

Solar Smart Bins – Transforming Litter Management in Fife

Sandy Anderson

Service Manager (Domestic Waste and Street Cleansing)

Fife – Waste Operations

- Every week around 186,000 properties receive a bin collection service, (4 x waste streams: Landfill, Cans & Plastics, Food & Garden Waste and Paper & Cardboard)
- 27 x 26t front line RCVs and 3 x 16.5t RCVs– Rural & Hard to Access – Approx 240 employees
- Twin shift system (Day shift 06:00 – 13:42 & Back shift 13:18 – 21:00)
- 21 Ward based Street cleansing teams working 07.45-16.00 (Approx 200 employees)
- Service over 13 million bins and sweep 16,500 streets each year

Today's Presentation

- 1. How and why the trial was initiated
- 2. Why Solar Compactor litter bins?
- 3. How do the units work?
- 4. CLEAN Software
- 5. Expected results and next steps.



Origins of the trial



Why St Andrews?

- St Andrews is the jewel in the crown of Fife Tourism
- Very High footfall during summer months
- Easily identifiable hot spots
- Distance from nearest tipping location
- Number of employees required to empty bins and service the area

Process

- Initial Consultation
- Site Survey, meet with Stakeholders
- Operations review
- Business Case Development
- Detailed Presentation – Survey report, Business Case, Branding
- Trial Implementation
- Reporting & Support



Current St Andrew's Operations

Current bins	Collections per day	Time collecting bins (3 mins) P.D.	Collection per week	Time collecting bins Weekly (Hrs)	Time collecting bins monthly (Hrs)	Time collecting bins Annually (Hrs)
2	3	18	42	2	9	109
70	2	420	980	49	212	2,548
54	1	162	378	19	82	983
43	0.6	77	172	9	37	447
98	0.3	88	196	10	42	510
152	0.1	46	152	8	33	395
		811	1,920	96	416	4,992
Hours per day		14				

Trial Objectives



- Rationalisation of operations allowing for additional focus on :
 - Street sweeping and litter picking
 - Detritus removal
 - Graffiti and chewing gum removal
 - Reduce allocated bin emptying by 6 hours a day.
 - Move to a data driven collection system

Trial Objectives

- Improving the overall look of the town
- Reduce Street clutter
- Blend in Aesthetically with the environment
- Implement a monitored, on-street recycling solution



Why Choose Smart Bins & Solar Compactors?

- 1. Increase productivity
 - Greatest impact in reducing Collections/Labour hours/Vehicles usage/Bags/Fuel
- 2. Cleaner Public spaces
 - Cleaner public spaces/keeps waste contained/pest proof
- 3. Measurable Sustainability
 - Reduced vehicle movements/Co2 emissions/GG emissions

