

Balfour Beatty

Award Recipient: Balfour Beatty Military Housing Management, LLC

Award Number: DE-FOA-0000612

Project title: SWITCH FOR GOOD COMMUNITY PROGRAM

Project director/principal investigator: Tabitha Crawford

Teaming Members: Balfour Beatty Military Housing Management, LLC was a sole contractor under this award. Our primary sub-contractor was WattzOn, Inc.

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Balfour Beatty Military Housing Management does not claim intellectual property restrictions for its role in Switch4Good as performed under DE-FOA-0000612.

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EXECUTIVE SUMMARY

Switch4Good is an energy-savings program that helps residents reduce consumption from behavior changes; it was co-developed by Balfour Beatty Military Housing Management (BB) and WattzOn in Phase I of this grant. The program was offered at 11 Navy bases. Three customer engagement strategies were evaluated, and it was found that Digital Nudges (a combination of monthly consumption statements with frequent messaging via text or email) was most cost-effective. The program was delivered on-time and on-budget, and its success is based on the teamwork of local BB staff and the WattzOn team. The following graphic shows Switch4Good “by the numbers”, e.g. the scale of operations achieved during Phase I.

Switch4Good, Phase I, January – July 2013 (Program end December 2013)

Element	Results
DATA	<ul style="list-style-type: none"> • Energy Use number of data points handled: 38K monthly; 15M hourly; 300M 15-minute • Integrated property management records (house size, house detail, no. of residents) with utility bills and smart meter data (hourly and 15-minute)
OUTREACH & PARTICIPATION	<ul style="list-style-type: none"> • 81,000 print & event touch points • 28 Town Hall meetings • 3 door-to-door campaigns • Participation: 39% opt-in (ranging from 20% at Key West to 49% at Mayport)
SERVICES	<ul style="list-style-type: none"> • 36,000+ text messages • 39,700 monthly consumption statements • 127 home coaching visits • 55 property manager reports • 17 high-use home reports • 24 property manager maps • 17 vacant home high energy use alerts • Innovated “house vs. habits” reporting
ENERGY SAVINGS	<ul style="list-style-type: none"> • 15% average electricity savings per month vs. control group for Digital Nudges • Savings in every month Mar – July (11%, 13%, 21%, 14%) • Savings at 4 out 5 bases each month • Additional 5% savings from Home Coaching visits, but Digital Nudges found to be more cost effective than Home Coaching (4 cents per kWh saved vs. 71 cents per kWh saved)
SURVEY RESULTS	<ul style="list-style-type: none"> • Two-thirds of residents and 100% of property managers want program to continue. • 93% of residents reported reading statements each month. • 52% of residents receiving Digital Nudges reported changing their habits.

Based on the success of Phase I, we propose to expand to 16 military communities and up to 8 cities in Phase II, leveraging our experience with on-base communities to the broader residential market. As smart meter installations grow to a projected 65 million homes by the end of 2015, and as Green Button interface standards are more broadly available, behavior-based savings become more easily accessible by consumers. Our innovative “house vs. habits” reports, based on 15-minute smart meter data are already useful to property managers. Switch4Good has proven to be a scalable and successful program that can be implemented across a variety of geographic and utility regions, and is poised to take advantage of national trends in consumer energy management.

Actual Accomplishments Versus Goals of Project

The results of the Switch4Good program are very strong. Our goals were the following expected results as submitted in our original application:

Expected Goals	Actual Results
10% reduction in energy use, on average	15% actual savings, on average
Well-coordinated outreach to engage residents	Participation rates of 40%
Behavior based energy saving actions	Program was 100% behavior based, no efficiency upgrades were made to homes
Use of a community wide goal to motivate residents	Community goals were used on each digital nudge and personal coaching site
Demonstration design that provides the value of smart grid data for residential energy savings	Not only did we reduce energy, we also discovered that smart grid data can help us tease apart issues that are home related (like HVAC malfunctions) versus habit related (like leaving lights on all night). An unexpected but welcome outcome.

This section provides more detail on these energy savings results.

Methodology

To measure the effect of the opt-in services on energy use in the Switch4Good program, a “difference-of-differences” method is used, in which the *change* in energy use between two months by Switch4Good participants is compared to the *change* in energy use by a control group.¹ The control group was constructed as follows: On each base offering Digital Nudges and/or Home Coaching, residents who did not chose to participate in the program form the control group. Additionally, those who did choose to opt in to the program were counted *as part of* control group in every month before they began receiving digital nudges or home coaching, mitigating selection bias. Because homes on each base are built from only a few floor plans, and homes are offered to military families based on rank and number of children, the non-participating homes serve as a remarkably comparable control group.

