



Energy Management

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Overview:

- **Previous process**
- **Improved Process**
- **Asset Accountability**
- **Business Table Development**
- **Map Products**





Building Energy!

The Air Force Space Command Energy Program team developed a focused energy strategy that **saved 1.48 billion Btu in FY 2013**. The program's energy roadmap focuses the entire command on a number of education and outreach "pulse points" for its 85 bases, geographically separated units, and other locations worldwide. The plan includes the following initiatives: implementing an energy strategic communication plan, reducing energy use at the top two energy-intensive geographically separated units, **deploying high-efficiency exterior lighting** command-wide, examining energy-intensive mission activities, reducing fleet fuel consumption, developing and deploying energy management systems at each installation, emphasizing energy management in facility design, and making the program headquarters building a model for energy management. As of FY 2013, the comprehensive energy and water conservation efforts driven by the Air Force Space Command Energy team, coupled with the efforts of each installation in the Command, led to a **29% reduction in facility energy intensity and a 46% reduction in water intensity from their respective baseline years**.





Previous Process:

Consisted of:

- **Manually gathering readings from field onto a sheet of paper**
- **Inputting reading into Excel Spreadsheet**
- **Sending spreadsheet to Energy Manager**
- **Energy Manager then placed data into his Reimbursable Billing Spreadsheet**





Initial Process Improvement:

- **Utility shop collected meter assets with GPS and collects meter reads/info monthly. (Date, meter type, current reading)**
- **Data is electronically transferred to GIS System**
- **Unique Energy Business Table is created and exported for Energy Manager's use**
- **Provides spatial visibility of Energy data**

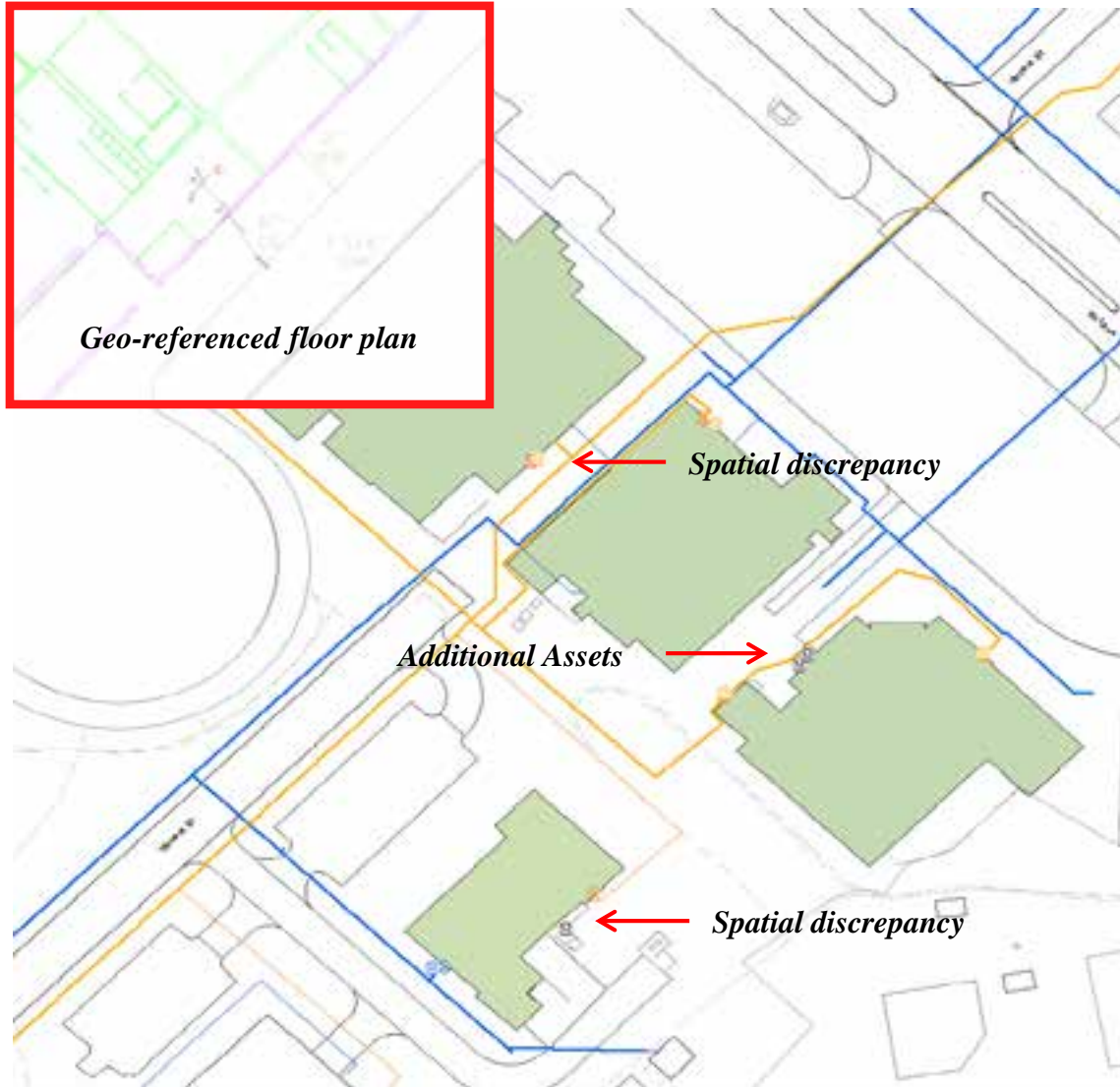
For example:

- **Energy usage per building (monthly/annually)**
- **Comparison of energy use month to month**
- **Reimbursable amounts billed per building**
- **Provide web enabled energy program accessibility**





GIS Asset Accountability:



Meterreads					
FID	Shape *	METERREA	DATE	BLDGN	UtilityTyp
19	Point	0	<Null>	1054.1	Water
32	Point	0	<Null>	425.2	Water
50	Point	0	<Null>	1486.2	Water
60	Point	0	<Null>	1485	Water
63	Point	0	<Null>	1361.2	Water
1	Point	987543	1/25/2015	1322.1	Natural Gas
20	Point	0	<Null>	1054.2	Natural Gas
23	Point	0	<Null>	205.3	Natural Gas
24	Point	0	<Null>	208	Natural Gas
25	Point	0	<Null>	210	Natural Gas
26	Point	0	<Null>	214.1	Natural Gas
28	Point	0	<Null>	119	Natural Gas
29	Point	0	<Null>	360.1	Natural Gas
30	Point	0	<Null>	360.2	Natural Gas
34	Point	0	<Null>	560.2	Natural Gas
35	Point	0	<Null>	133.1	Natural Gas
37	Point	0	<Null>	140	Natural Gas
42	Point	0	<Null>	404.1	Natural Gas
45	Point	0	<Null>	404.4	Natural Gas
46	Point	0	<Null>	400	Natural Gas
47	Point	0	<Null>	725	Natural Gas
50	Point	0	<Null>	1038	Natural Gas
56	Point	0	<Null>	1345	Natural Gas
57	Point	0	<Null>	1485	Natural Gas
58	Point	0	<Null>	1486.1	Natural Gas
62	Point	0	<Null>	1361.1	Natural Gas
66	Point	0	<Null>	1840	Natural Gas
67	Point	0	<Null>	1844	Natural Gas
70	Point	0	<Null>	1.1	Natural Gas
74	Point	0	<Null>	3.2	Natural Gas
76	Point	0	<Null>	1700	Natural Gas
77	Point	0	<Null>	1246.2	Natural Gas
33	Point	0	<Null>	660.1	Electrical
73	Point	0	<Null>	3.1	Electrical
22	Point	0	<Null>	206.2	
43	Point	0	<Null>	404.2	
0	Point	54321	1/25/2015	1324.1	
2	Point	976593	2/20/2015	1324.2	



GIS Asset Accountability:

- **All meters will be assigned unique IDPK numbers**
- **When meters need maintenance or replacing, map will show exact location of meter.**
- **Meter types can also be easily distinguished**
- **Population of additional meter asset attributes through Energy Management & Control Systems**



Comparison:

Previous Process

- **Only gathers meter usage information**
- **Requires data input multiple times**
- **No spatial asset accountability**



Improved Process

- **Gathers spatial data and meter usage.**
- **Only requires data input one time**
- **Allows for asset accountability**
- **Able to use meter locations to verify/match-up where utility lines enter/exit buildings**
- **Allows for Map Product production**