Smart bins for St Andrews

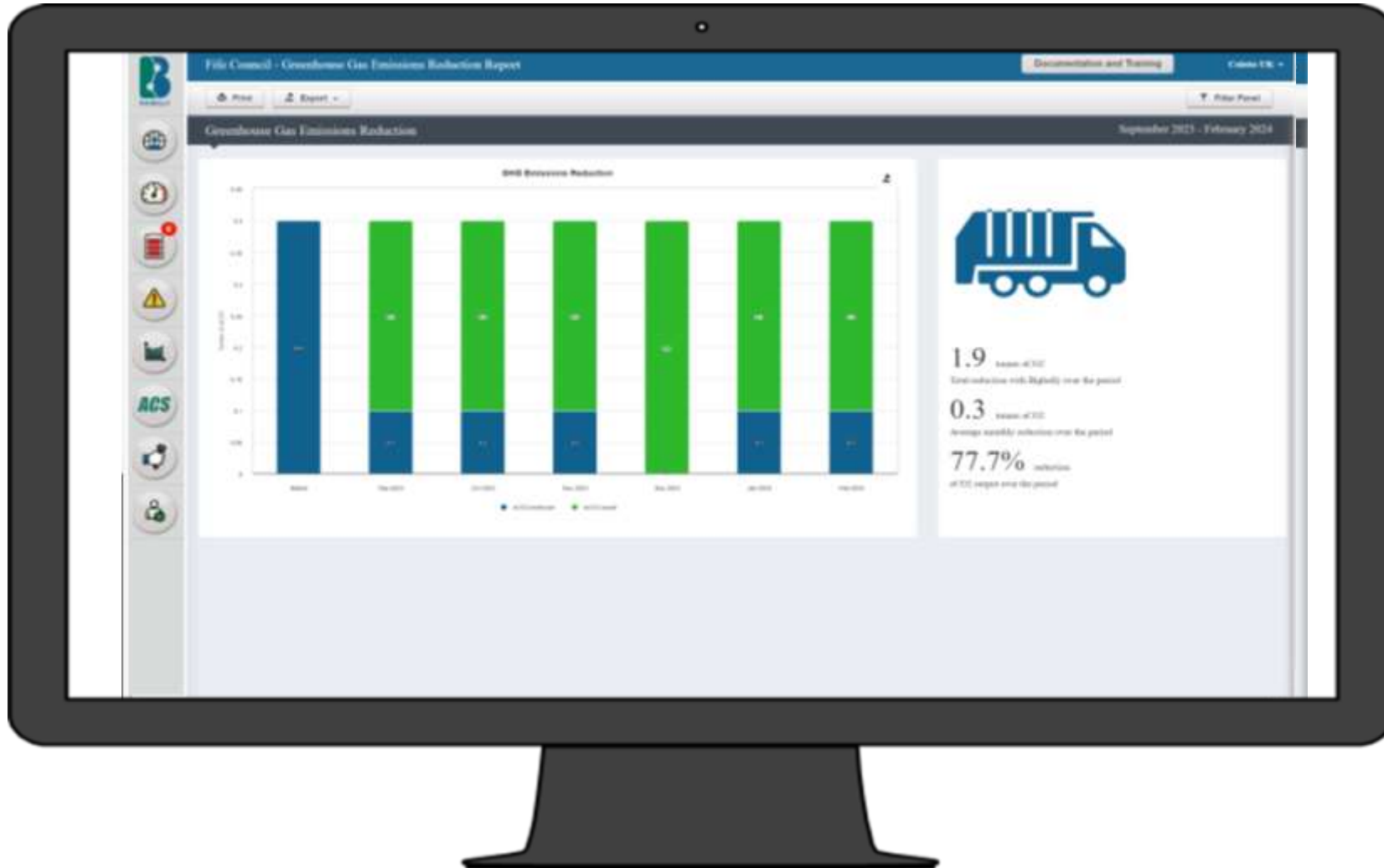


Bigbelly's SHC5 is a smart, solar-powered, compacting waste or recycling station. This compacting model holds up to 10x more than the average litre traditional waste bin and is equipped with sensors that monitor and report fullness levels and collection activity. Bespoke brand to bend in aesthetically.

How do solar compactors work

- The public dispose of their waste through the aperture on the front of the unit. They can be opened using a handle and or foot pedal (each interaction is recorded on the hopper count).
- Once the waste fills above the internal bin liner, the electronic sensors trigger the compactor automatically.
- The ram compacts litter into the bin, making room for more, while continually allowing the public to dispose of their waste safely. The bin is designed to ensure maximum compaction ratio capability.
- The compaction design measures the distance the ram travels into the liner and the resistance at a point to record the compacted fullness.
- When full to the preset level (60%, 80%, or 100%) the station reports up to the Clean platform as well as the LED on the station changing from flashing green to flashing red
- Depending on the material, a station can carry out 4 to 20+ compactions before reaching its preset fullness threshold.
- A unit can hold up to 560+ liters of uncompacted waste – this compacted waste when removed from the bin breaks apart and be separated at disposal sites.
- The bin liner can be collected manually or mechanically.

CLEAN Software Dashboard



Trial Headlines after 6 months

Summary

- Ready collections total – 2,232
- Not ready Total Collections - 776
- Total HC5 Collections – 3,008
- Collection Efficiency – 76%
- Previous collections over 6 months – 28,548
- Reduction since introduced – 25,539 - 89% less
- Labour Hours saved per collection (3mins x 2 operatives per vehicle)
 - Total over 6 months 2,554hrs
 - Ave Daily 8hrs
 - Ave Monthly 426