¹ “Difference of differences” is the preferred methodology for studying the effect of behavior-based energy savings programs. For example, see the papers and guides supporting the recent California Public Utility Commission hearing (June, 2013), .

This method of calculating energy savings controls for external factors, particularly large shifts in weather (e.g. Cooling Degree Days) from the beginning and end of the program. Importantly, utilizing a difference-of-differences methodology controls for the unique situation arising from the implementation of resident utility billing for the first time in April. It should be expected that some energy savings would be achieved by having residents begin to pay for their utilities. By measuring savings from Switch4Good as the comparison between participants and a control group on the same base and by like type homes, we accounted for any savings effects that may have been generated by the beginning of billing, and isolate the effects of the Switch4Good program. A month-to-month comparison was chosen to ensure the highest quality data possible, as it relies on billing data. (For various reasons, the hourly and 15-minute interval data was not 100% consistent with monthly utility billing.) With January 2013 as our baseline month (pre-Switch4Good), we compared the change in energy use at participating homes to control homes in April, May, June, and July, 2013 – months in which residents were billed for energy use.

As mentioned, the 11 bases were divided into three treatment groups (Statements Only; Digital Nudges + Statements; Home Coaching + Digital Nudges + Statements). The performance of treatment groups was evaluated at the program level. All homes in Digital Nudges were pooled into a group and compared to all homes that did not opt-in. Homes receiving a Home Coaching Visit were automatically enrolled in Digital Nudges. This allowed the incremental effect of Home Coaching Visit program to be compared to Digital Nudges alone, and to homes receiving only Statements. There is not a control group for homes receiving Statements, because of the simultaneous introduction of residential utility billing. (The perfect control group would also be undergoing the introduction of billing, but not receiving Statements. A less perfect control group would be a Navy base or group of bases with billing underway. Neither was available.)

Additional details on methodology and results can be found in Appendix E, “Switch4Good: Details on Implementation, Data, Analytics and Results.”

Switch4Good: High Participation Rates & Strong Energy Savings

During the seven months of the program (January – July, 2013), the Switch4Good program had 42% total participation in opt-in services (Digital Nudges and Home Coaching), generating incremental savings averaging 15% per month per participating home. Individual base results ranged between less than 1% and as high as 45% savings each month for Digital Nudges. Home Coaching Visits were found to add an additional 5% savings over those provided by Digital Nudges.

These are quite high participation and savings results for a behavior-based program. To put these results in context, a short literature review was completed, and shows participation rates for opt-in behavior programs ranging from 1.5 – 18%, and energy savings for opt-in programs ranging from 4 – 8%.

Switch4Good outperformed all studies reviewed. As discussed previously, the trusted community partner and the use of frequent messaging via a scalable technology platform have provided Switch4Good important program differentiators.

Also note that in other studies, mailing statements alone has been found to achieve 2 – 3% energy savings.² Thus the energy savings reported in this Demonstration Report are likely be a low estimate, as

² OPower has the largest programs of this nature. See the studies listed at their site for more information: <http://opower.com/company/library/verification-reports>.

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the control group itself might have generated energy savings. (Program needs – in particular, the need to serve all residents on the 11 bases – required 100% of homes receive statements, and these needs dominated methodology issues in program design.)

Review of Participation Rates and Energy Savings for Opt-In Behavior Programs

Study	Participation Rates	Energy Savings	Notes
Ehrhardt-Martinez, Donnelly & Laitner; ACEEE; 2010	“under 10%”	4 - 8%	Summary of 56 studies, 1974 – 2010
Delmas, Fischlein Asensio 2013	Most studies reviewed had small sample sizes (eg under 500)	7.4%	Review of 156 studies, 1975 – 2012.
BC Hydro (CEE)	15% in target population; 4% overall		Online tools
City of Palo Alto (CEE)	1.2%		Home coaching (behavior only)
Fortis, BC (CEE)	18%		Community Energy Diet
Fortis, BC (CEE)	7%		Hour in the Dark
NJ Natural Gas (CEE)	2%		Online Dashboard
SMUD (CEE)	1.5%		Social Media campaign