Business Table:

Record	Bldg	User	Rate Type	E Rate	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	YTD TOTAL	YTD COST
21 FSS	1	Snackbar	4	0.05238		13142	6286	7070					56717	\$3,060.42
21 FSS	1	Officer's Dining	4	0.05238	1119	1477	1857						11811	\$618.42
AAFTS	2	Snackbar	4	0.05238	7196	7967	7710	7967					30840	\$1,605.88
ARMY	3	U.S. Army Space Command	3	0.05799	265400	299817	284268	293744					2436569	\$145,649.99
21 FSS	133	Aero Club	4	0.05238	2824	2958	2831	2803					25939	\$1,396.55
	140	200 Airlift Squadron	3	0.05799	503	530	421	431					4188	\$249.99
IAA	205	SAA Tower	2	0.0587	50602	56023	60240	63000					490659	\$27,297.06
21 MDG	425	Physiological Training	3	0.05799	2233	2472	7591	4410					26592	\$1,598.45
21 FSS	640	Community Activities	4	0.05238	7760	9360	7256	4240					67096	\$3,612.34
DAPS	664	DAPS	1	0.07348	4620	5115	4950	5115					40095	\$3,082.96
21 MDG	725	Mental Health/Med Gp	3	0.05799	43638	45817	45335	38114					355990	\$21,273.38
21 MDG	959	Clinic	3	0.05799	129520	148480	158560	87360					1096240	\$65,527.35
21 FSS	1033	The Club	4	0.05238	59787	65873	61926	66969					523	
21 FSS	1054	Golf Course House	3	0.05799	20608	21545	20254	22115					168	
General	1171	Entire Building (Sep 11)	3	0.05799	11894	13420	12333	12885					102	
21 MDG	1346	Bio-Environmental	3	0.05799	5950	6547	5583	5981					500	
Federal Credit Un	1345	Ent Federal Credit Union	1	0.07348	10095	11187	10335	12086					829	
AAFTS	1360	Service Station	4	0.05238	2108	2753	2346	2496					205	
21 FSS	1363	Car Wash	4	0.05238	3805	5578	4080	4068					363	
McDonald's Restau	1365	McDonald's Restaurant	4	0.05238	28911	33009	29840	30563					252	
TVC	1425	Tierra Vista Communities	1	0.07348									0	
U.S. Post Office	1466	U.S. Post Office	2	0.0587	5121	5811	5628	6071					472	
5 Star Bank	1485	5 Star Bank	1	0.07348	2800	4240	4640	2560					301	
21 FSS	1685	Cart Barn/Golf Course EQ	3	0.05799	1453	2394	5223	2150					186	
AAFTS	1700	Shoppette	4	0.05238	13360	15240	17520	10800					112	
MSU/AFSC	1836	Space Training	3	0.05799	113545	130183	117621	136052					755	
21 MDG	2012	Dental Lab	3	0.05799	29820	34620	43020	25560					266	
21 MDG	20127	Temporary Dental Trailers	3	0.05799	22771	19090	24833	12237					178	
AAFTS	2017	Base Exchange	4	0.05238	157333	178524	169621	183727					1420	

Reimbursable Billing Spreadsheet



Apr_MeterReads\$			
METERREAD	DATE	UtilityTyp	Bldg #
34227	4/28/2015	water	2012.3
865643	4/28/2015	gas	2019.1
18557	4/28/2015	water 1	2019.2
805121	4/28/2015	water2	2019.3
15627	4/28/2015	water high	2017.4
15627	4/28/2015	water high	2017.4
3315	4/28/2015	gas	1054.1
44452	4/28/2015	water	1054.2
11472	4/28/2015	water-1	205.1
9687	4/28/2015	water-2	205.2
7845	4/28/2015	Natural Gas	205.3
3290821	4/28/2015	Natural Gas	208
98272	4/28/2015	Natural Gas	210
406359	4/28/2015	Natural Gas	214.1
565242	4/28/2015	gas-2	214.2
469264	4/28/2015	Natural Gas	119
14692	4/28/2015	Natural Gas-1	350.1
15084644	4/28/2015	Natural Gas-2	350.2
3163	4/28/2015	ga	425.1
314	4/28/2015	Water	425.2
894362	4/28/2015	gas	560.1
47340	4/28/2015	water	601.2