Recycling Diversion / 6 months

- 89.6% Waste
- 10.4% Single Stream

Total Diversion 10.4%



Total Liters / 6 months



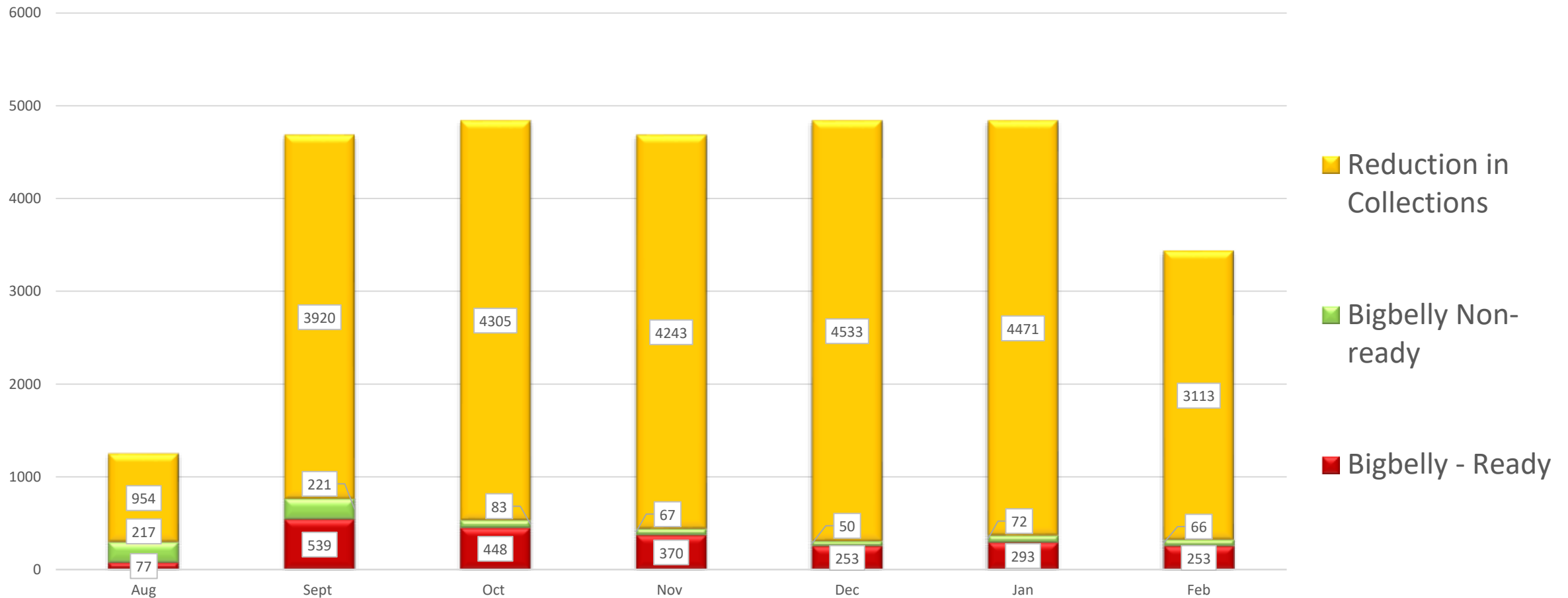
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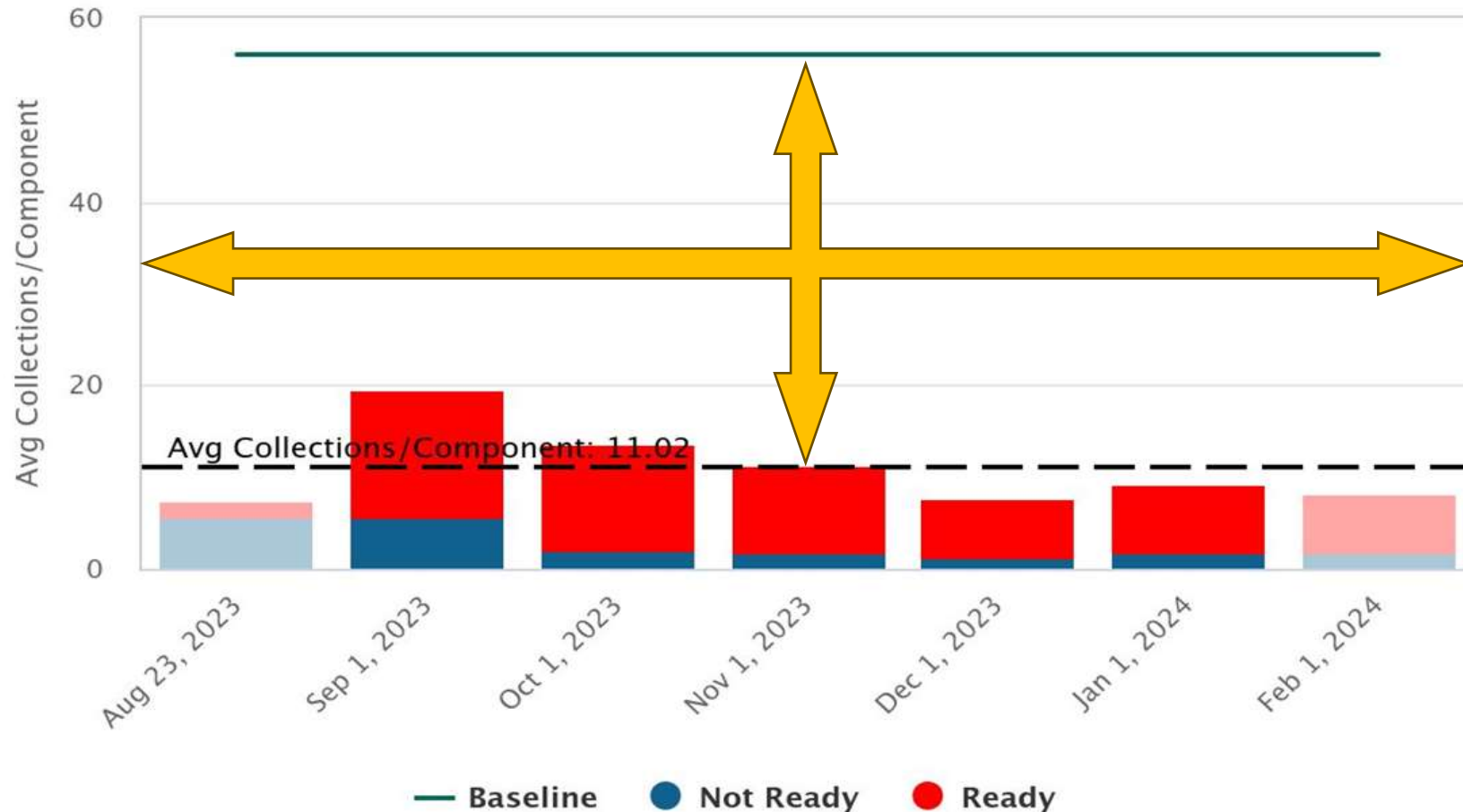
105,598