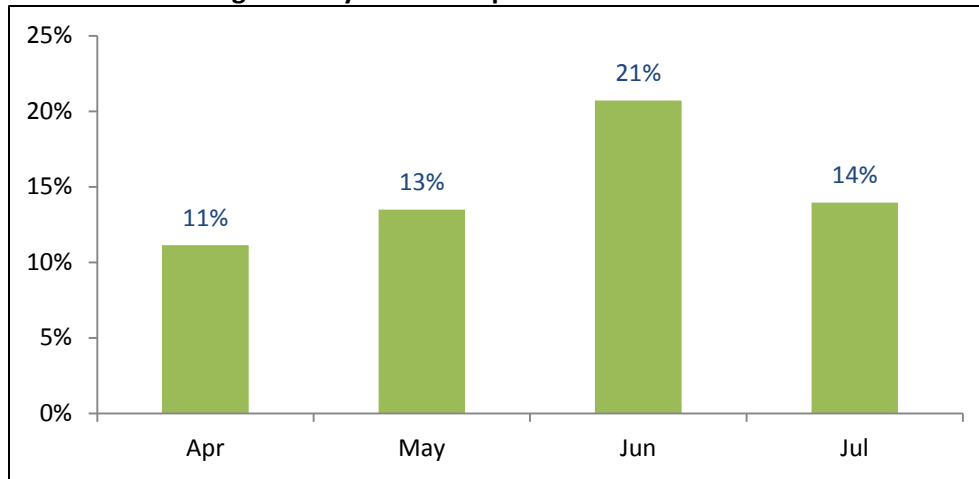
References:

--Karen Ehrhardt-Martinez, Kat A. Donnelly, John A. “Skip” Laitner,, “Advanced Metering Initiatives and Residential Feedback Programs: A Meta-Review for Household Electricity-Saving Opportunities”, American Council for an Energy-Efficient Economy, 2010, <http://sedc-coalition.eu/wp-content/uploads/2011/06/ACEEE-08-06-01-Energy-Information-Feedback-Studies1.pdf>.
 --Delmas, M., Fischlein, M. & Asensio, O. *Information Strategies and Energy Conservation Behavior: A Meta-Analysis of Experimental Studies From 1975 to 2012*. University of California Center for Energy & Environmental Economics, May 2013. Available at: http://www.uce3.berkeley.edu/WP_061.pdf
 --Consortium for Energy Efficiency (CEE), *Summary of Behavior Programs, 2012*, Public, <http://library.cee1.org/content/2012-behavior-program-summary-public>

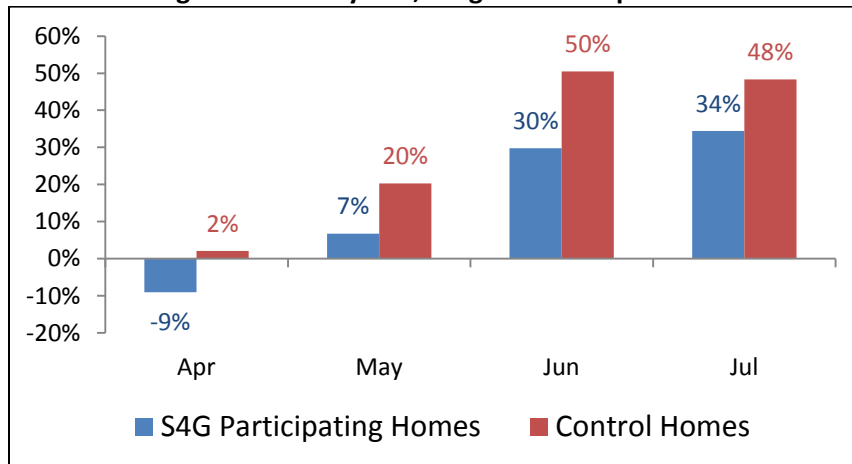
The following figure shows the monthly savings results for the program. Panel A shows the “bottom line”, the net savings per month. Panel B shows the savings as the difference between participants and the control group. As is clear from Panel B, electricity use increased significantly in this footprint in late spring/early summer. Participating homes increased their electricity use less than control group homes.