GIS Attribute Table



Map products:

CUSTOMER	BUILD #	USER	ELECTRIC	GS	NA/SAPL GA	FF	WATER	FO	SEWER	STY	TOTAL
ARMY	3	U.S. Army Space Command	334,700	18408,212	307,333	2471,1070	84681	209,8711	51,973	224,7823	22471,1306
DELA	2018	Commissary	281,189	10,000,1031	1,232,18,3	871,2413	89000	249,1340	-	-	11120,8611
21 MDO	809	Cafe	120990	7914,4734	144939	971,2099	89500	303,3494	52,400	227,8993	4581,8234
21 FSS	1013	Fire Club	72,87	2181,100	113713	240,5908	148000	722,8902	-	-	5149,8422
FAA	200	FAA Tower	53884	3102,8904	3800	20,8000	49000	280,7343	11,127	89,73	3091,4760
FAA	200	FAA Tower	23804	3102,8904	3800	20,8000	49000	280,7343	11,127	89,73	3091,4760
FAA	200	FAA Tower	53884	3102,8904	3800	20,8000	49000	280,7343	11,127	89,73	3091,4760
21 MDO	2012	Dental Lab	31420	1800,0408	153739	1006,8924	11300	60,6047	8,848	26,100	2972,1310
21 MDO	708	Medical Admin/Adm Group	39430	2000,9871	14839	260,1924	3910	30,7548	4,728	26,1817	2848,10
MCDs	1389	McDonald's Restaurants	30483	1807,1795	60833	344,111	88800	207,2144	24,700	90,1833	2029,2948
21 FSS	1084	Golf Course House	24040	1448,2888	28090	240,1084	98800	800,0004	28,007	128,100	2018,7460
SNF	1348	Ent Patient Credit Union	8880	712,480	7300	8,8988	0	0	0	0	721,872
AA/BS	1700	Snuggles	12600	680,968	4839	28,1208	0	0	0	0	888,1048
21 FSS	840	Community Activities	8980	648,3728	28109	188,2114	8800	17,8493	-	-	831,2088
21 MDO	1348	BoEhrmann	7587	408,8534	5000	20,7541	16000	83,2048	2,000	81,840	878,1911
USAR	1488	U.S. Post Office	7008	648,8720	8839	30,7108	3000	17,8048	2,400	14,210	813,6821
DAFS	604	DAFS	4840	380,728	18790	107,1833	488	3,5217	0,273	0	807,5911
21 FSS	1381	Car Wash	2100	141,8488	5000	80,2410	88200	282,8188	-	-	497,0088
AA/BS	2017	Gate Exchange	18096	1064,4760	30100	1484,3277	80400	280,1983	-	-	11783,9011
21 MDO	420	Physiological Training	2901	111,7083	24800	181,8438	8000	20,1894	3,200	13,844	270,8903
21 MDO	420	Physiological Training	2901	111,7083	24800	181,8438	8000	20,1894	3,200	13,844	270,8903
3 STAR	1489	3 Star Stars	810	278,2848	833	8,8423	0	0	0	0	280,1871
21 FSS	133	Auto Club	22040	110,4120	10447	81,7140	2800	24,8200	-	-	227,0161
AA/BS	1300	Beulah Station	3800	140,8211	7000	38,7488	3200	13,8448	-	-	187,4148
21 FSS	1085	Carl Barndt Center Bldg	2108	100,0740	9	0	0	0	0	0	100,0740
206AR	140	200 Airmen Squadron	290,47780	34,8887	1023,8023	8,9000	8000	49,8000	7,200	21,1400	120,0760
206AS	140	200 Airmen Squadron	290,47780	34,8887	1023,8023	8,9000	8000	49,8000	7,200	21,1400	120,0760
206AD	140	200 Airmen Squadron	290,47780	34,8887	1023,8023	8,9000	8000	49,8000	7,200	21,1400	120,0760
206AE	140	200 Airmen Squadron	290,47780	34,8887	1023,8023	8,9000	8000	49,8000	7,200	21,1400	120,0760
AA/BS	7	Driveway	7810,23413	400,2040	2800,3088	18,8023	18100	79,7340	-	-	800,8821

Total Energy Costs

Rate Types





Map products:

