

Energy savings at Good Burger using technology, data, and behavioral change

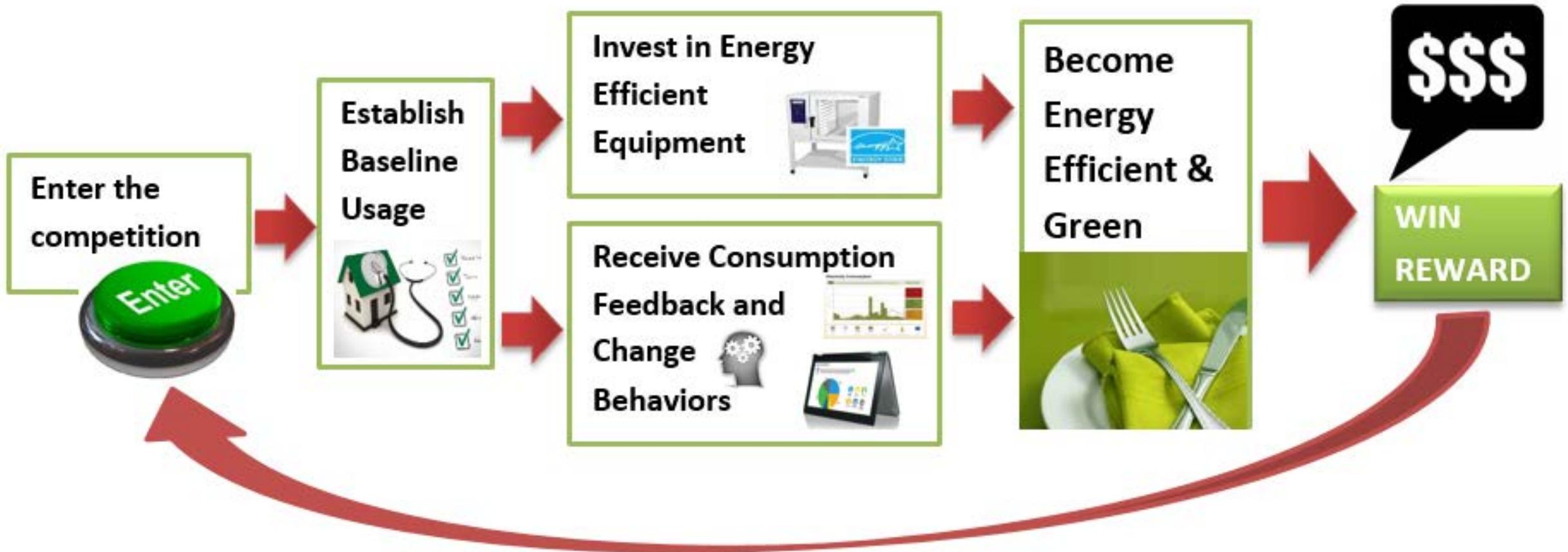


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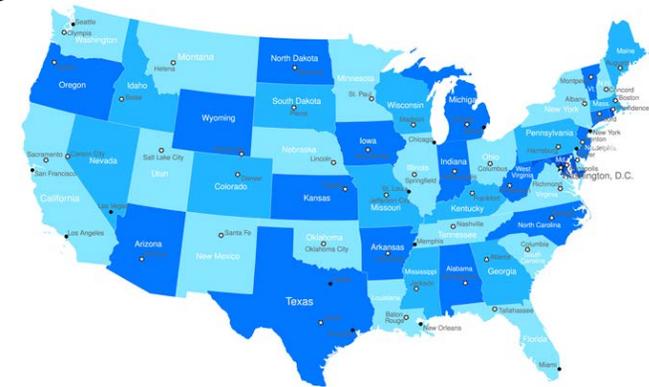
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Recommendation Overview

