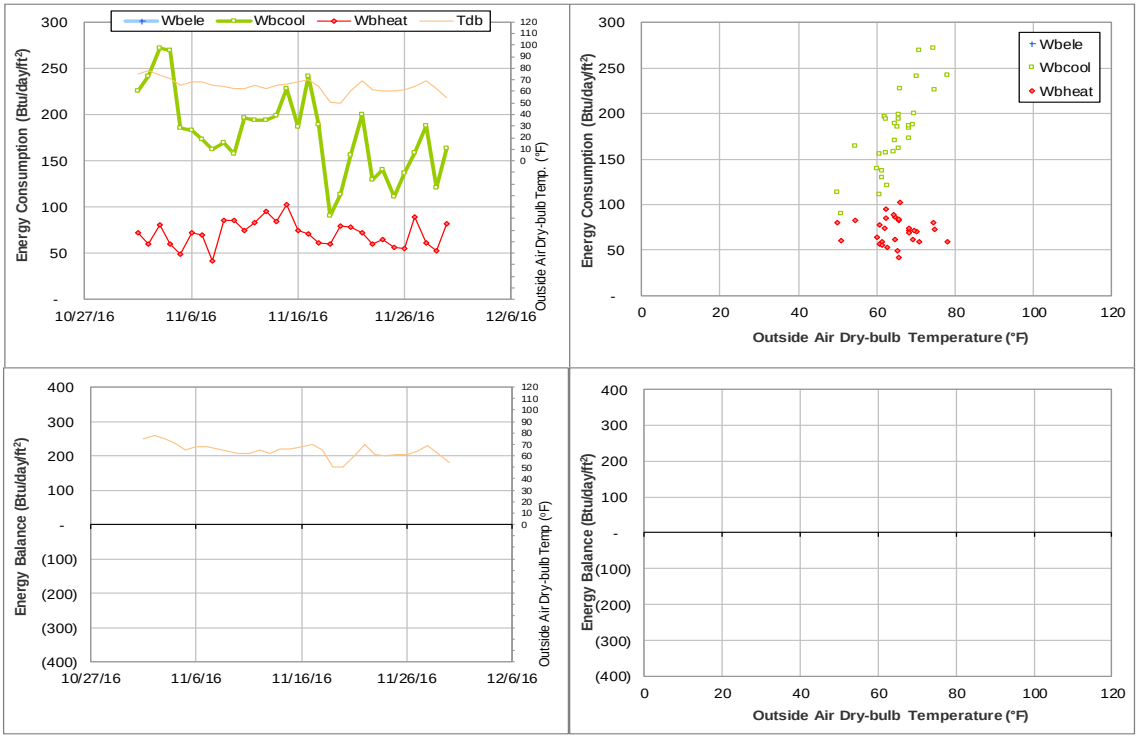


Figure IV-171 Reed Arena TAMU BLDG # 1554 Energy Balance Plot during November 2016

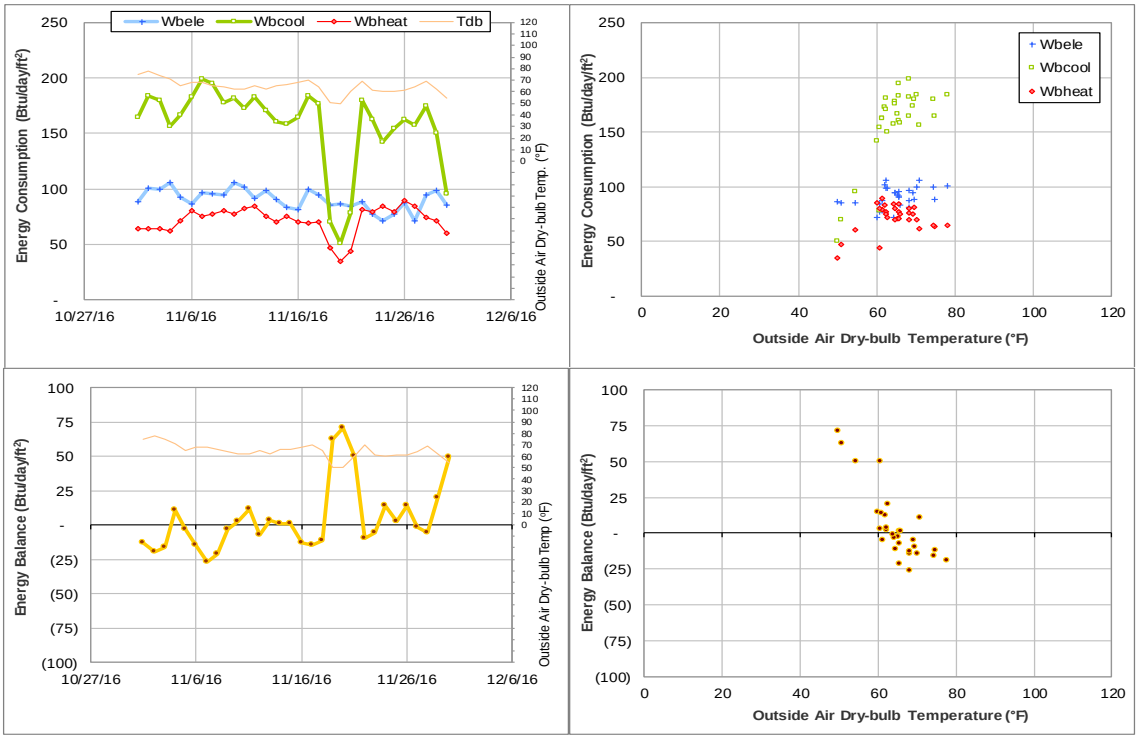


Figure IV-172 Cox-McFerrin Center for Aggie Basketball TAMU BLDG # 1558 Energy Balance Plot during November 2016

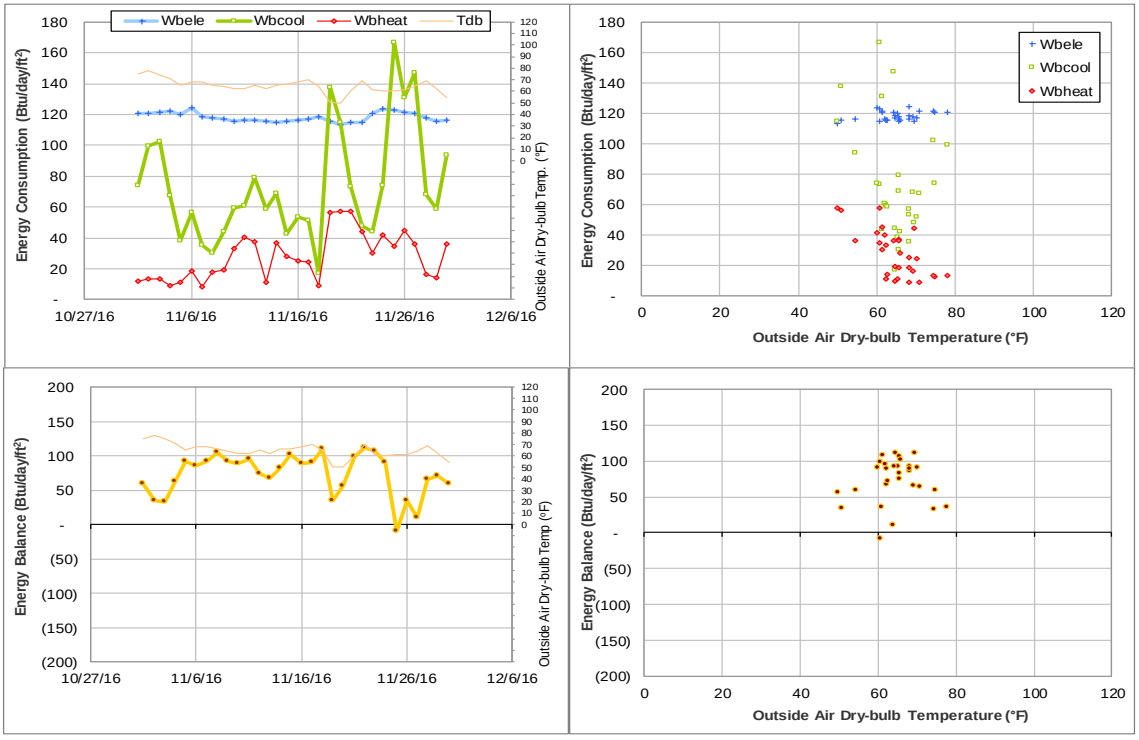


Figure IV-173 West Campus Parking Garage TAMU BLDG # 1559 Energy Balance Plot during November 2016

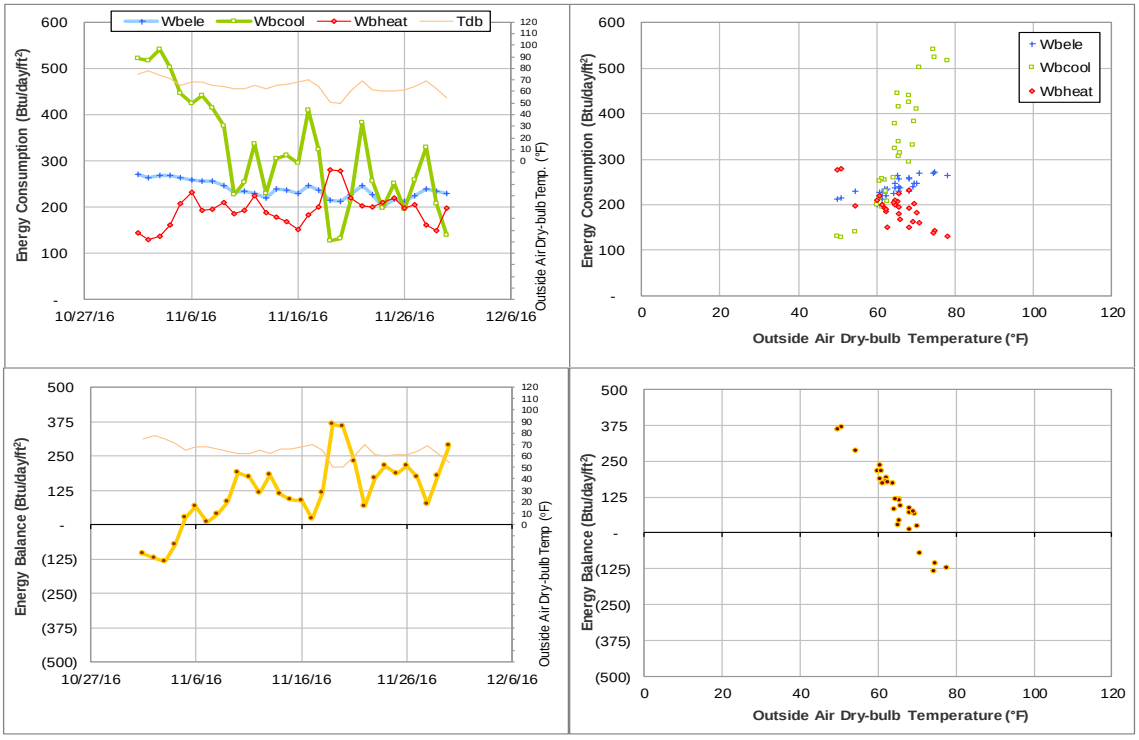


Figure IV-174 Student Recreation Center TAMU BLDG # 1560 Energy Balance Plot during November 2016

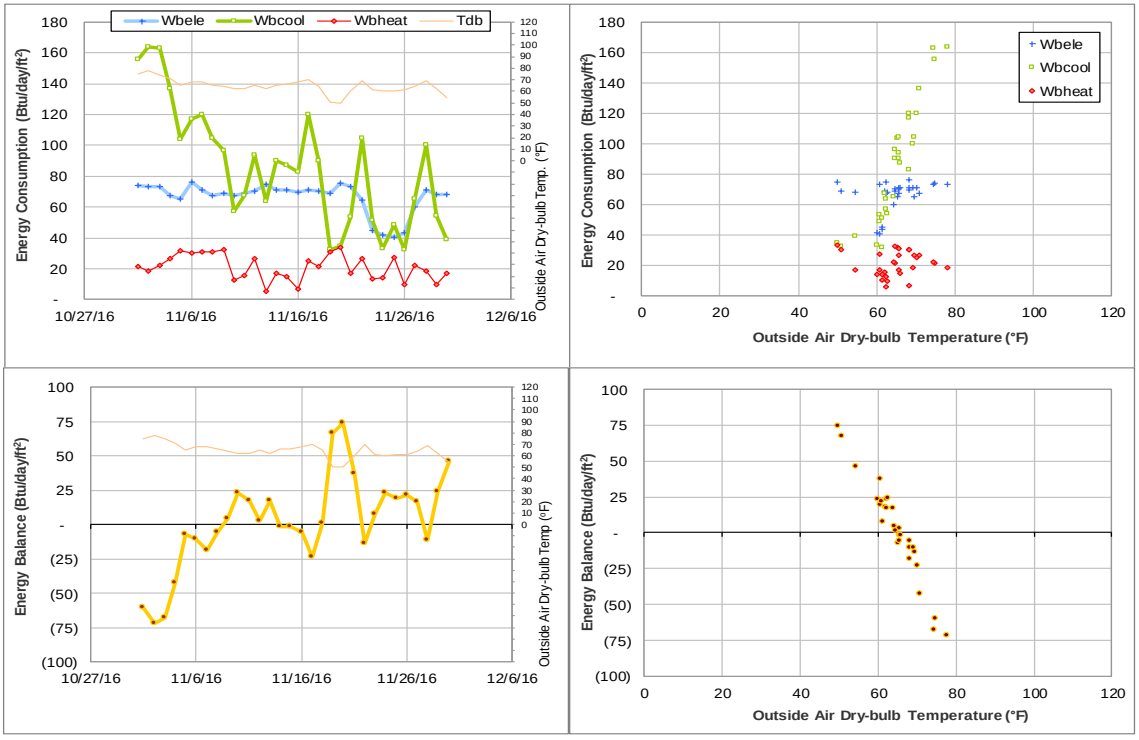


Figure IV-175 White Creek Apartment 1 and White Creek Apts Activity Center TAMU BLDG # 1589 Energy Balance Plot during November 2016

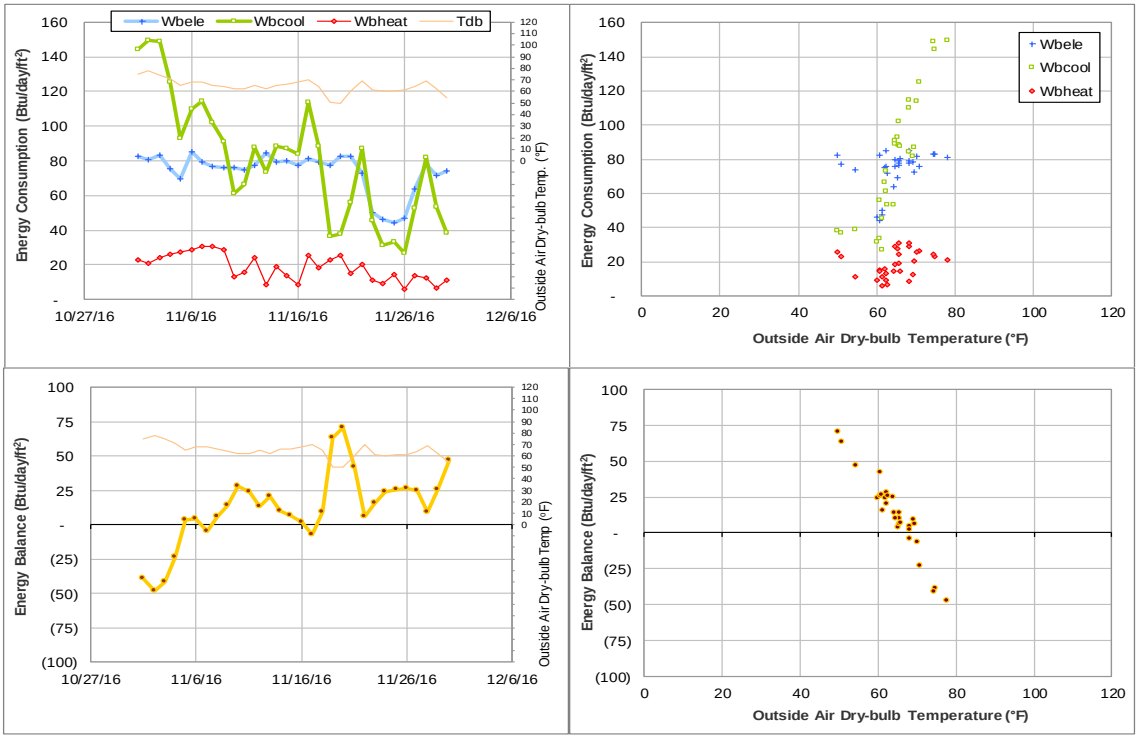


Figure IV-176 White Creek Apartment 2 TAMU BLDG # 1591 Energy Balance Plot during November 2016