Energy Savings Achieved by Switch4Good Participants

Panel A: Net Savings in Navy Southeast per Month



Panel B: Change in Electricity Use, Program Participants vs. Control Group



Not only were the energy savings results consistent over time, they were consistent across communities. The following table reports savings by base by month. Savings are calculated as energy use compared to non-participating homes on the same base. As the table shows, there were only two months in which just one base failed to show savings from Switch4Good. Overall, more than 344,000 kWh were saved. At an average cost of 12 cents per kWh, the Switch4Good program saved residents \$41,000 worth of energy during the program period.

Summary of Project Activities

Actual accomplishments are shown in the table below against the goals and objectives established in our statement of operating procedures. Included are the milestones, anticipated completion dates and actual completion dates for all items during this time period.

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Due Date	Hypotheses / Goals	Completion Date	Comments / Approaches Used
Task 1.1 Project Management & Planning			
01 Oct 2012	1.1.1 - Host a Kickoff Meeting to provide overview information, program requirements and opportunities, and coordinate the 60-day preparation period.	28 Sep 2012	Attended by representatives from BBMHM, Yardi, the Navy, and WattzOn.
Task 2 Demonstration Preparations			
30 Sep 2012	2.1 Develop home baselines.	10 Sep 2012	BBMHM & U.S. Navy developed baselines and provided to YES and WattzOn.
30 Sep 2012	2.2 Prepare statement content for test groups.	28 Sep 2012	Pre-mock billing statements provided to residents by WattzOn and BBMHM at Resident Utility Meetings
30 Jan 2013	2.3 Prepare home coaching program and test in several homes with WattzOn.	Demonstrated 28 September 2012.	Tested in 5 homes during December Home Energy Coach training. Home coach training completed 12/14/12.
15 Feb 2013	2.4 Select community incentive goals for participating bases.	Complete	Goal for March 31st Community Reward was 20% participation. All bases achieved at least 20%. Goal for June 30th reward was 80% of S4G homes save 5%. All bases achieved at least 8% savings.
31 Dec 2012	2.5 Prepare marketing and outreach collateral to engage residents.	Complete	Flyers & check-in information complete. Flyer box used in remote areas. Door hangers complete and distributed. Road signs completed. Energy advice column "Ask Kate" printed in 3 base newspapers. Switch4Good Saving Tips articles written monthly for release to local media and posting to BBC blog.
30 Jan 2013	2.6 Prepare websites for each base so residents can track progress to community goals.	Complete 24 Jan 2013	http://nsmayport.switch4good.org/ Updated Community Reward progress reports posted monthly.
Task 3 Demonstration Execution			
31 Oct 2012	3.1 Launch enrollment campaign with outreach program.	Complete	Updated statistics included in this report.
01 Feb 2013	3.2 Begin home coaching visits.	Complete	Home coaching tested in December and launched full scale February 1st.

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30 Jan 2013	3.3 Send monthly statements to test groups.	Complete	Monthly savings statements launched in November for September & October data. Statements personalized with hourly data began with January data.
30 Jan 2013	3.4 On-board new residents with the program as they check into the housing for the first time.	Complete	Updated statistics included in this report.
31 Jul 2013	3.5 Obtain any demographic and house data not yet collected.	Complete	Providing home diagnostic reports and vacant energy alerts by analyzing 15min smart meter data.
31 Jul 2013	3.6 In final month, conduct exit interviews by phone with residents	Complete	Additionally, 18 home coaching and 11 staff surveys completed.

Survey Results

- 66% of residents on opt-in bases felt S4G increased their awareness of energy usage
- 94% read the S4G Energy Snapshot that arrived with their utility bill
- 53% changed their behavior based on a S4G text or email
 - 48% made that behavior change permanent
- 67% recommended that S4G be continued on their base

Monthly Summary

- 4,700 resident touchpoints via printed content and events
- 6,700 social media impressions
- 5,647 text alerts & tips
- 1,236 email alerts & tips
- Sent 15 Vacant Energy Alerts to Community Managers
- Continued 15min diagnostic reports for high using homes, as requested
- Continued Community Manager Summary Reports
- Continued hourly energy profile reports to supplement BBC audits
- Collected resident & staff end-of-program surveys

April-June \$500 Community Rewards

Base	Reward Recipient
JB Charleston	Dog park
NAS Jacksonville	Dog park & picnic area
NAS Key West	Wounded Warrior Project
NAS Pensacola	NW Florida USO
NS Mayport	Finegan Elementary

S4G Savings Summary - (savings by S4G homes over non-S4G homes)