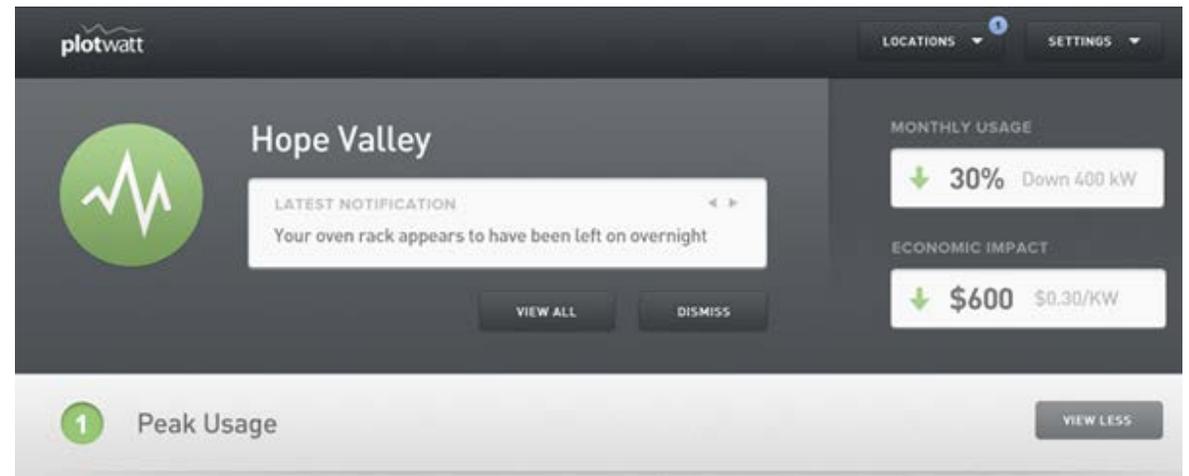


Equipment Upgrades

- Energy Star estimated energy savings of 23-33% in restaurant industry
- Potential equipment cost premium up to 15%
- Other considerations:
 - IRS depreciation guidelines: approximate 5-year recovery period
 - Federal tax incentives: \$0.60 to \$1.80 per square foot
 - State tax incentives
- Recommendation:
 - Update Good Burger approved equipment list with Energy Star appliances
 - Leverage volume discounts to reduce cost premium



- Non-intrusive Load Monitoring
 - Data driven techniques for measuring consumption without need of expensive sub-metering
- Behavioral change through energy conservation feedback and training
 - Studies suggest 10-15% energy savings through disaggregated feedback to change consumption behavior and proactively manage equipment
- Dunkin Donuts' 19% reduction



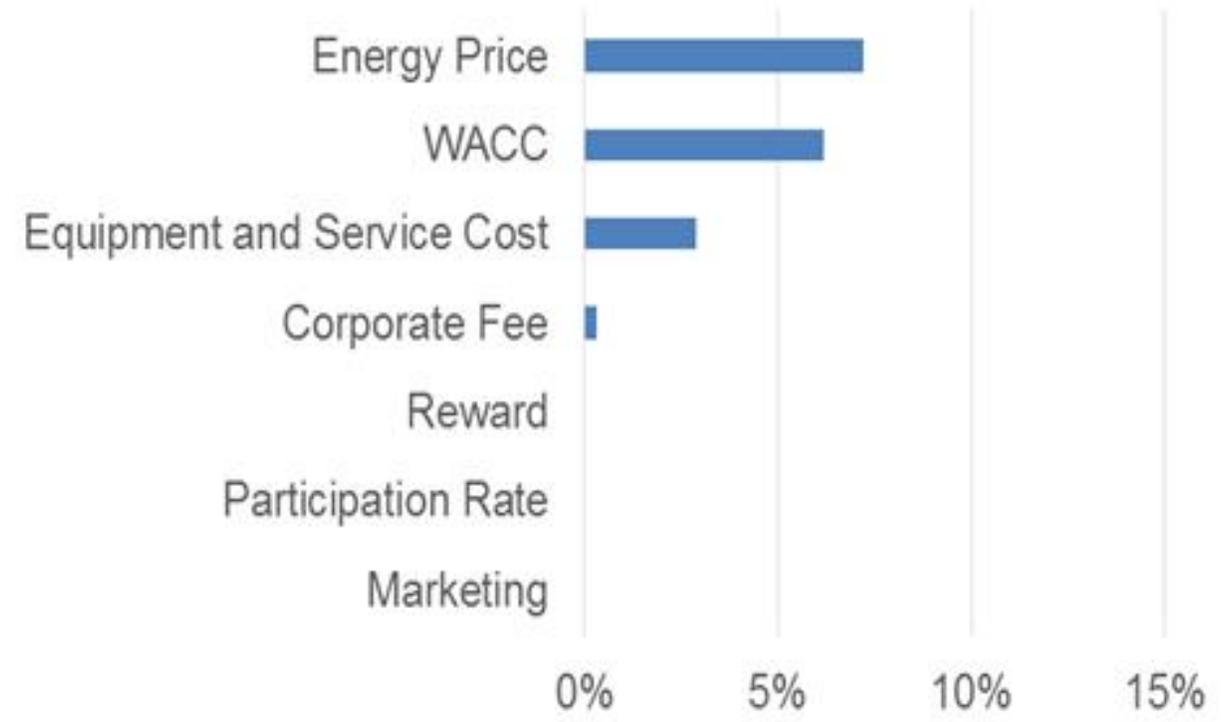
- Goal: 10% reduction by 2020 (6 years)
- Opt-in Competition
- Franchise pays \$1,770 annually for equipment, training, and feedback / comparison service
- \$5,000 annual reward to winning franchise
- \$5,000 Pilot Program
- \$5,000 Annual Marketing Campaign