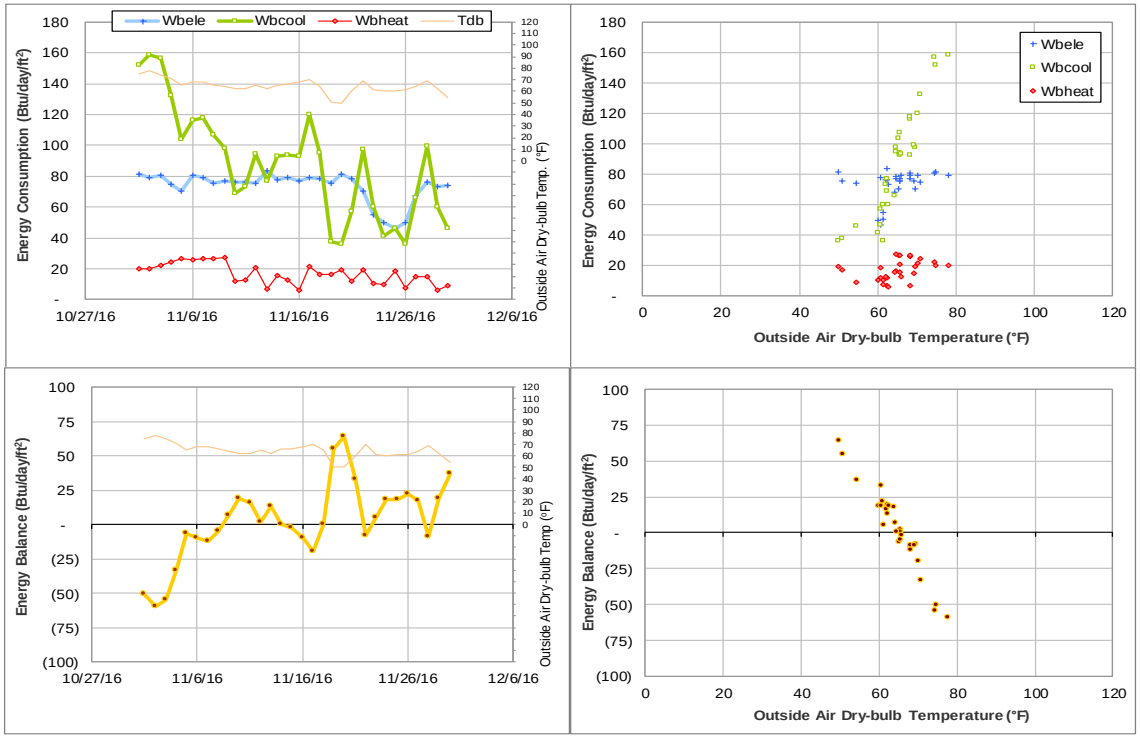


Figure IV-177 White Creek Apartment 3 TAMU BLDG # 1592 Energy Balance Plot during November 2016

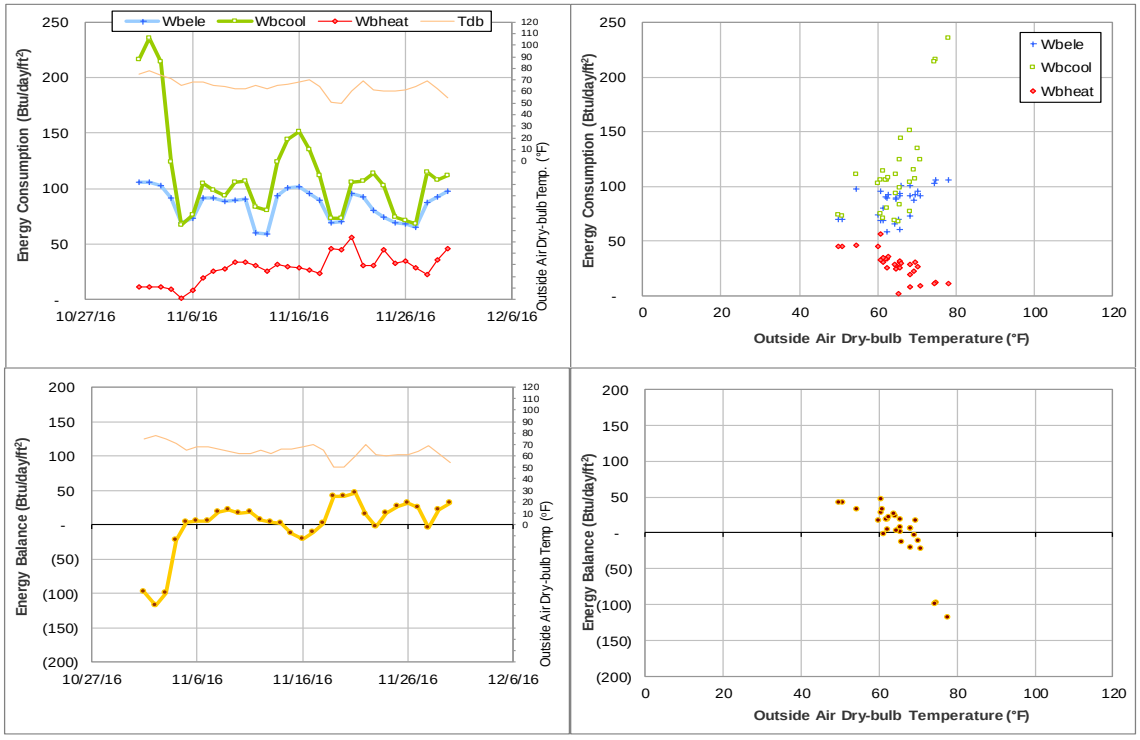


Figure IV-178 Gilchrist TTI Building TAMU BLDG # 1600 Energy Balance Plot during November 2016

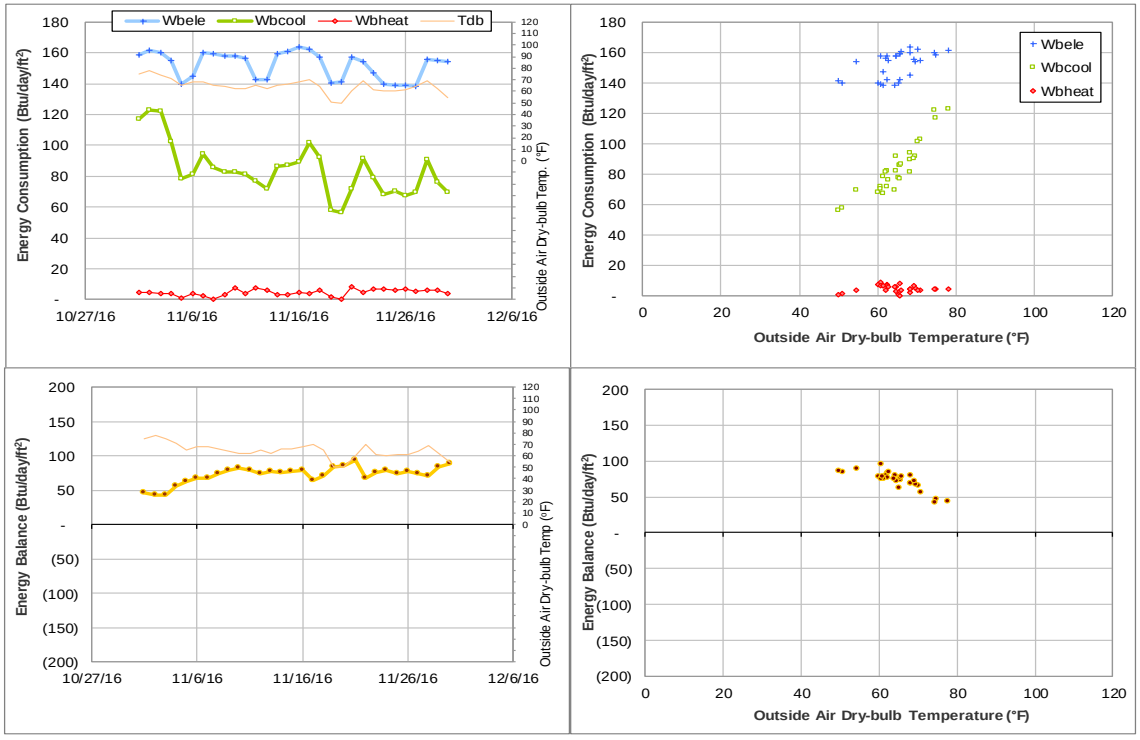


Figure IV-179 International Ocean Discovery Building TAMU BLDG # 1601 Energy Balance Plot during November 2016

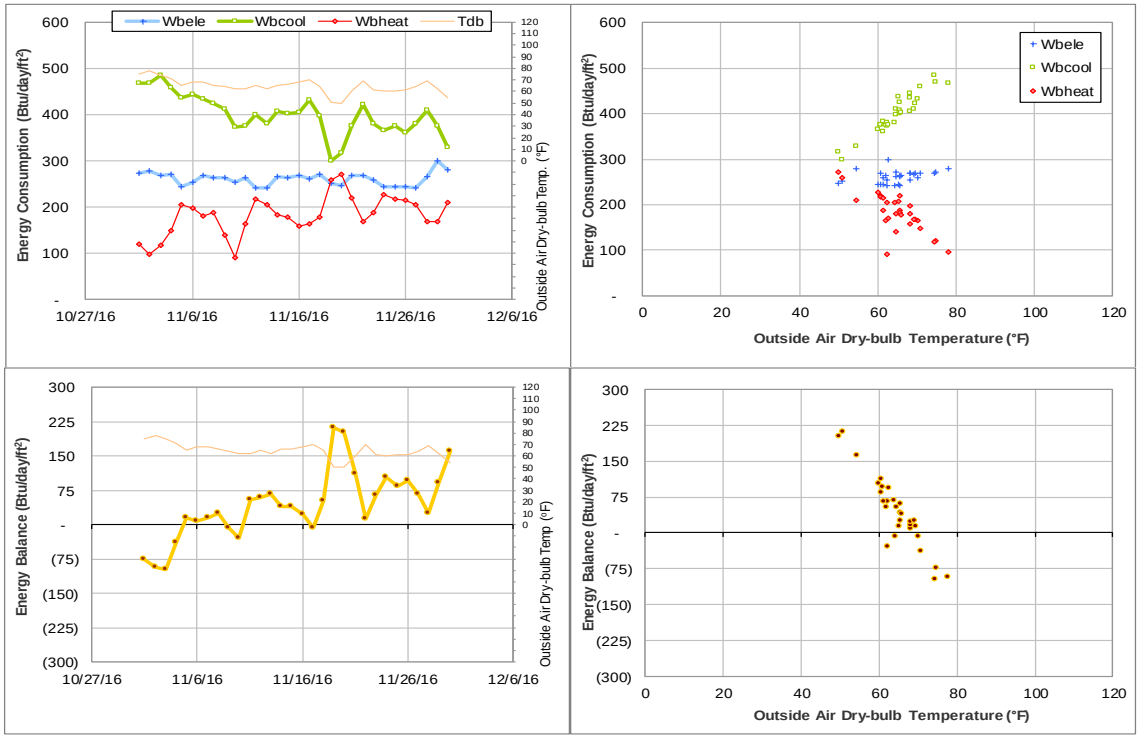


Figure IV-180 Offshore Technology Research Center TAMU BLDG # 1604 Energy Balance Plot during November 2016

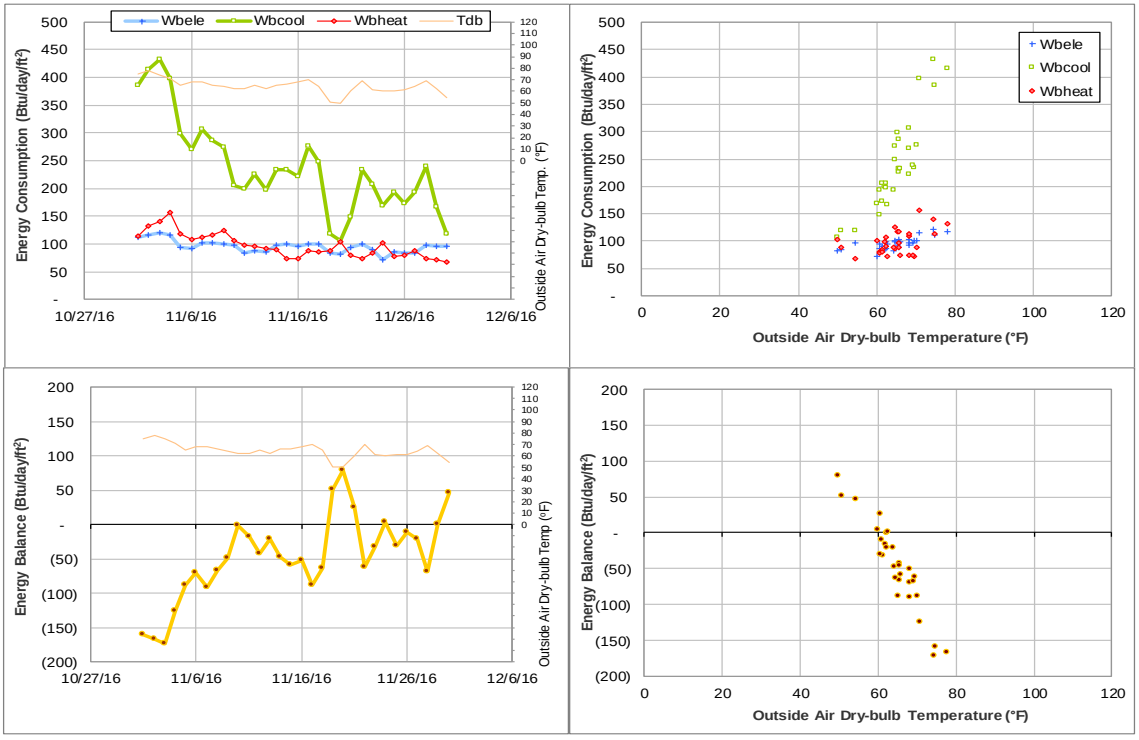


Figure IV-181 George Bush Presidential Library & Museum TAMU BLDG # 1606 Energy Balance Plot during November 2016