Total
1,012,621

Collection Comparison & Breakdown



Smart Collections v Baseline



Previous Collections per day	2
No. of bins removed	78
Days collected weekly	7

This is the amount of reallocated collection resource starting from Day 1

Station Snapshot

Fastest filling stations							
Description	Streams	Liters	Not Ready	Ready	Total Collections	Avg. Days to Full	Hopper Count
Market street Fatface G/W	Waste	47,014	29	89	118	1.3 days	22,525
South Street The Home Improvement Store G/W	Waste	50,875	14	101	115	1.3 days	21,455
South Street Christian Institute G/W	Waste	47,355	18	96	114	1.3 days	17,781
South Street VPZ G/W	Waste	46,219	22	89	111	1.4 days	18,653
Market Street Rogerson G/W	Waste	44,062	25	86	111	1.5 days	16,338
Market Street Waterstones Rec	Single Stream	19,569	8	98	106	1.6 days	9,485
Market street Tesco Rec	Single Stream	16,905	8	84	92	1.8 days	9,082
Market street Boots Rec	Single Stream	16,155	6	81	87	1.7 days	7,699

Officer Opinion

- The resident sweepers have spent the **extra time sweeping** down lanes and passages that previously they would have only got down twice or three times a year. They have started sweeping streets that they never had time to concentrate in the past.
- They have reported **a lack of seagulls** and other scavengers including rats that used to frequent the old-style litter bins, when engaged in conversations with the taxi drivers they have told the sweepers in the early hours they **no longer see the amount of rats scuttling** around the town centre.
- The Chargehand reported that to him **the difference is night and day**, instead of lifting/collecting 40/50 bags from litter bins he will do 4 or 5 bins, he has used his resident sweepers in the peripheral areas of the town to aid in street cleaning (this is something that will be getting done more often).
- There has been **in reduction in household items being disposed** in the BBB as the flap prevents the household item from fitting in.
- They all expressed they think the whole area looks a lot cleaner, neater, and less cluttered.

Employee Testimony

- “The bins are good – nae seagulls in the bins taking stuff out, a lot less mess, can we get more for the rest of the town. I don’t have to spend an hours a day emptying bins now, which is two hours in the summer because then I have to empty them at least twice day. ”
- Doug Wilkie – Street Cleaner for South Street

Next Steps

- Full Roll out in St Andrews
- Business Case - Hire V Capital Spend
- Anstruther replacement and full roll out
- Dunfermline City Centre
- **Food waste??**



Questions?

- Contact details:
- Alexander.anderson-es@fife.gov.uk
- 03451 555555 ext 473424
- <https://www.linkedin.com/in/sandy-anderson-358a891a7>
- [https://www.justgiving.com/fundraising/sandyanderson-65785b71f5c265e5dcc8673c?utm_source=Sharethis&utm_medium=fundraising&utm_content=sandyanderson-65785b71f5c265e5dcc8673c&utm_campaign=pdf-email&utm_term=029a7e46f0534eea8dba3e1a749974e2.](https://www.justgiving.com/fundraising/sandyanderson-65785b71f5c265e5dcc8673c?utm_source=Sharethis&utm_medium=fundraising&utm_content=sandyanderson-65785b71f5c265e5dcc8673c&utm_campaign=pdf-email&utm_term=029a7e46f0534eea8dba3e1a749974e2)