Month	April	May	June	July
Savings from Digital Coaching	11%	14%	22%	18%

Opt-in Program Summary

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Summary as of 7/31/2013*	Total enrollment since launch	Enrolled Move-outs	Current Enrollment	As a % of Occupied Homes	As a % of RECP Homes	As a % of non-RECP Homes	Coaching Visits
Charleston	508	61	447	48%	58%	26%	
Mayport	434	46	388	49%	60%	15%	87
Pensacola	251	16	235	46%	48%	21%	
Key West	175	23	152	19%	23%	3%	40
Jacksonville	125	3	122	31%	41%	2%	
TOTAL	1,493	149	1,344	39%	42%	16%	127
*Removed vacancies							

Enrollment & Services Rollup

	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July
Total S4G Enrollment	83	136	399	821	1,191	1,349	1,389	1,453	1,493
MoM Increase %	-	64%	193%	106%	45%	13%	3%	5%	3%
Home Coaching Visits	-	5	-	27	43	21	23	9	0
Text Messages	-	-	908	2,579	6,144	7,111	7,307	7,286	5,647
Emails	-	-	-	-	-	941	1,582	1,394	1,236

Outreach Summary

	YTD Estimated Touchpoints	81,812
Oct	Major Outreach Activities	Est. Reach
	Events	
10/23/2012	Panama City Resident Utility Meeting (RUM)	30
10/23/2012	Key West RUM #1	40
10/24/2012	Key West RUM #2	40
10/25/2012	Gulfport RUM	20
10/25/2012	Pensacola RUM #1	10
10/26/2012	Pensacola RUM #2	10
10/29/2012	Whiting Field RUM	20
10/31/2012	Jacksonville RUM #1	30
	October Sub-Total	200
Nov		Est. Reach
	Events	
11/1/2012	Meridian Resident Utility Meeting (RUM)	20
11/5/2012	Kings Bay RUM	20
11/5/2012	Mayport RUM #1	30
11/5/2012	Jacksonville RUM #1	15
11/6/2012	Mayport RUM #2	30
11/7/2012	Mayport RUM #3	30
11/8/2012	Fort Worth RUM	20
11/8/2012	Jacksonville RUM #2	15
11/13/2012	Charleston RUM	20

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	Statements & Flyers	
11/26/2012	Consumption statements mailed for Sep-Oct data	3,525
	Articles / Blogs	
11/14/2012	Mayport Mirror article front page	500
	Other	
11/26/2012	Coordination with NAVFAC Base Energy Managers	5
	November Sub-Total	4,185
Dec		Est. Reach
	Events	
12/10 -12/14	Home Energy Coach Training	10
	Statements & Flyers	
12/18/2012	MPT - Home Coach Door to Door Flyer distribution	123
12/19/2012	Remainder of Sep-Oct consumption statements mailed	107
12/19/2012	Flyers mailed to non-participating homes	830
12/27/2012	Consumption statements & flyers mailed for Oct-Nov data	4,550
	Articles / Blogs	
12/4/2012	NS Mayport Housing Blog	50
12/13/2012	Mayport Mirror article front page	500
12/14/2012	Southernmost Flyer article front page	500
12/21/2012	Southernmost Flyer article page 4	400
	December Sub-Total	7,070
Jan		Est. Reach
	Events	
1/16/2013	CHA - Briefed Compass meeting	26
1/18/2013	JAX - Briefed Community Workout Group	10
1/19/2013	CHA - Briefed Operation Clip & Save	15
1/24/2013	JAX- Energy Conservation meeting with NAVFAC	2
1/28/2013	CHA - Briefed Community Center Cardio Class	5
1/29/2013	CHA - Briefed Community Center Zumba Class	10
1/29/2013	MPT - Ombudsman assembly meeting	200
	Statements & Flyers	
1/28-1/29	MPT - Home Coach Door to Door Flyer distribution	170
1/14/2013	JAX - Email Flyer sent to HSM 70 FRG	200
1/14/2013	CHA - Flyers posted at NEX, MWR, Chapel, FFSC, Gym & Navy Relief	180
1/16/2013	JAX - Email Flyer sent to HSM 70	400
1/21/2013	JAX - Emailed and posted flyers at Base Chapel	150
1/22/2013	CHA - Flyers posted at schools, library & optomotrist	90
1/22/2013	JAX - Flyers posted at Youth Center	75

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1/22/2013	JAX - Distributed flyers at Commissary	100
1/26/2013	Consumption statements & flyers mailed for Dec data	4,652
	Articles / Blogs	
1/1-1/31	KW - Weekly Southernmost Flyer article (250 views per week)	1,000
1/4/2013	CHA - NWS Charleston Homes BBC Blog	250
1/4/2013	CHA - Posting to various social media spouse groups	500
1/15/2013	MPT - Fleet and Family Support Center Facebook post	700
	Other	
1/1-1/31	WattzOn responding to inquiries via website & phone	20
	January Sub-Total	8,755
Feb		Est. Reach
	Events	
2/2/2013	JAX - Briefed community play group	12
2/7-2/28	CHA - Various events (Spouse groups, financial planning, PTA, etc.)	170
2/11/2013	MPT - Neighborhood huddle for RECP update	15
2/21/2013	MPT - Lemonade stand S4G signup at Marsh Cove	50
	Statements & Flyers	
2/6/2013	PEN - Flyers posted in NEX & Chief's Club	150
2/6/2013	PEN - Flyers posted in Lighthouse Terrace	20
2/7/2013	JAX - Distributed flyers to housing	55
2/13/2013	JAX - Distributed flyers to housing	62
2/15/2013	JAX - Distributed flyers to housing	71
2/15/2013	Consumption statements & flyers mailed for January data	4,845
2/15/2013	Door hangers mailed to each base	3,000
2/21/2013	MPT - Flyer Box posted in Marsh Cove	100
2/25/2013	JAX - Distributed flyers at Commissary & NEX	85
2/28/2013	JAX - Distributed flyers at baseball fields	35
	Articles / Blogs	
2/14/2013	JAX - Air News Article	1,000
2/18/2013	KW - S4G posted to spouses group Facebook page	247
2/22/2013	KW - Ask Kate in Southernmost Flyer	500
2/26/2013	CHA - Posting on community websites & social media	200
	Other	
2/1-2-28	WattzOn responding to inquiries via email, website & phone	16
2/1-2-28	MPT - Residents contacted for home energy coaching visits	174
2/1-2-28	KW - Residents contacted for home energy coaching visits	78
2/23-2/28	Road signs placed in each neighborhood on five bases - 131 total signs	4,000
	February Sub-Total	14,885
Mar		Est.

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		Reach
	Events	
3/1/2013	JAX - MWR Event	25
3/5/2013	JAX - Community Group	10
3/8/2013	PEN - Lighthouse Terrace Meeting	4
3/9/2013	PEN - Command meeting to discuss flyer	60
3/9/2013	JAX - Baseball game flyers	25
3/1-3/31	CHA - Community Events	75
3/9/2013	JAX - VP26 FRG & Ombudsman Meeting & emailed flyers	450
	Statements & Flyers	
3/1/2013	PEN - Lighthouse Housing	65
3/2/2013	PEN - Barrancas Housing	45
3/4/2013	PEN - Andrew Jackson Housing	25
3/8/2013	PEN - Corry Village Housing	61
3/14/2013	PEN - Officer Housing	50
3/18/2013	JAX - Flyers posted around base	100
3/15/2013	Consumption statements & flyers mailed for January data	4,736
3/21-3/30	PEN - Flyers posted in housing, headquarters, bowling alley	260
3/1-3/31	MPT - Flyer Box in Marsh Cove	100
	Articles / Blogs	
3/25/2013	Switch4Good Monthly Tips article on BBC Better Living Blog	500
	Other	
3/1-3/31	WattzOn responding to inquiries via email, website & phone	13
3/1-3/31	Residents contacted for home energy coaching visits	96
3/1-3/31	Road signs placed in each neighborhood on five bases - 131 total signs	4,000
	March Sub-Total	10,700
Apr		Est. Reach
	Events	
4/3/2013	JAX - Meeting with FRG HSM70 and sister command	45
4/9/2013	JAX - VP30 FRG Meeting	50
4/14/2013	JAX - Church, neighborhood & intramural meetings	177
4/1-4/30	CHA - Community Events	21
4/26/2013	MPT - Earth Day & Beautification Event	624
4/1-4/30	ALL - Community Huddles & RECP meetings	200
	Statements & Flyers	
4/1/2013	JAX - Emails to VP30 Distribution List w/ Flyer Attached	500
4/12/2013	JAX - Email Distribution Fleet and Family Support Center	100
4/2-4/28	PEN - Door to Door Housing Outreach	191
4/15/2013	Consumption statements & flyers mailed for March data	4,722