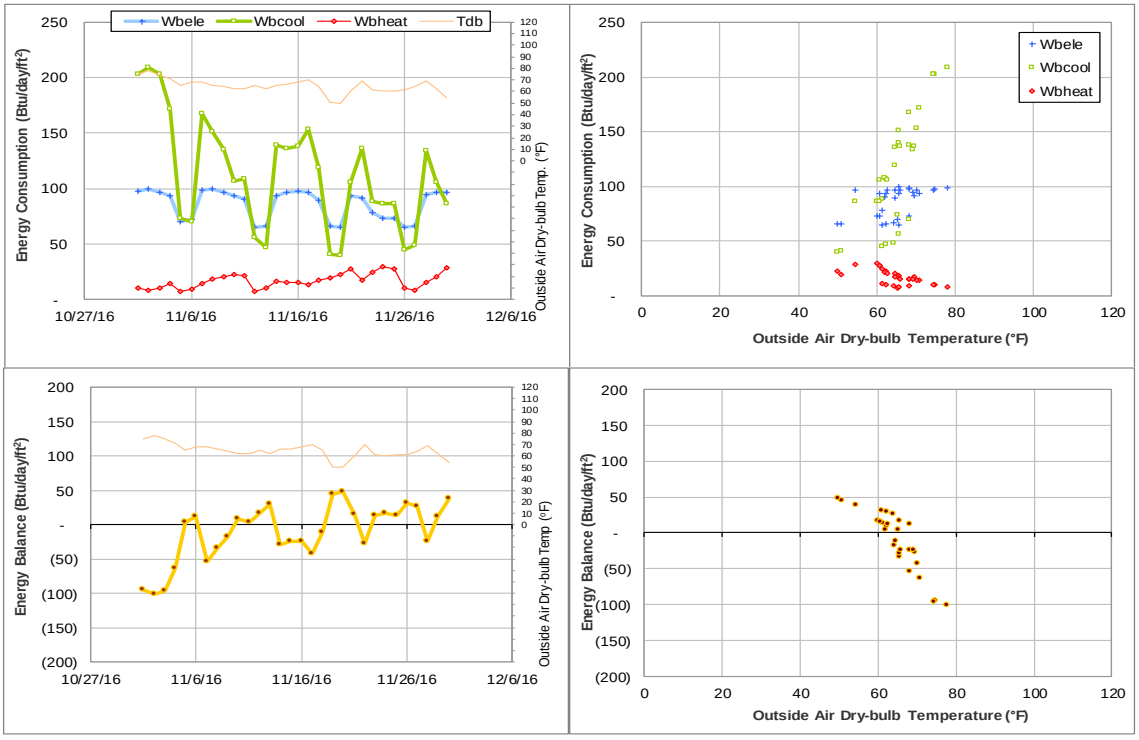


Figure IV-182 Allen Building TAMU BLDG # 1607 Energy Balance Plot during November 2016

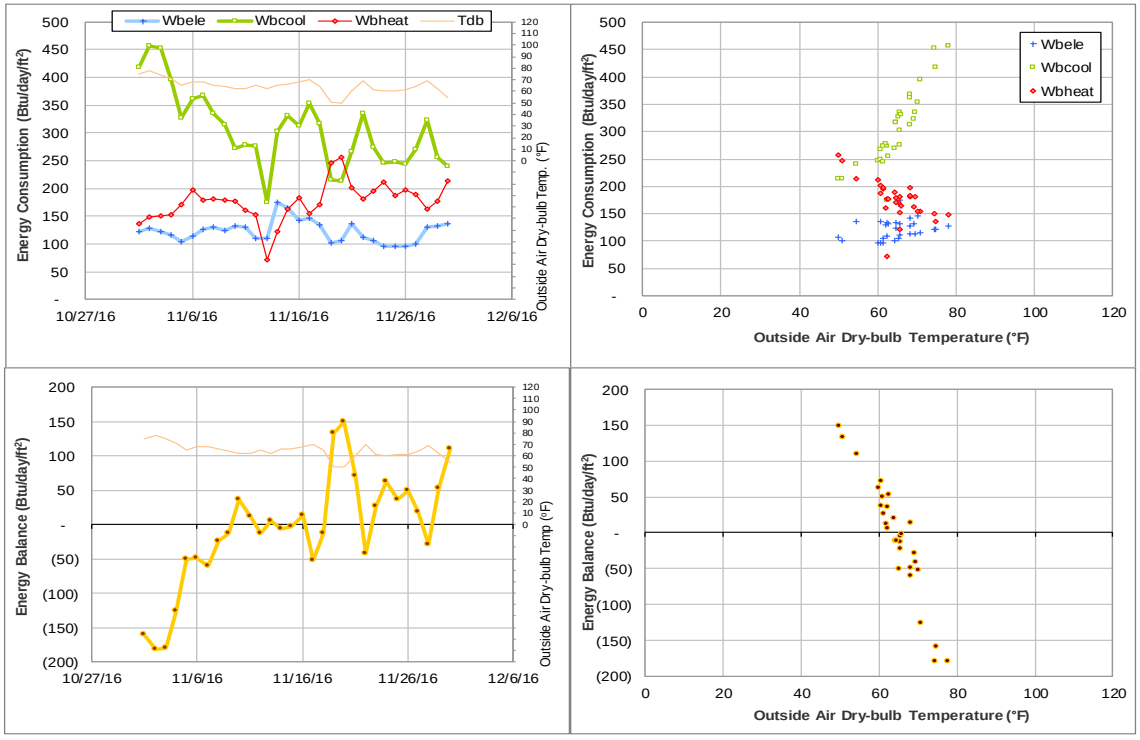


Figure IV-183 Annenberg Presidential Conference Center TAMU BLDG # 1608 Energy Balance Plot during November 2016

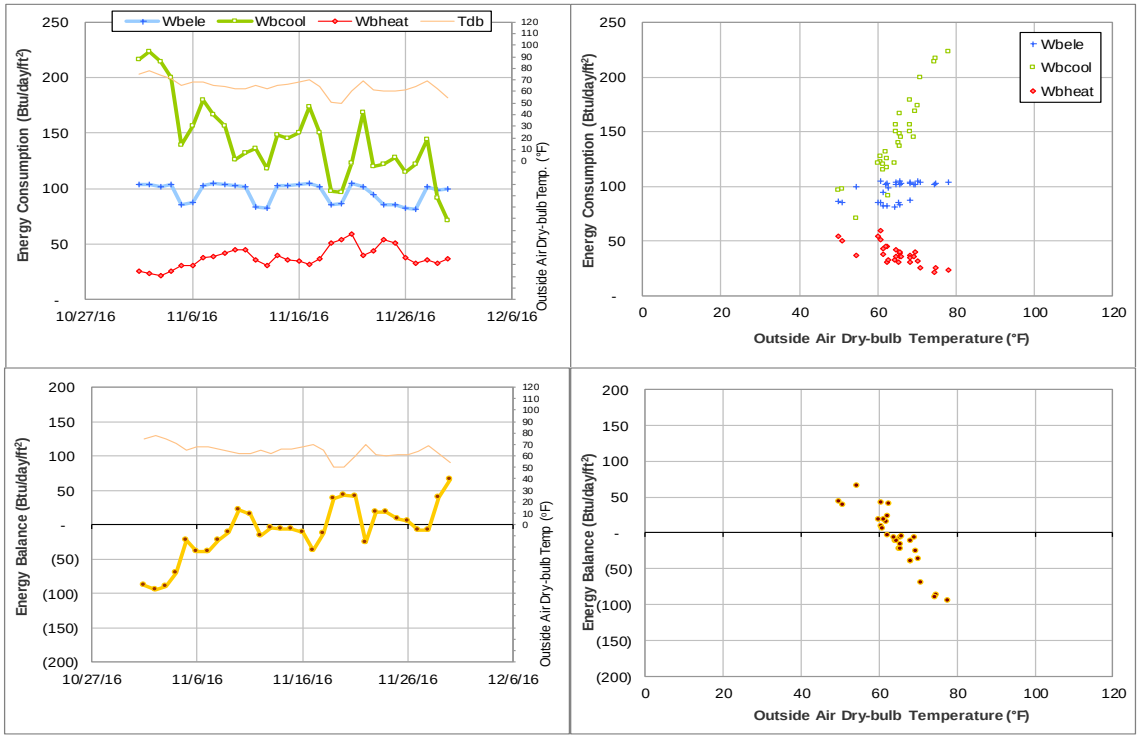


Figure IV-184 TTI Headquarters TAMU BLDG # 1609 Energy Balance Plot during November 2016

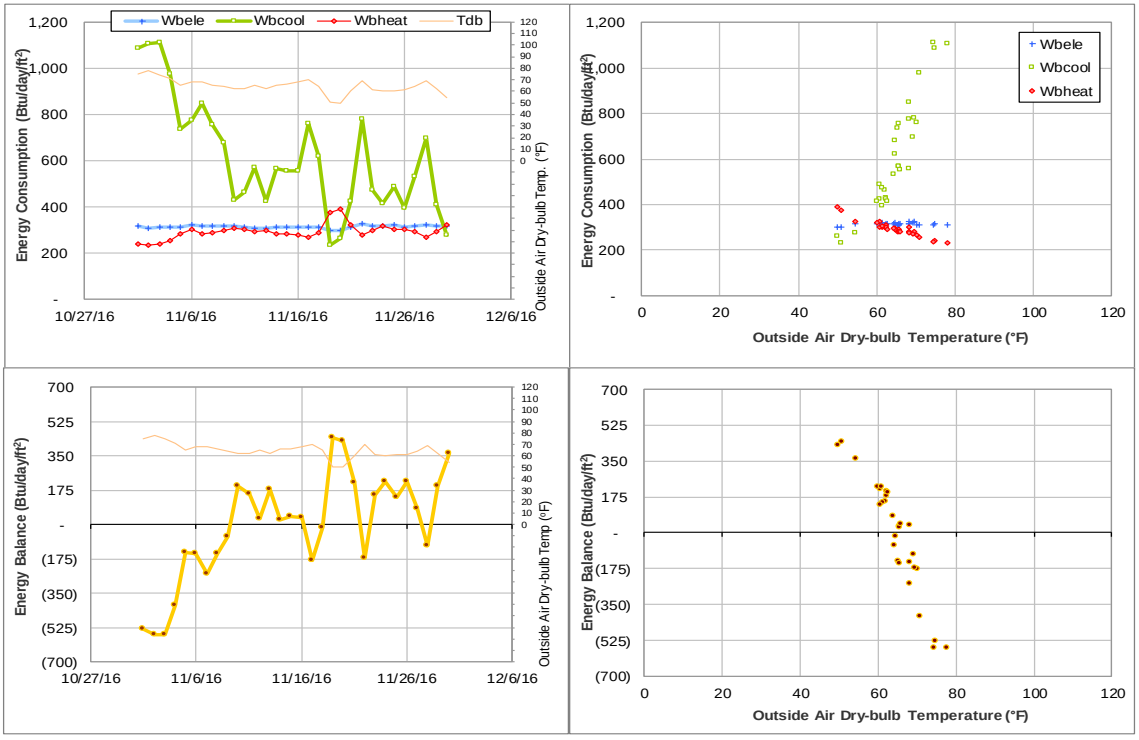


Figure IV-185 Engineering Research Building TAMU BLDG # 1611 Energy Balance Plot during November 2016

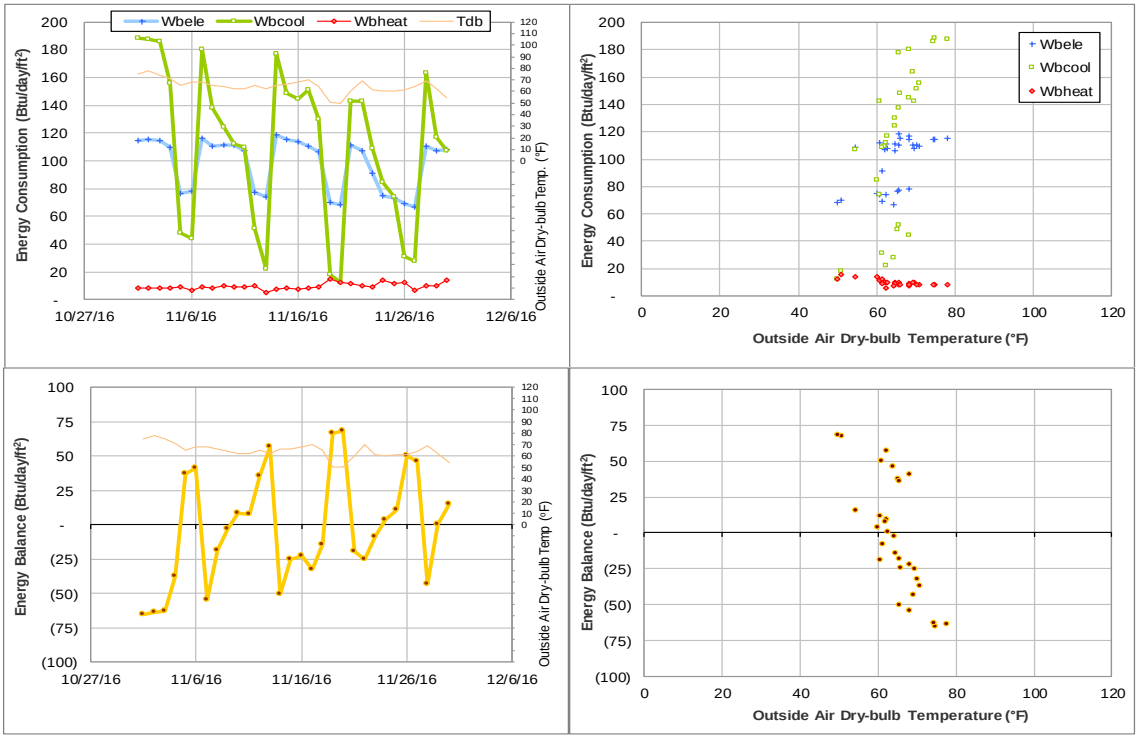


Figure IV-186 General Services Complex TAMU BLDG # 1800 Energy Balance Plot during November 2016

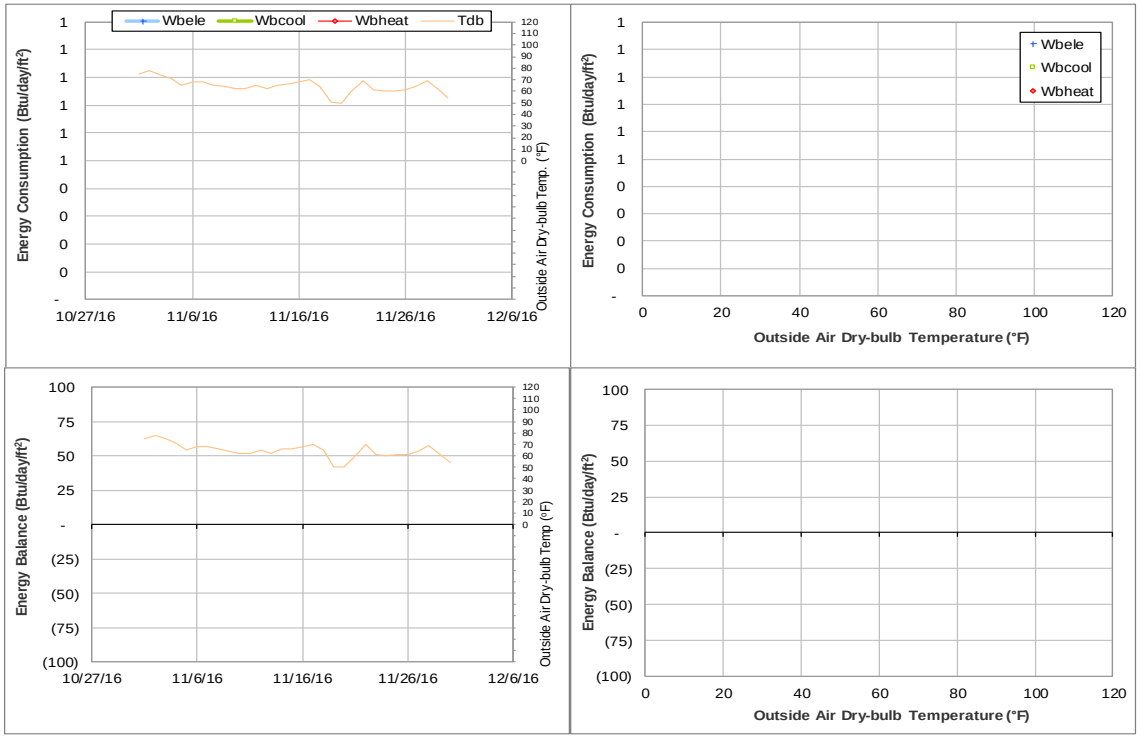


Figure IV-187 New TVMDL TAMU BLDG # 1809 Energy Balance Plot during November 2016

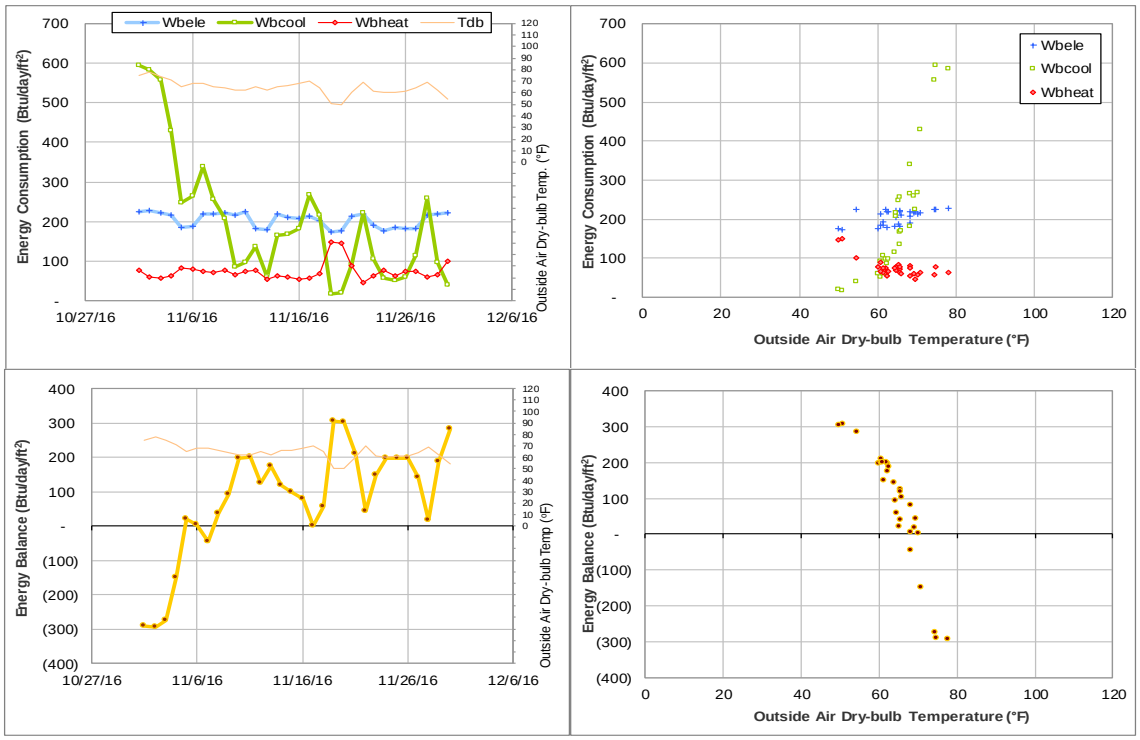


Figure IV-188 Office of the State Chemist Building TAMU BLDG # 1810 Energy Balance Plot during November 2016

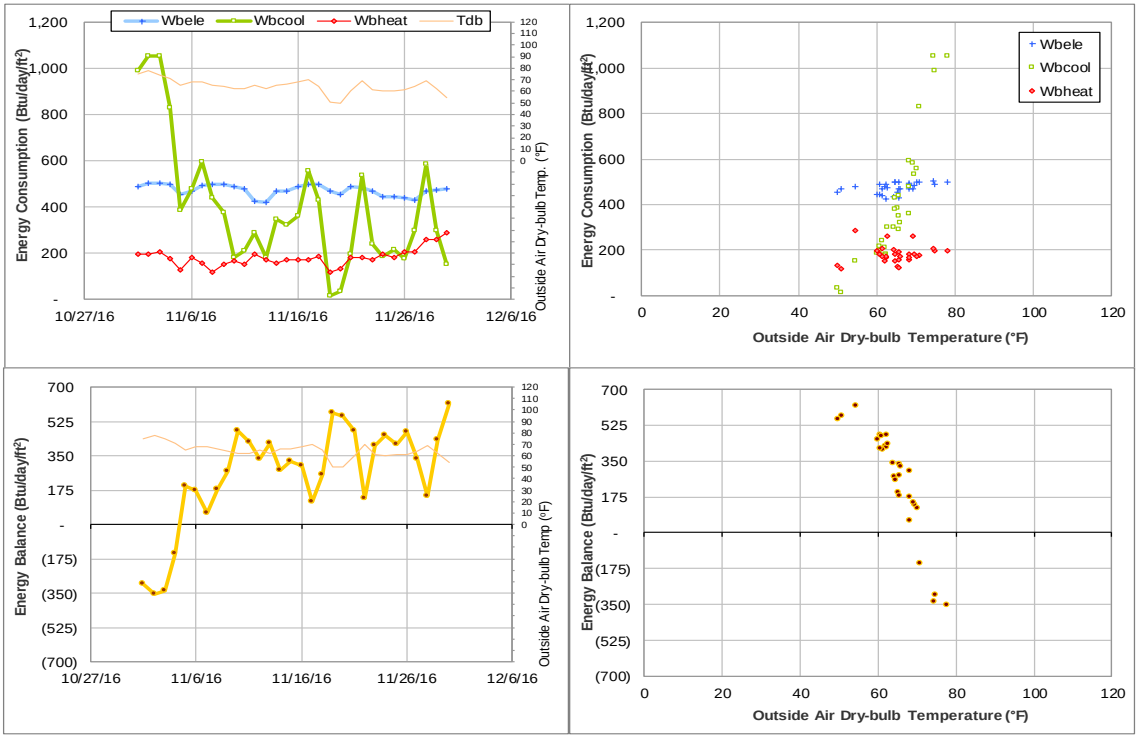


Figure IV-189 Vet Med Research Bldg Addition TAMU BLDG # 1811 Energy Balance Plot during November 2016

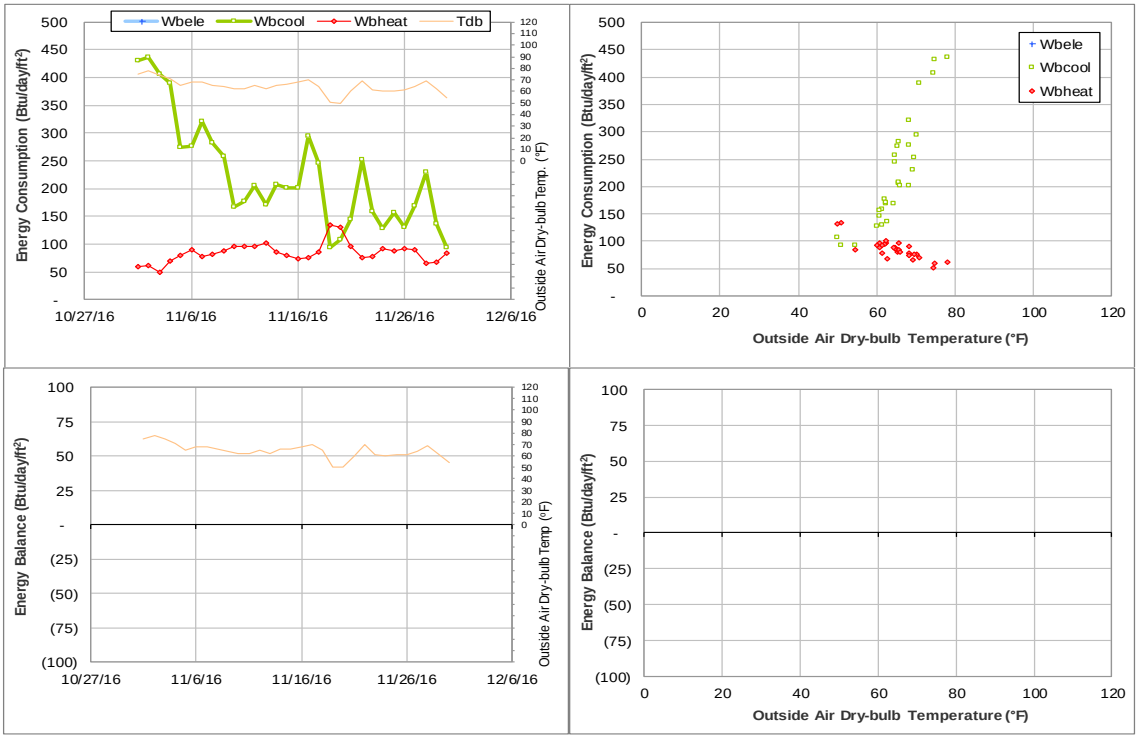


Figure IV-190 Veterinary Medicine Building 1, 2, and 3 TAMU BLDG # 1812, 1813, 1814 Energy Balance Plot during November 2016

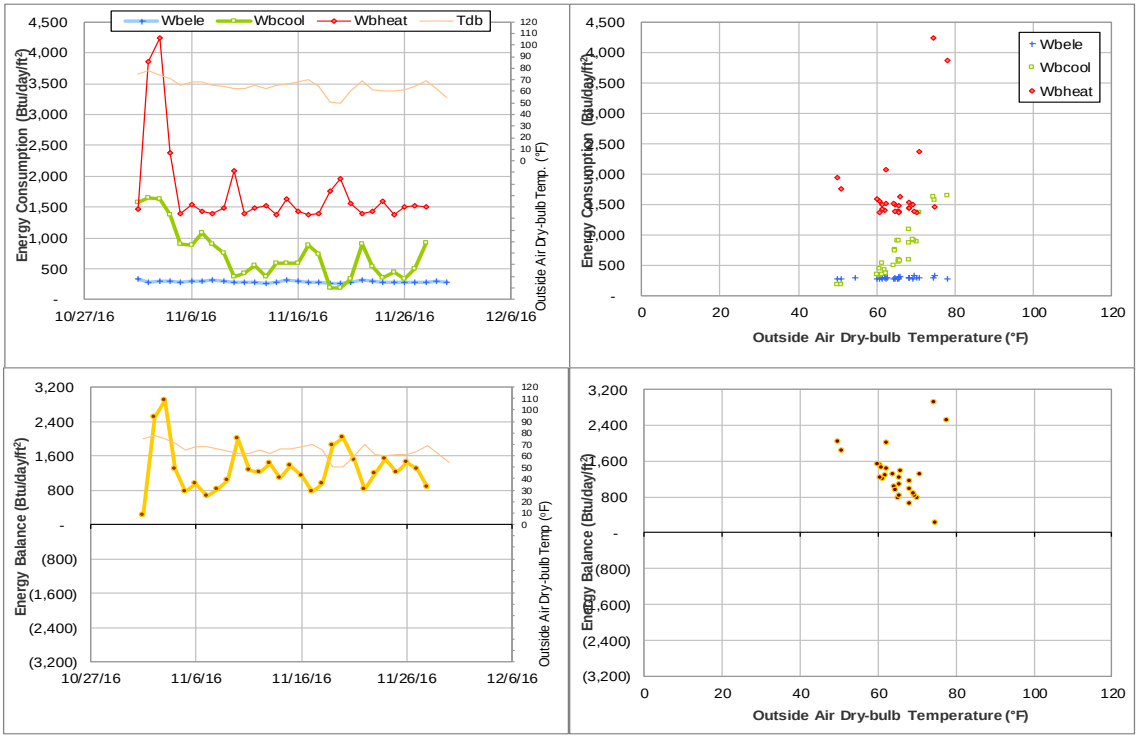


Figure IV-191 Texas Institute for Genomic Medicine TAMU BLDG # 1900 Energy Balance Plot during November 2016

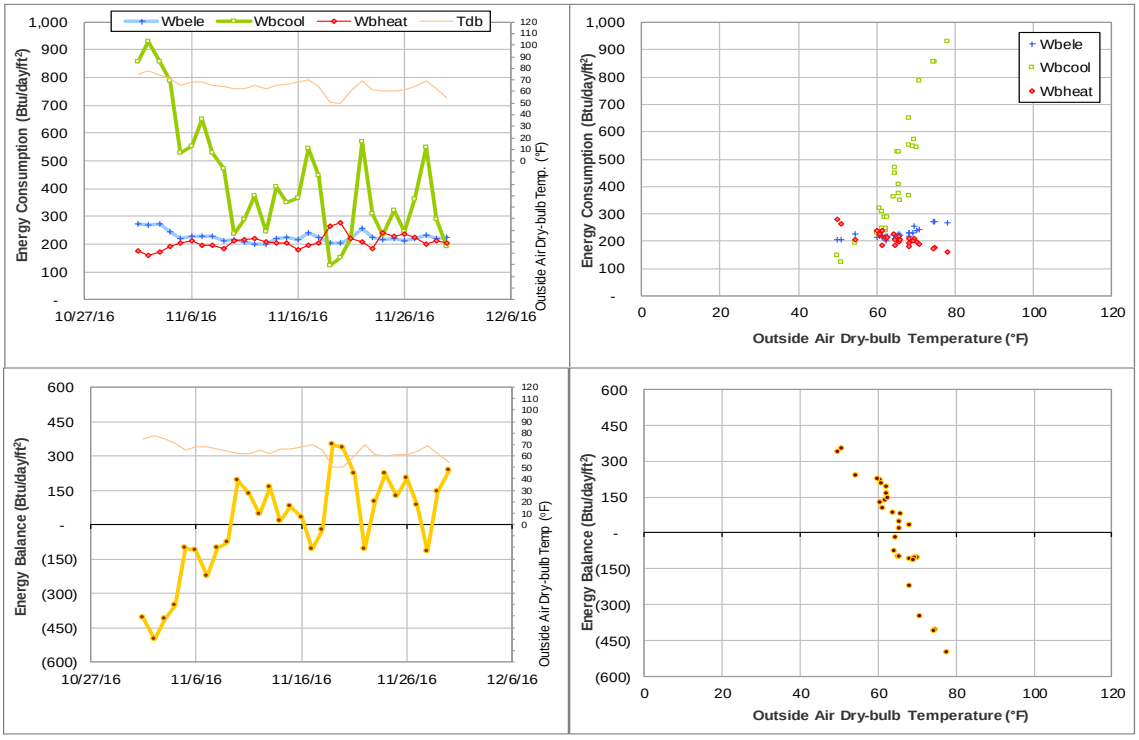


Figure IV-192 Texas A&M Institute for Preclinical Studies A TAMU BLDG # 1904 Energy Balance Plot during November 2016