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4/1-4/30	MPT - Flyer Box in Marsh Cove	100
	Articles / Blogs	
4/30/2013	Switch4Good Monthly Tips article on BBC Better Living Blog	750
	Other	
4/1-4/30	WattzOn responding to inquiries via email, website & phone	20
4/1-4/30	Residents contacted for home energy coaching visits	111
4/1-4/30	Road signs in each neighborhood on five bases - 131 total signs	4,000
	April Sub-Total	11,611
May		Est. Reach
	Events	
5/1-5/31	ALL - Community Huddles & RECP meetings	200
	Statements & Flyers	
5/1-5/12	PEN - Door to Door Housing Outreach	35
5/15/2013	Consumption statements & flyers mailed for April data	4,655
5/1-5/31	MPT - Flyer Box in Marsh Cove	100
	Articles / Blogs	
5/1/2013	MPT - Community Reward Article in Mayport Mirror	500
5/1/2013	MPT - Community Reward Article in Florida Times-Union	2,000
5/20/2013	Switch4Good Monthly Tips article on BBC Better Living Blog	750
5/31/2013	PEN - Community Reward Article in base paper	500
	Other	
5/1-5/31	WattzOn responding to inquiries via email, website & phone	25
5/1-5/31	Residents contacted for home energy coaching visits	115
5/1-5/31	Road signs in each neighborhood on five bases - 131 total signs	3,000
	May Sub-Total	11,880
June		Est. Reach
	Statements & Flyers	
6/1-6/30	PEN - Door to Door Housing Outreach	40
6/15/2013	Consumption statements for May	4,836
6/1-6/30	MPT - Flyer Box in Marsh Cove	100
	Articles / Blogs	
6/30/2013	Switch4Good Monthly Tips article on BBC Better Living Blog	750
	Other	
6/1-6/30	WattzOn responding to inquiries via email, website & phone	10
6/1-6/30	Residents contacted for home energy coaching visits	50
6/1-6/30	Road signs in each neighborhood on five bases - 131 total signs	2,000
	June Sub-Total	7,786
July		Est. Reach

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	Statements & Flyers	
6/15/2013	Consumption statements for June	4,728
	Other	
6/1-6/30	WattzOn responding to inquiries via email, website & phone	12
	July Sub-Total	4,740
YTD Total		81,812

Social Media

	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July
Facebook									
Posts on S4G page	4	6	16	11	17	20	19	14	16
Page Likes	20	31	51	64	96	100	125	136	141
Touchpoints	80	186	816	704	1,632	2,000	2,375	1,904	2,256
Posts on 5 BBC base pages	3	3	6	8	10	1	1	2	1
BBC Housing Likes	1,800	1,814	1,939	1,999	2,055	2,141	2,500	2,600	2,600
Touchpoints	5,400	5,442	11,634	15,992	20,550	2,141	2,500	5,200	2,600
Twitter									0
Followers	20	51	76	85	89	92	98	99	99
Tweets	13	6	18	7	15	17	15	11	19
Touchpoints	260	306	1,368	595	1,335	1,564	1,470	1,089	1,881
Monthly Touchpoints	5,740	5,934	13,818	17,291	23,517	5,705	6,345	8,193	6,737
YTD Touchpoints	5,740	11,674	25,492	42,783	66,300	72,005	78,350	86,543	93,280

Problems Encountered & Impact / Mitigation

The only significant problem we encountered was that homes which were originally labeled as having smart meters, in some cases, did not. Our approach to was to include the homes with traditional meters in our program under the “Monthly Statement” track. We gave saving tips based on the meter or sub-meter data available. While it was not as granular as the digital or personal coaching tracks, we still received resident feedback that they enjoyed getting the monthly tips.

Products developed & technology transfer activities

Presentations, Networks & Collaborations Fostered

- Assistant Secretary of the Army Office for Energy & Environment and the U.S. Congressional Caucus for High Performance Buildings
- White House Energy Data Initiative Datapalooza

Awards

FINAL SCIENTIFIC TECHNICAL REPORT

- Finalists in European Smart Metering Awards & Summit for “Smart Meter Data Management” and “Innovation of the Year” categories. Applicants in January 2014.
- Applied for American Military Engineers ‘SAME’ Award, “Education & Outreach” category

Publications & Press

- Construction Tech Magazine, August 2013
- Press Release (Appendix A)

There are no Web sites or other Internet sites that reflect the results of this project.