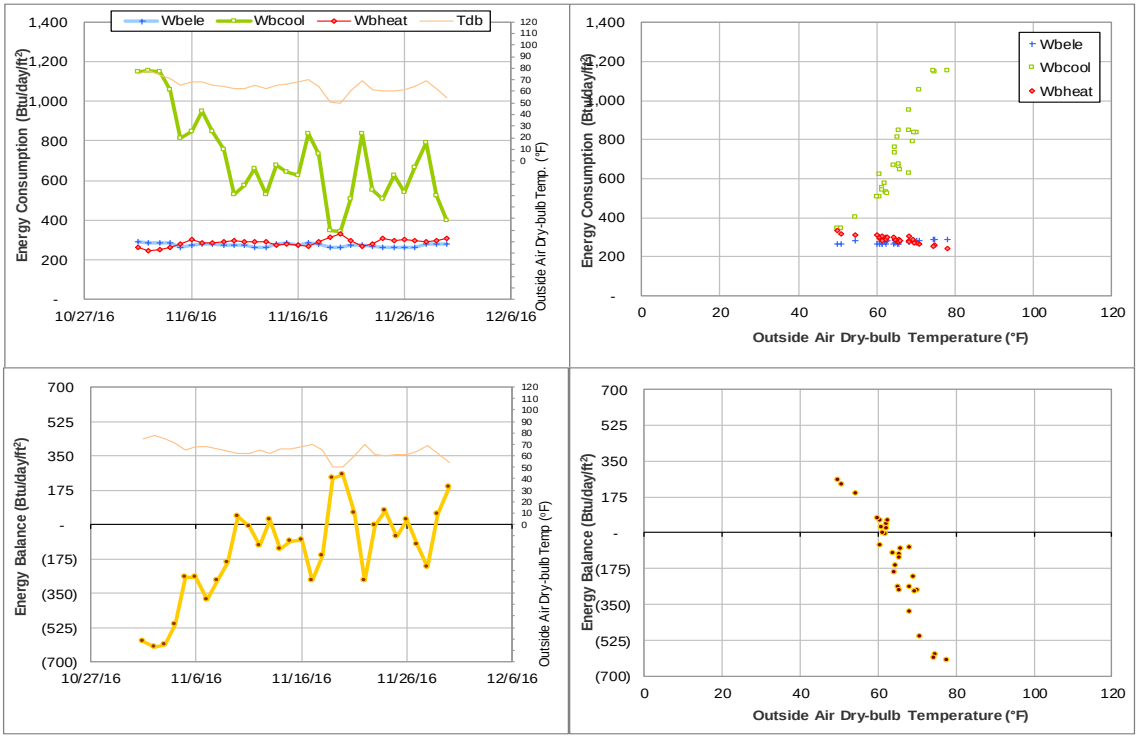


Figure IV-193 National Center for Therapeutics Manufacturing TAMU BLDG # 1910 Energy Balance Plot during November 2016

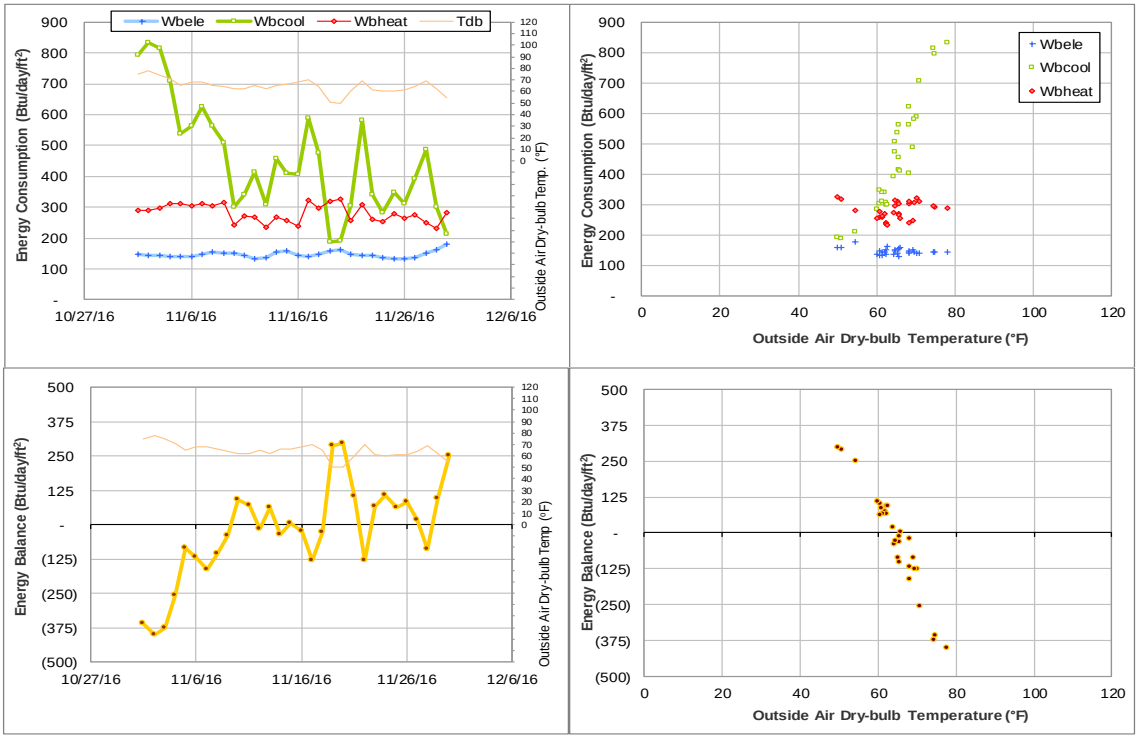


Figure IV-194 Multi-Species Research Building TAMU BLDG # 1911 Energy Balance Plot during November 2016

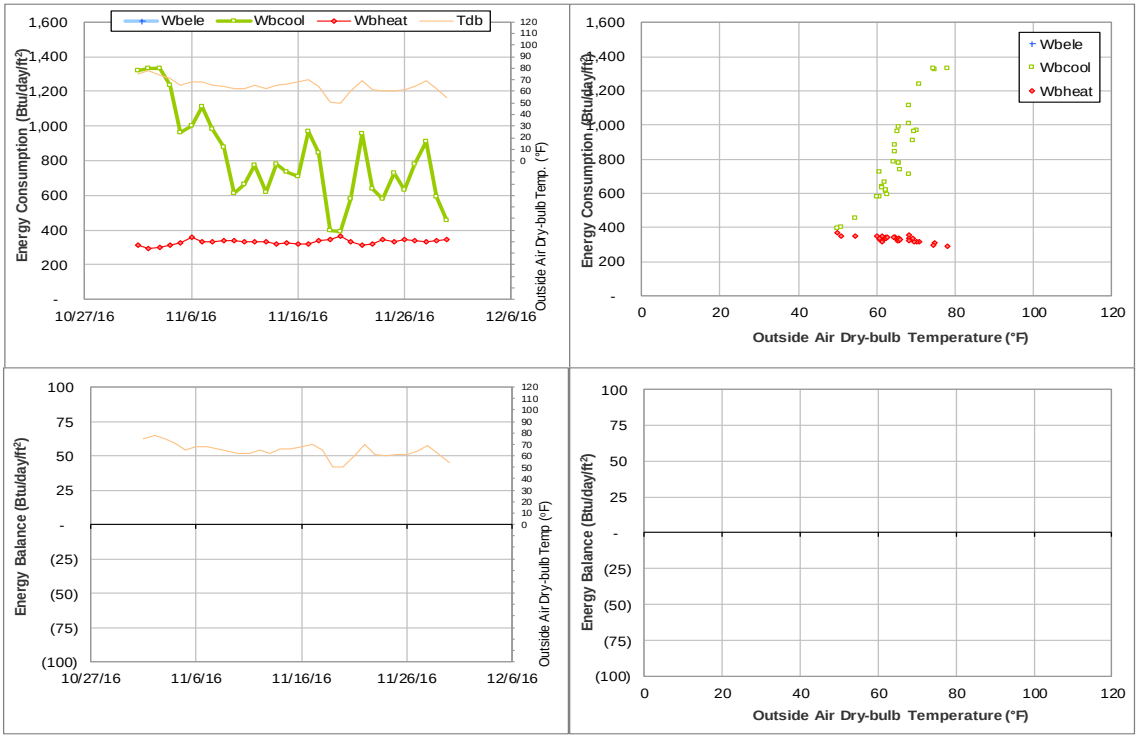


Figure IV-195 NCTM Manufacturing Building TAMU BLDG # 10226 Energy Balance Plot during November 2016

V. Energy Balance Plots with Filled-in data for November 2016 Consumption

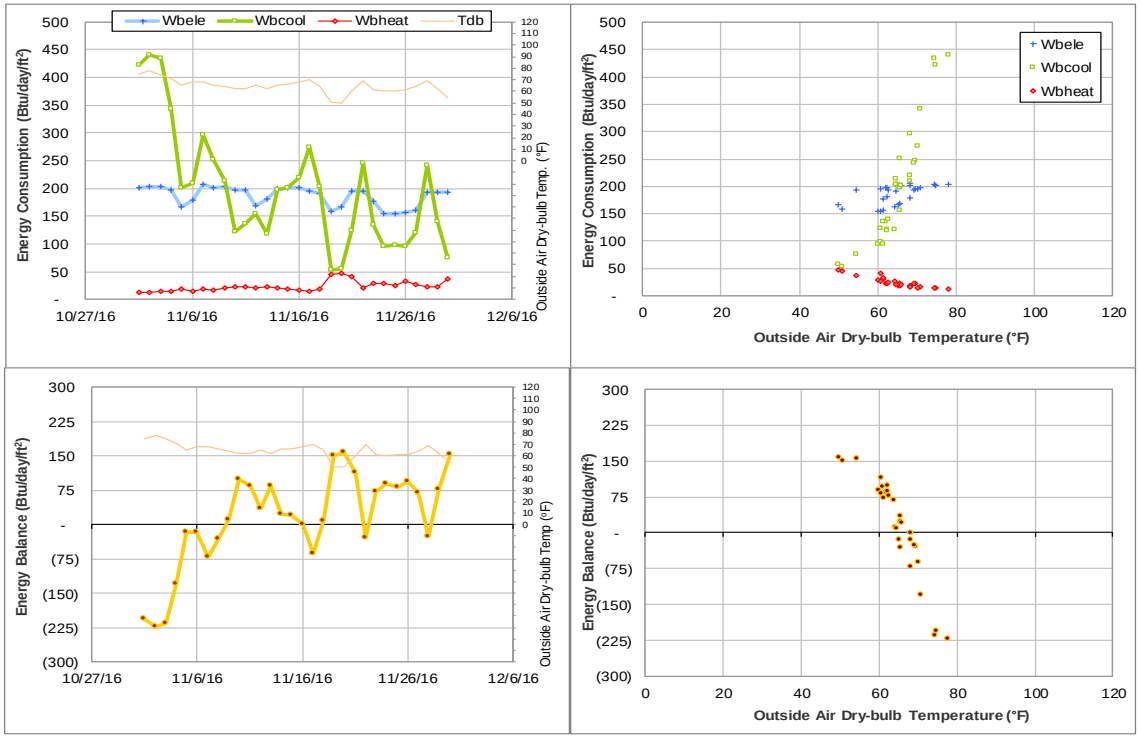


Figure V-1 Richardson Petroleum Engineering Building TAMU BLDG # 387 Energy Balance Plot during November 2016

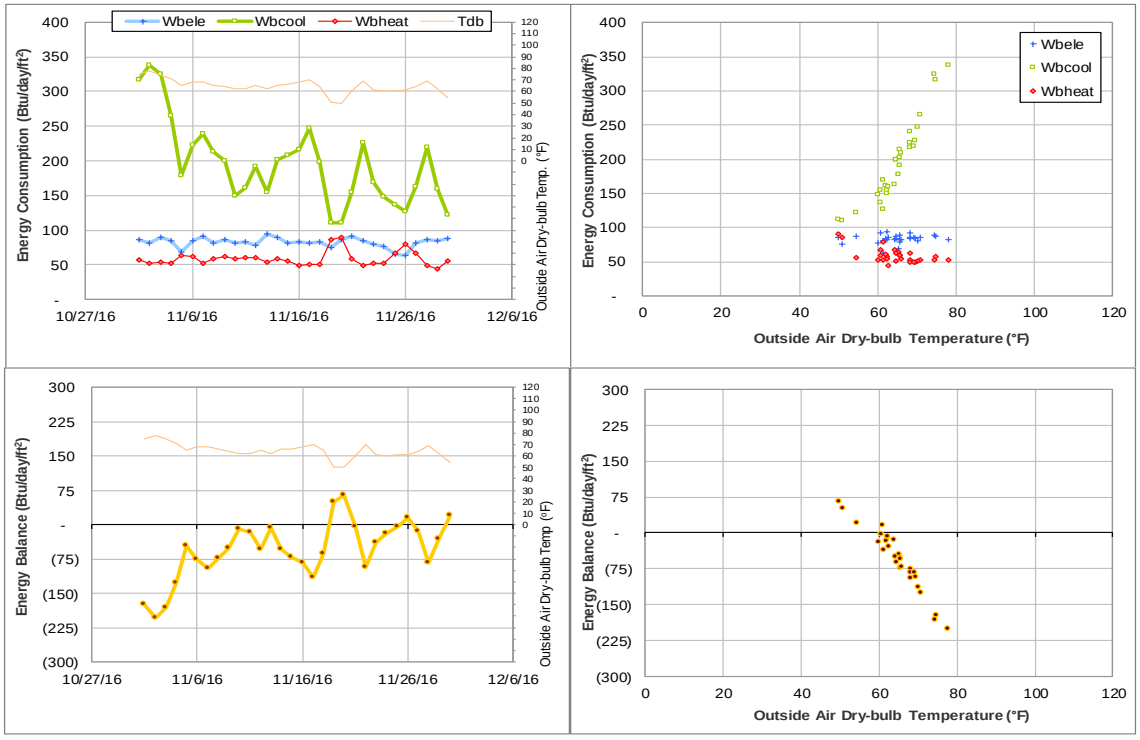


Figure V-2 Fountain Hall Dorm 4 TAMU BLDG # 403 Energy Balance Plot during November 2016

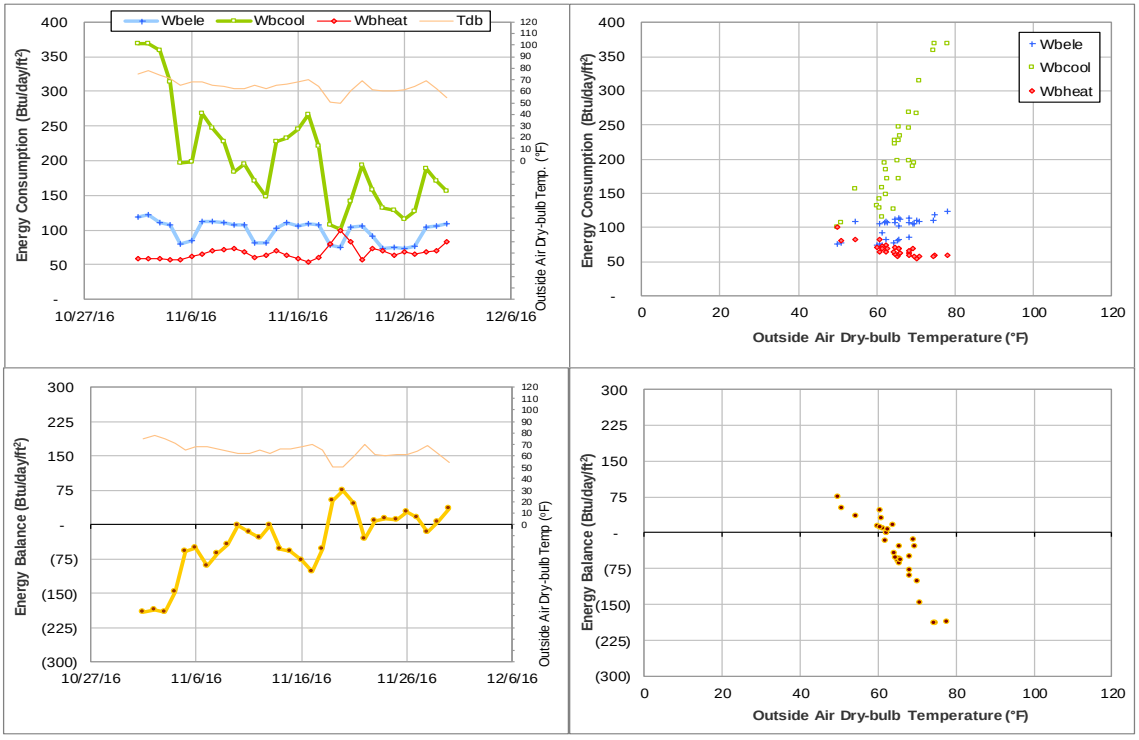


Figure V-3 Teague Research Center and DPC Annex TAMU BLDG # 445 Energy Balance Plot during November 2016

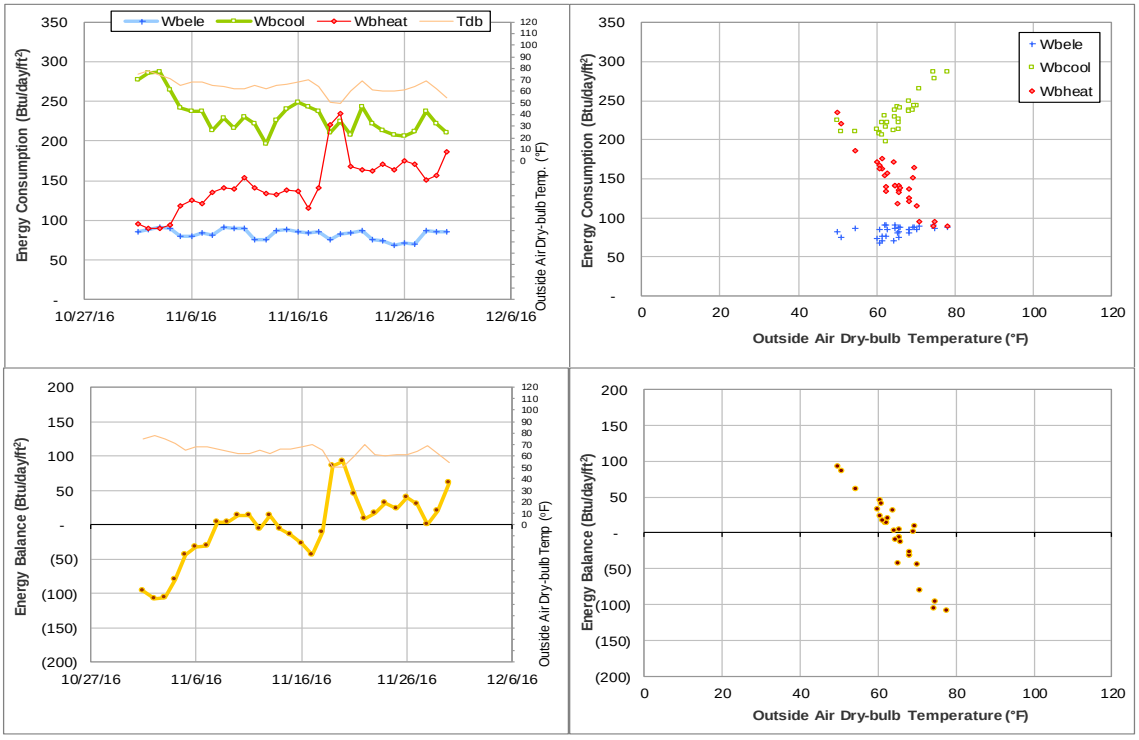


Figure V-4 Rudder Tower and Theatre Complex TAMU BLDG # 446 Energy Balance Plot during November 2016

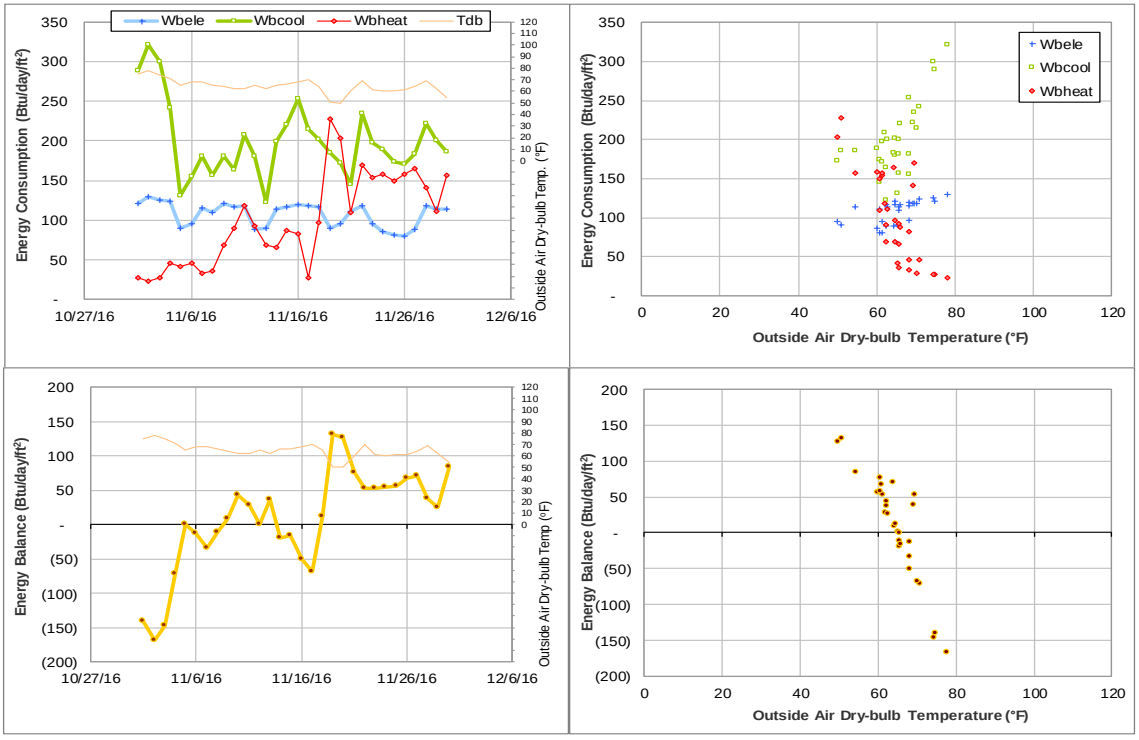


Figure V-5 Rudder Tower TAMU BLDG # 446 Energy Balance Plot during November 2016

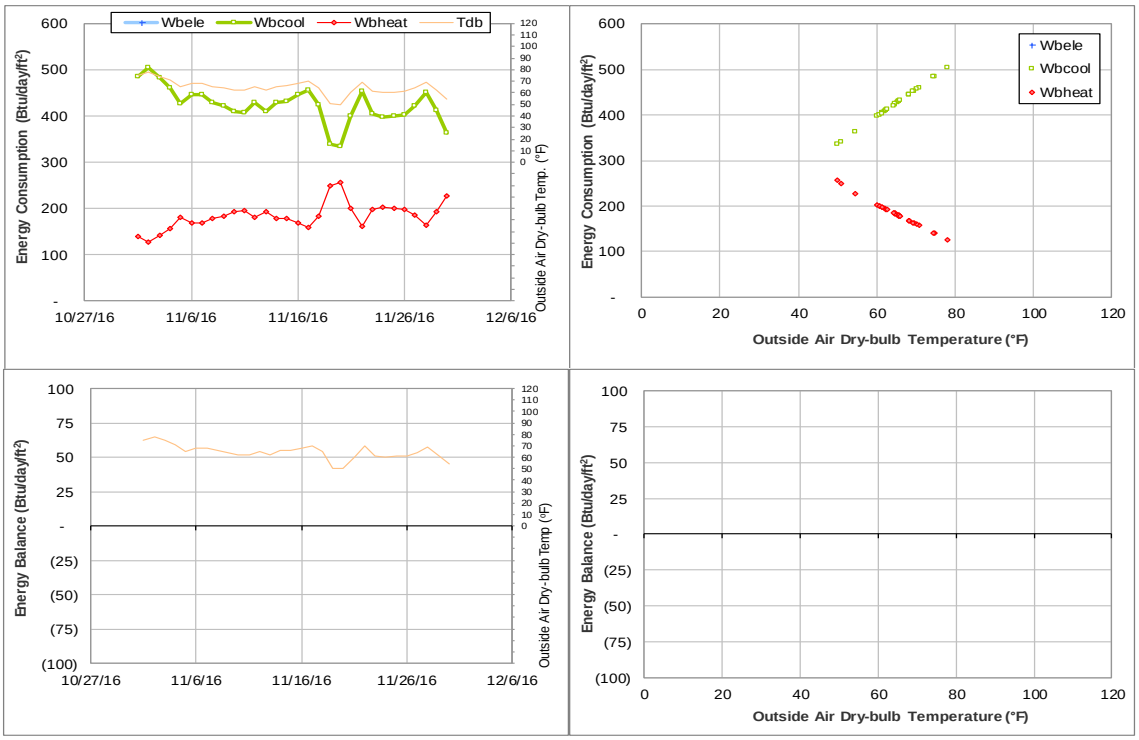


Figure V-6 Military Sciences Building TAMU BLDG # 456 Energy Balance Plot during November 2016

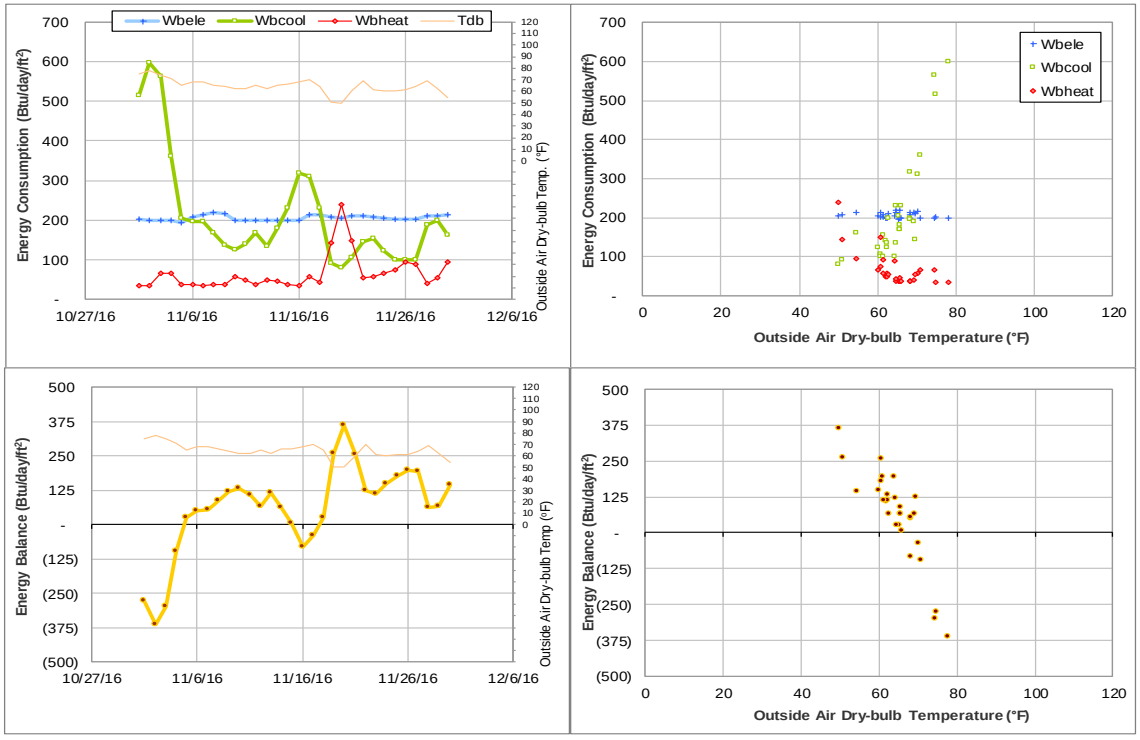


Figure V-7 Central Campus Parking Garage TAMU BLDG # 469 Energy Balance Plot during November 2016

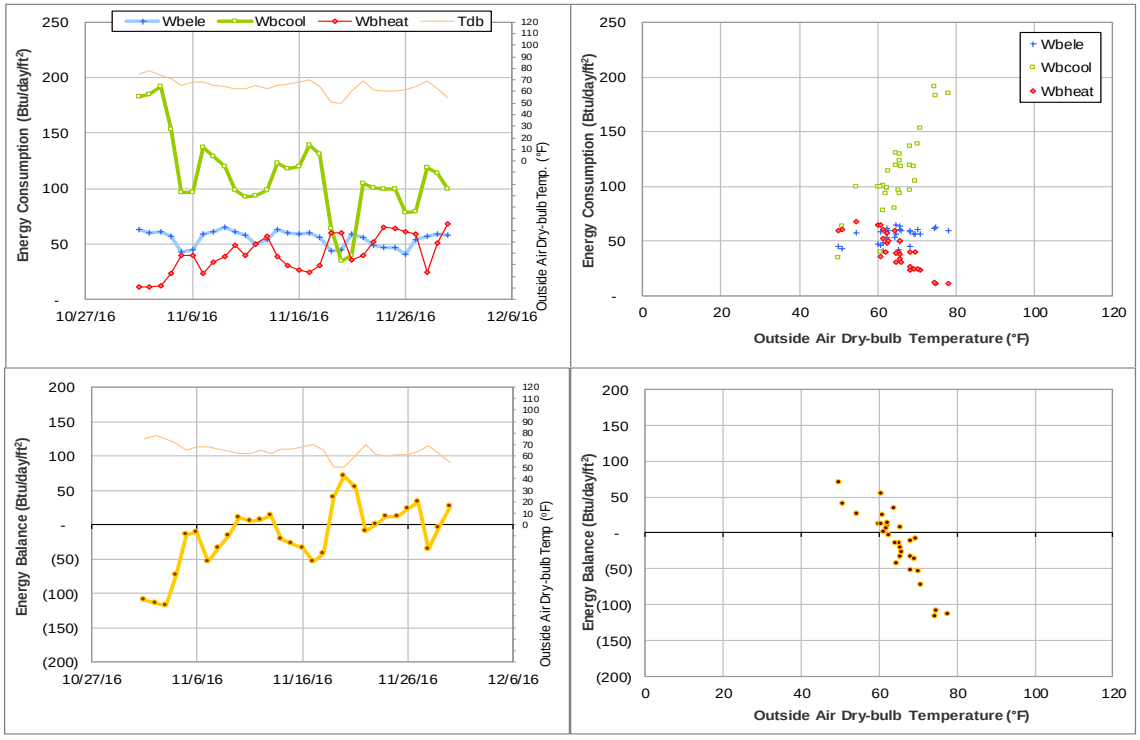


Figure V-8 Glasscock History Bldg TAMU BLDG # 470 Energy Balance Plot during November 2016