Technologies/Techniques and Inventions/Patent Applications, licensing agreements; as well as Other products, such as data or databases, physical collections, audio or video, software or netware, models, educational aid or curricula, instruments or equipment are not owned (nor intended to be licensed) by Balfour Beatty Military Housing Management. Our sub-contractor, WattzOn, Inc. has proprietary software it used in the Switch4Good initiative.

There was no computer modeling aspect to this program.

Appendix A: Press Release Switch4Good Results



Press Release

For Immediate Release

10 Campus Boulevard ■ Newtown Square, PA 19073 ■ 610.355.8100

Balfour Beatty Communities' Residential Energy Savings Program Generates Impressive Results in Navy Southeast Military Housing Pilot *Program uses near real-time energy consumption data coupled with behavioral coaching techniques to drive reduced energy consumption in military homes.*

NEWTOWN SQUARE, PA --- August 12, 2013 – [Balfour Beatty Communities, LLC](#), a leading provider of property management, development and related real estate services for the multifamily, military, and student housing markets, today announced results from its home energy efficiency program that was piloted this spring in more than 3,900 military family homes under Balfour Beatty Communities' Navy Southeast Region Military Housing Privatization Project. Balfour Beatty Communities' Switch4Good program combines digital coaching and smart meter data to help residents conserve energy and save on their electric bills. Data from the pilot program indicates a 16% reduction in monthly energy use from behavior change—an average monthly savings of more than \$20 per home—when compared to similar homes not participating in the program. The program has been implemented in conjunction with Silicon Valley's [WattzOn](#), a leading cloud-based, energy management software company.

The unique combination of personalized, near real-time energy consumption data and simultaneous behavior change coaching distinguishes the program. Participating homes had access to a web portal showing personalized smart meter data (daily, hourly), supplemented by a system of multi-weekly energy savings prompts delivered to the home occupants via text message, Twitter, Facebook and other digital media. Collective energy savings were also tracked for entire neighborhoods and awards were given as the communities achieved various benchmarks.

The pilot program was launched in October 2012 by Balfour Beatty Communities, with technical support from WattzOn. Eleven Navy bases in the southeast were included in the pilot, which involved marketing the program to military housing residents serviced under Balfour Beatty Communities' property management, conducting home energy audits, and providing technical support.

Based on a comprehensive analysis of pilot data, the program in the Navy Southeast demonstrated the following results:

- An average of 16% in monthly energy savings when compared to energy consumption of non-participating like homes in the area.
- On average, the 3,900 homes participating have collectively reduced monthly energy consumption by 90,000 kWh within a few months.

The final results of the pilot further demonstrate the value of the program in a rental environment. As part of the program, local property management teams were provided with detailed monthly reports from WattzOn which identified the high consumption homes, vacant home reports and other tools that helped the teams identify and repair meter issues, HVAC and system problems, and target their efforts to offer personalized conservation coaching for high consumers.

“The Balfour Beatty Communities’ Switch4Good program clearly demonstrates that using smart meter data to provide personalized habit cues for residents results in reduced energy consumption, without retrofits,” said Tabitha Crawford, Senior Vice President of Sustainability and Innovation, Balfour Beatty Investments. “We are encouraged by the impressive pilot results and are working to expand this program to other communities managed by Balfour Beatty Communities so that all of our residents have access to the advanced tools that will help them more actively manage their day-to-day energy consumption. With housing comprising 20-25% of a military installation’s energy consumption, this program is an important tool in supporting the sustainability goals of our Army, Navy and Air Force partners.”

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About Balfour Beatty Communities

[Balfour Beatty Communities, LLC](#) is a diversified real estate services company delivering development, design, financing, construction, renovation, property and facilities management services in the multifamily, student and military housing sectors. A leader in the industry, Balfour Beatty Communities has more than 37,000 residential units and \$5.5 billion in real estate assets under management and has developed or renovated more than 27,000 units with a total value of close to \$4 billion. Headquartered outside Philadelphia, PA, Balfour Beatty Communities has more than 1,100 employees and is a subsidiary of [Balfour Beatty Investments, Inc.](#)

Balfour Beatty Investments is part of [Balfour Beatty plc](#), a global leader in professional services, construction services, support services, and infrastructure investment, with more than \$17 billion in annual revenues.

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