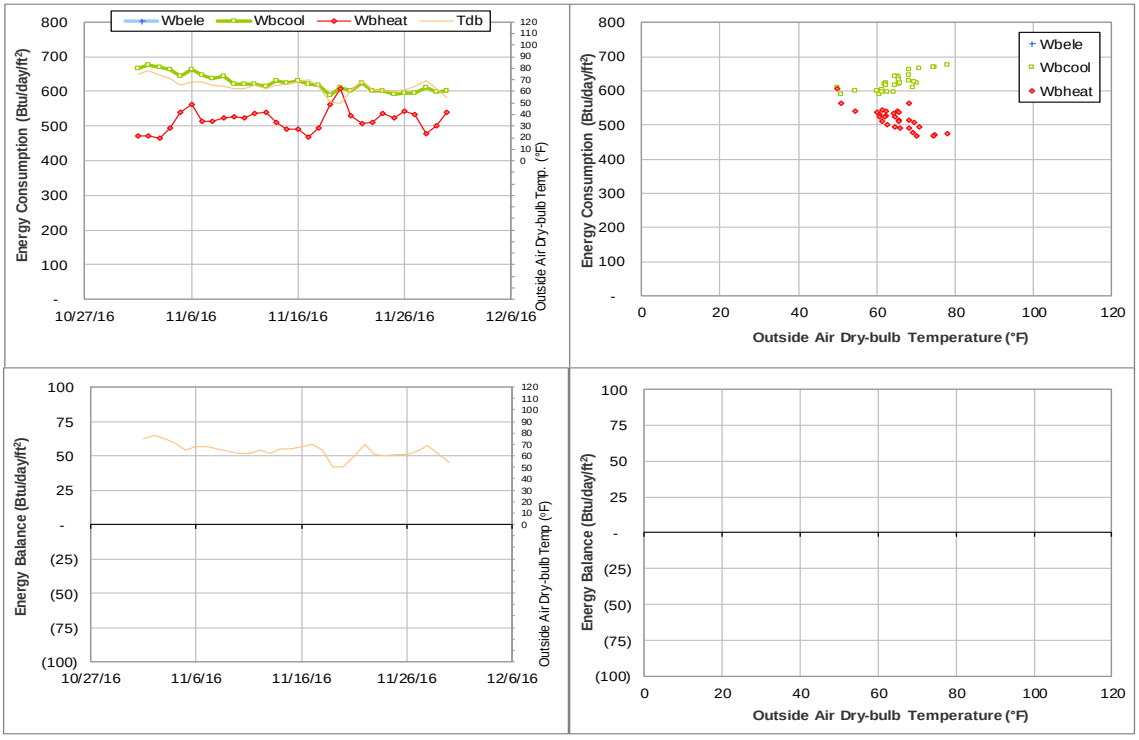


Figure V-9 Heaton Hall TAMU BLDG # 481 Energy Balance Plot during November 2016

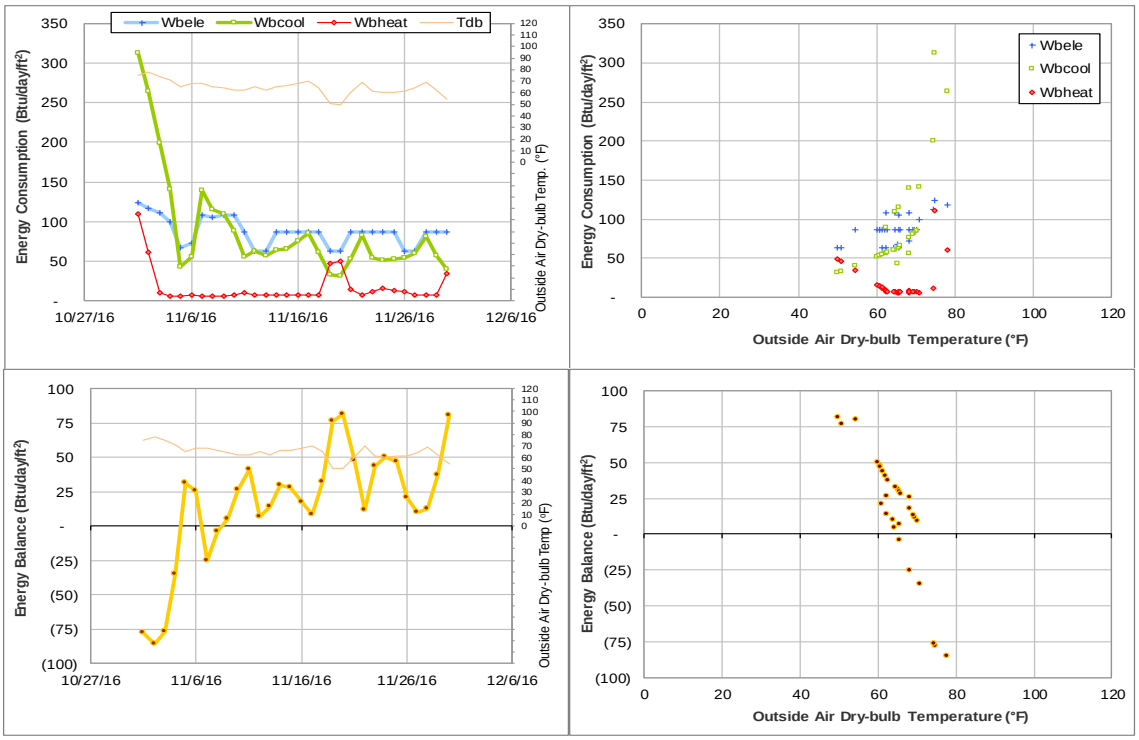


Figure V-10 Thompson Hall TAMU BLDG # 483 Energy Balance Plot during November 2016

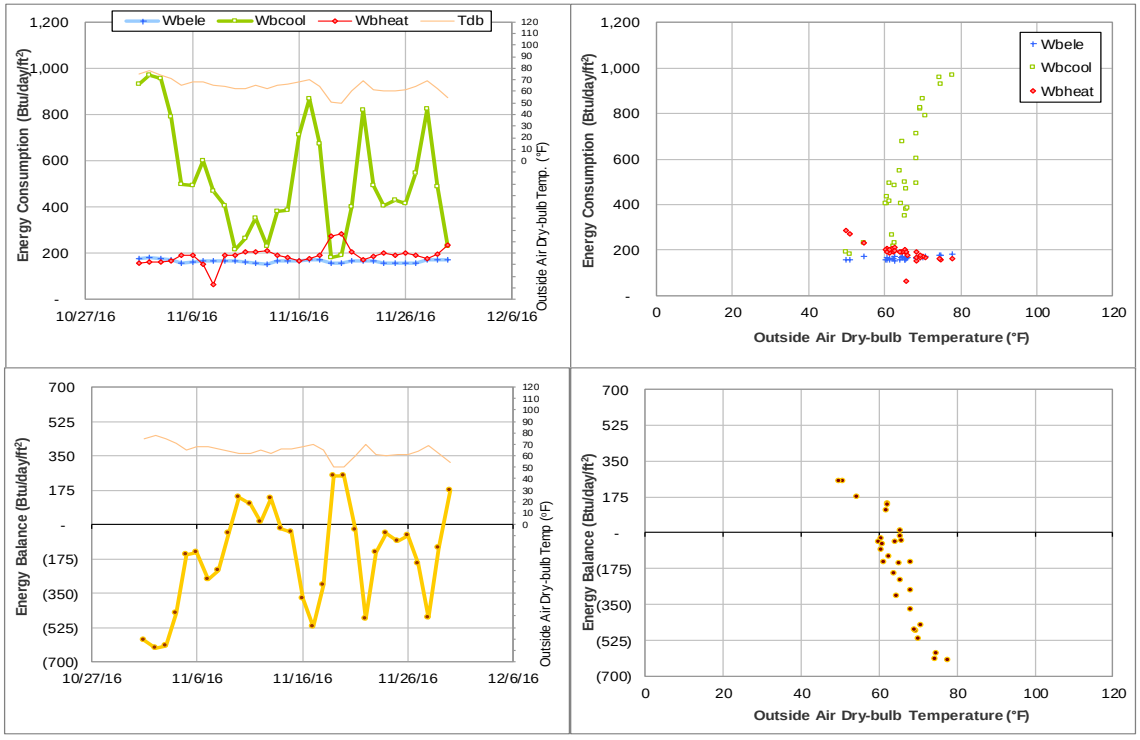


Figure V-11 Chemistry Building TAMU BLDG # 484 Energy Balance Plot during November 2016

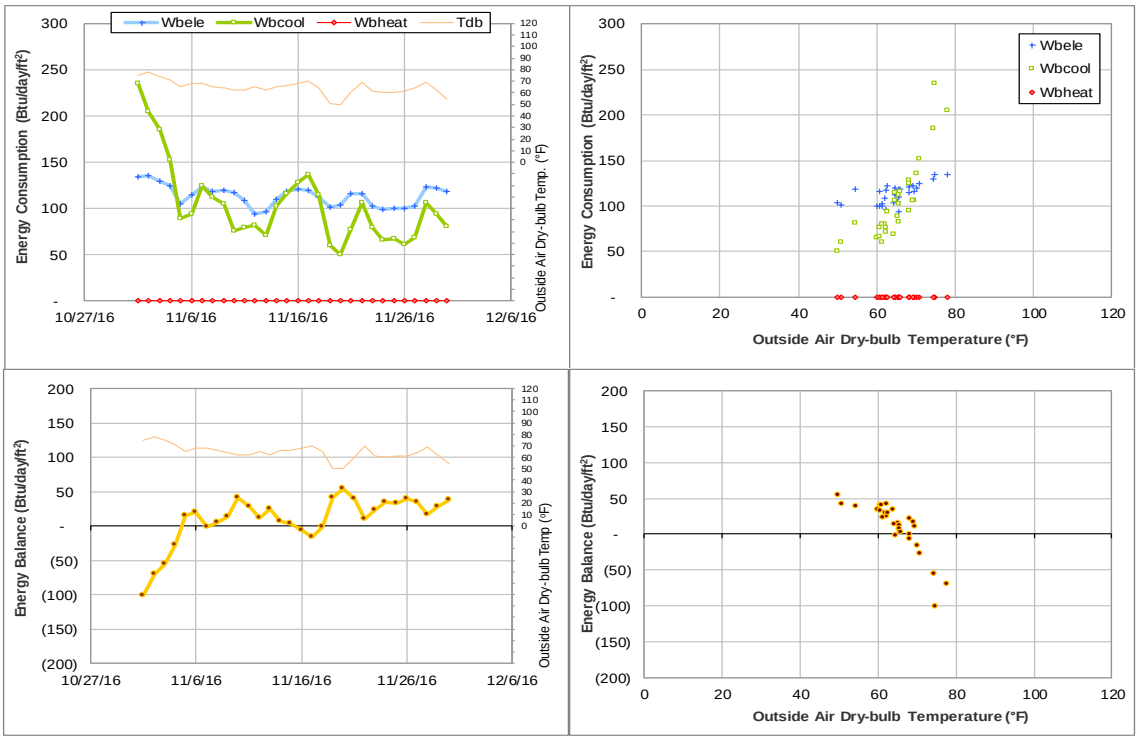


Figure V-12 Civil Engineering Building TAMU BLDG # 492 Energy Balance Plot during November 2016

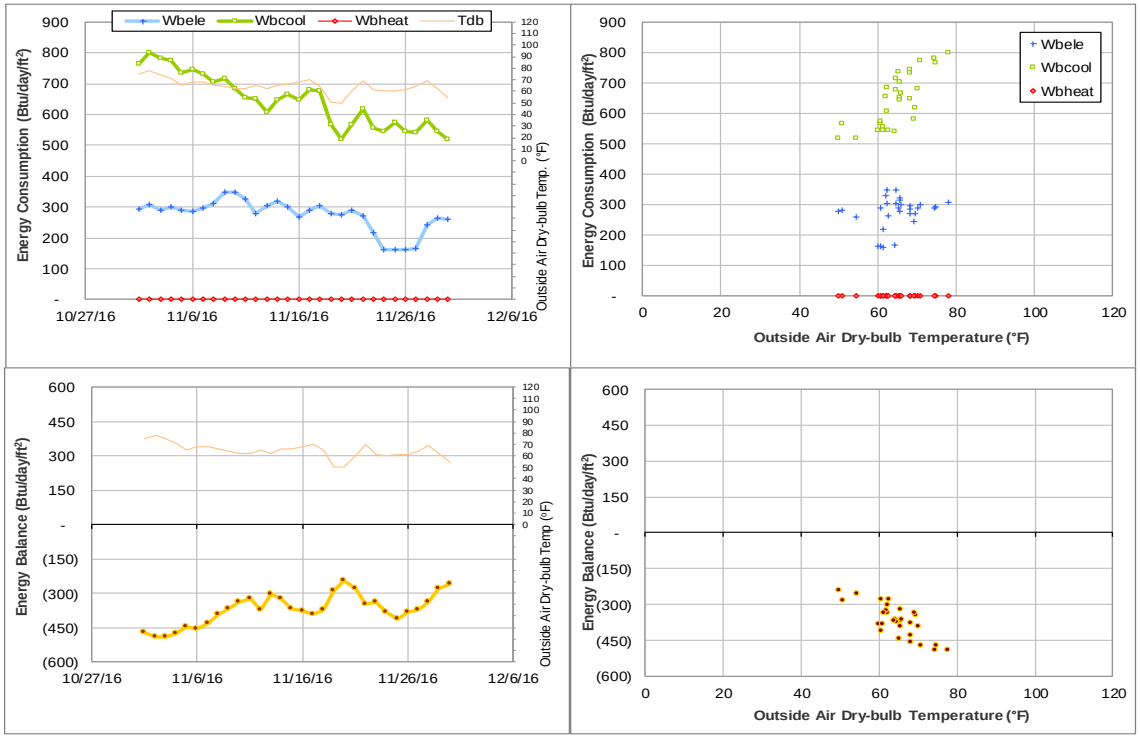


Figure V-13 McNew Laboratory TAMU BLDG # 740 Energy Balance Plot during November 2016

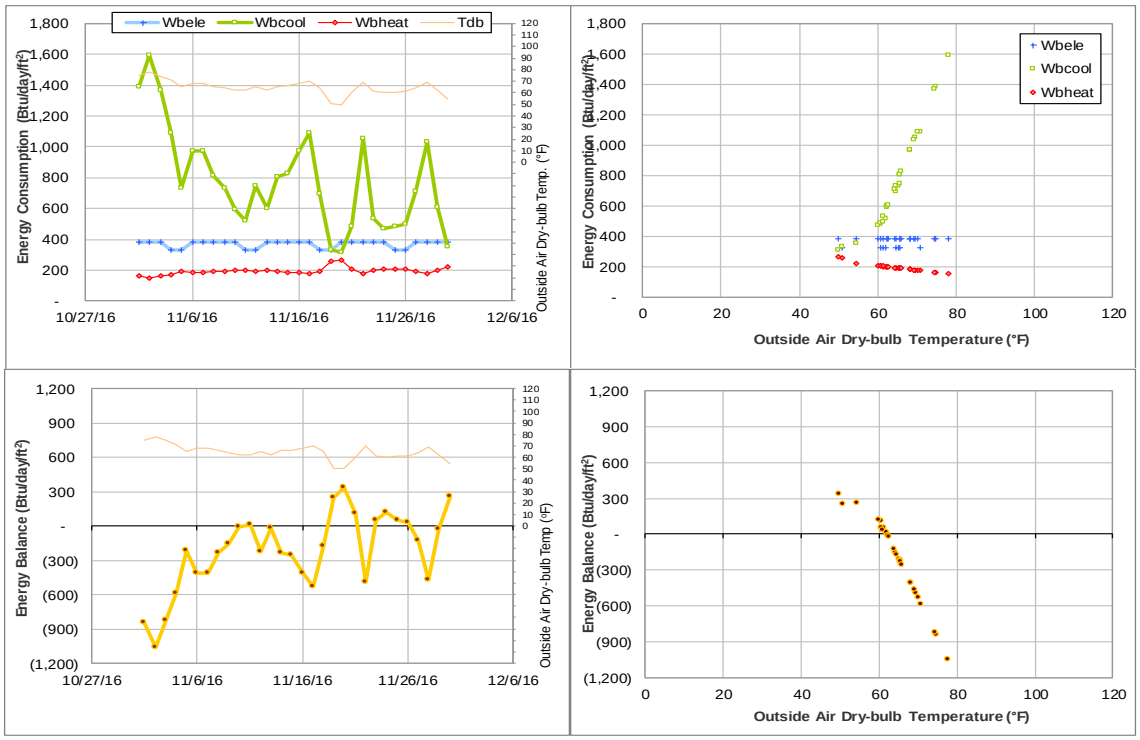


Figure V-14 Texas Vet Med Diagnostic Lab TAMU BLDG # 1041 Energy Balance Plot during November 2016

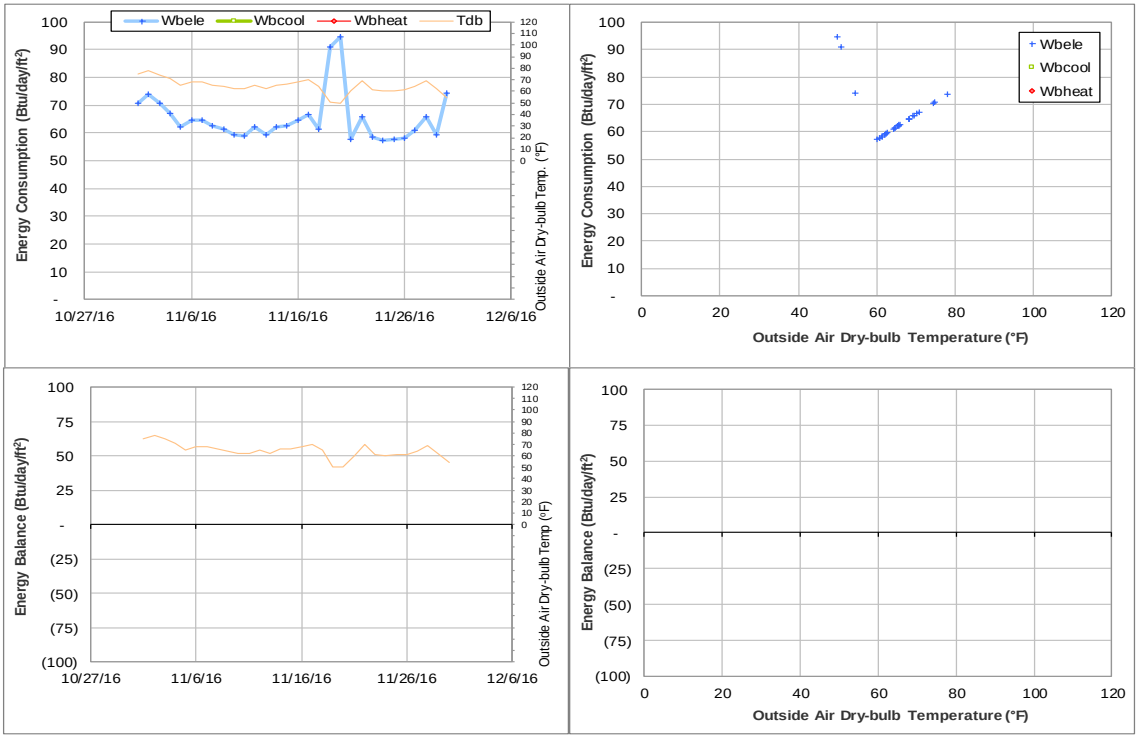


Figure V-15 University Apartments - The Gardens F TAMU BLDG # 1454 Energy Balance Plot during November 2016

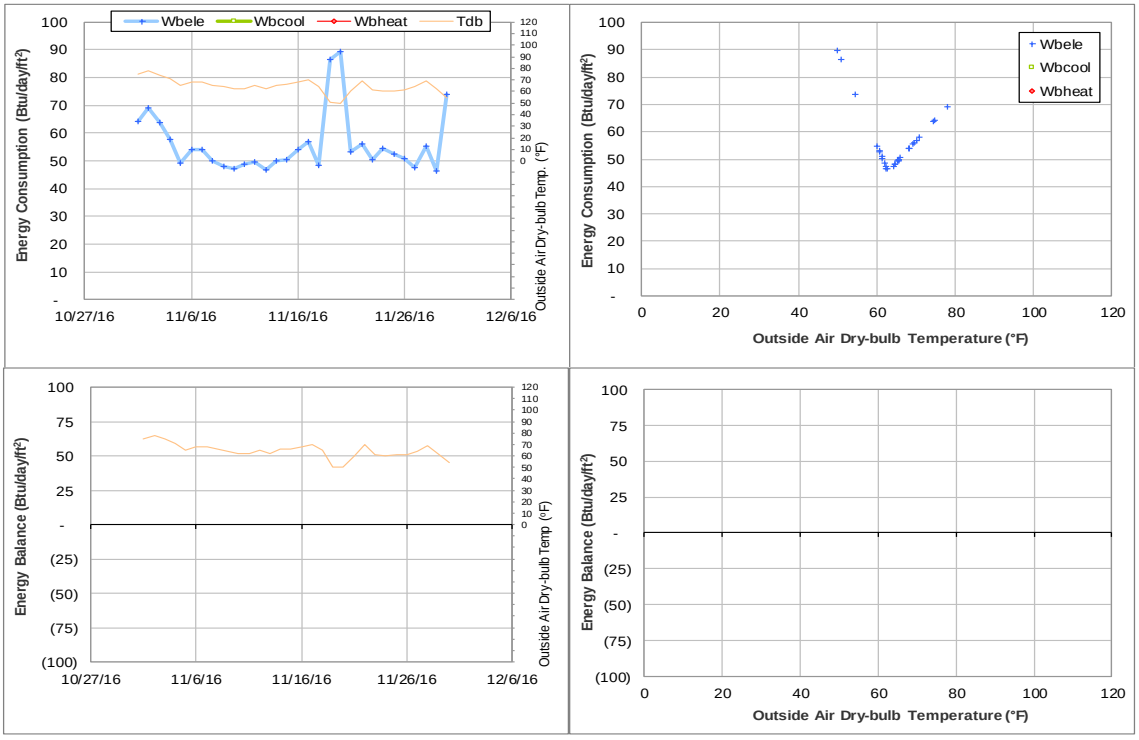


Figure V-16 University Apartments - The Gardens G TAMU BLDG # 1455 Energy Balance Plot during November 2016

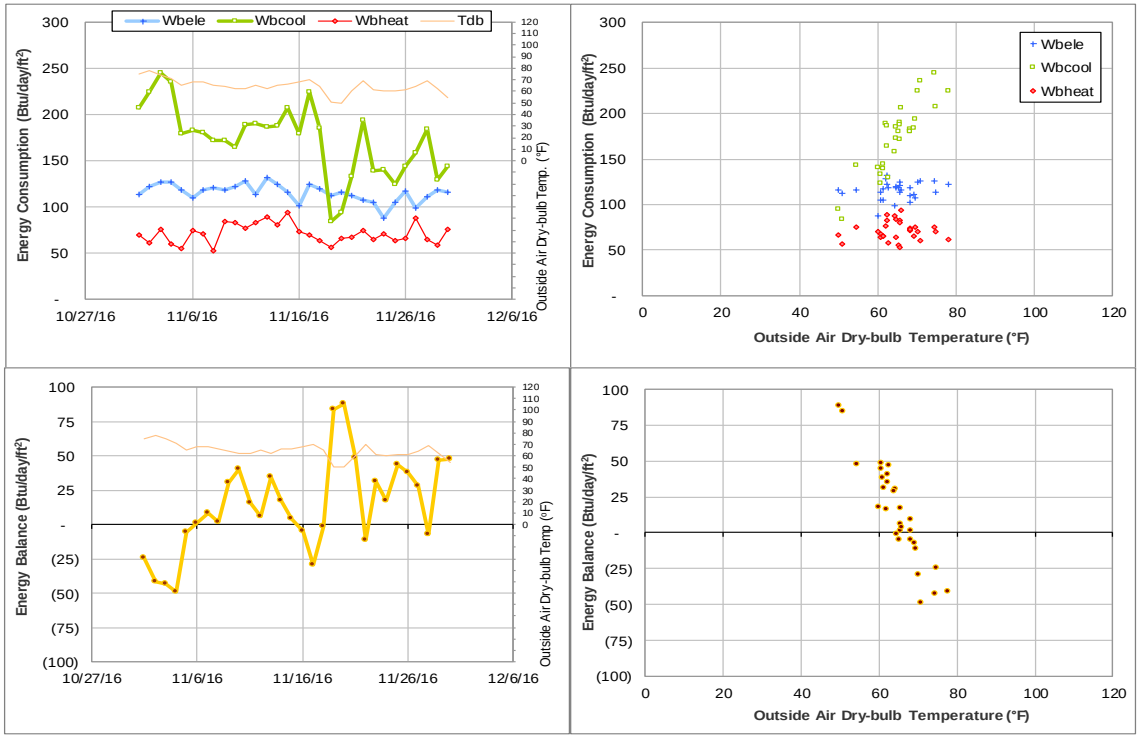


Figure V-17 Reed Arena and Cox-McFerrin Center TAMU BLDG # 1554 Energy Balance Plot during November 2016

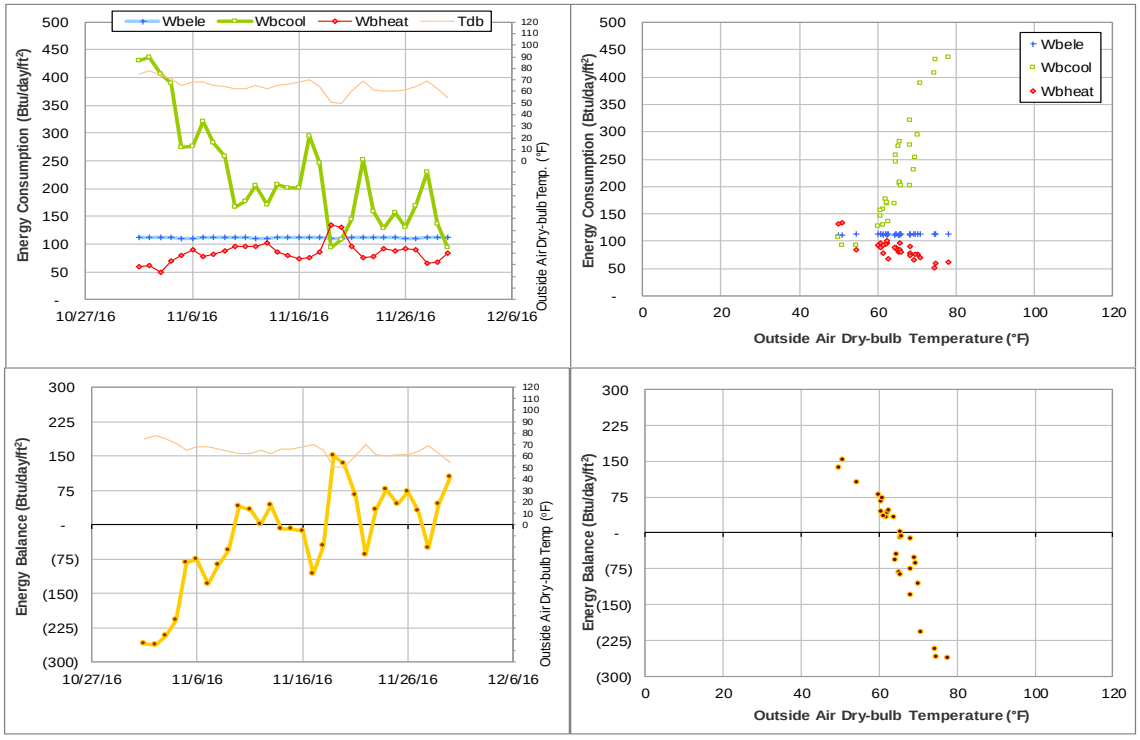


Figure V-18 Veterinary Medicine Building 1, 2, and 3 TAMU BLDG # 1812 Energy Balance Plot during November 2016

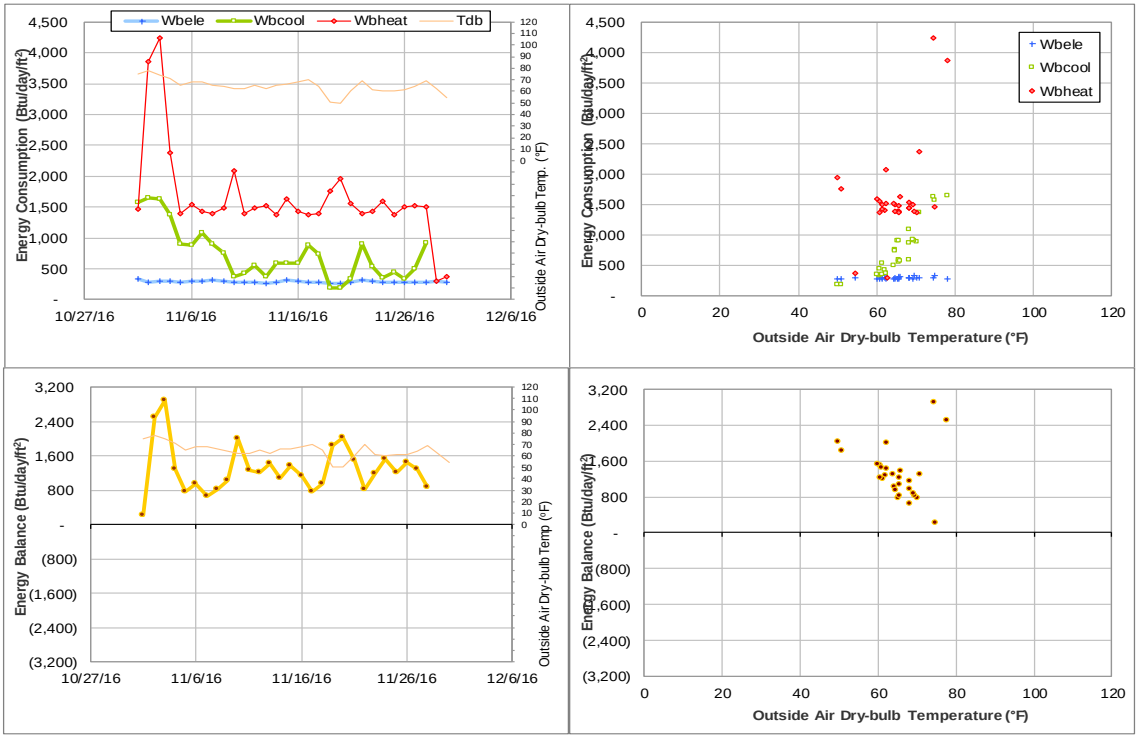


Figure V-19 Texas Institute for Genomic Medicine TAMU BLDG # 1900 Energy Balance Plot during November 2016

VI. Appendix

ENERGY ANALYSIS GROUP

ENERGY SYSTEMS LABORATORY
TEXAS A&M ENGINEERING EXPERIMENT STATION

Project: TAMU: Energy Analysis*

Report: Energy Consumption Data Quality Assurance/Quality Control Assessment Report for the Month of November 2016

Prepared for:

Utility & Energy Services

Division of Administration

Texas A&M University

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Date: December 2016

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