Robust Energy and Financial Models

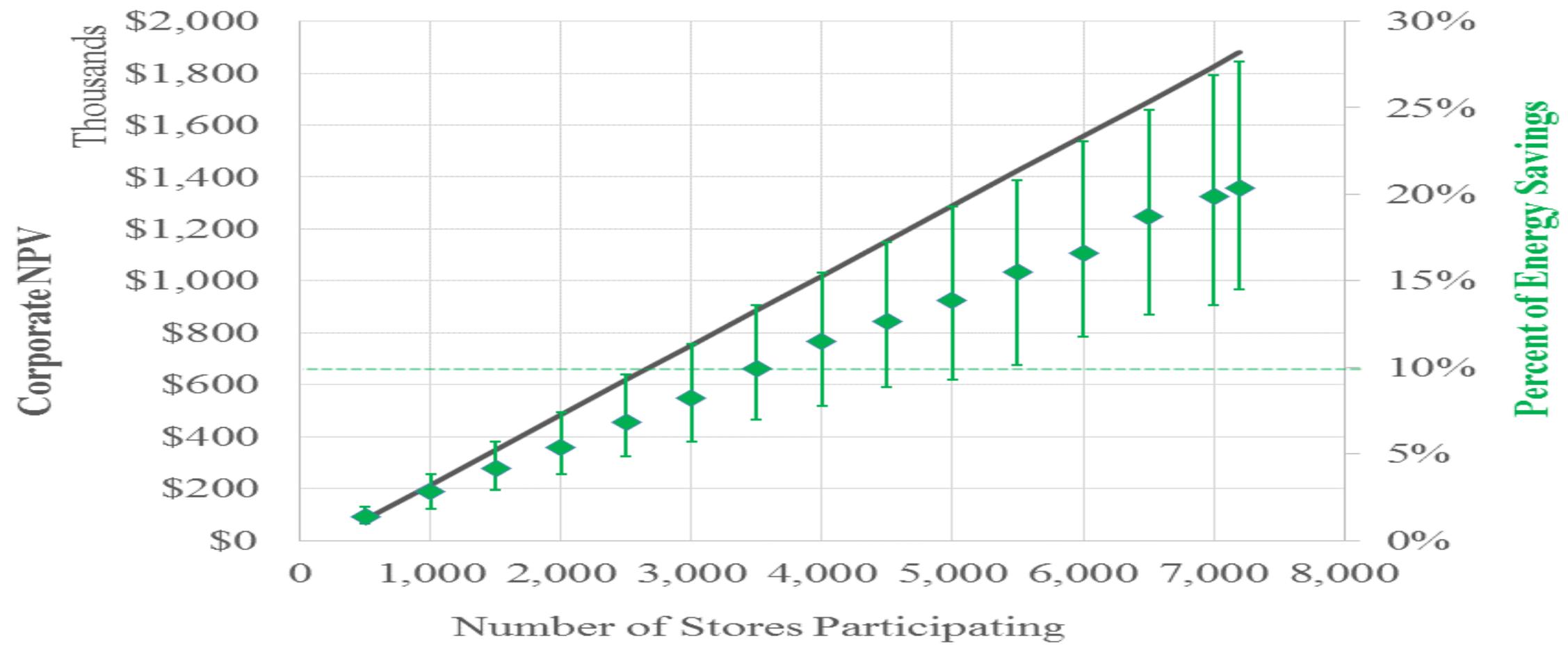
Corporate NPV Key Drivers



Franchise NPV Key Drivers



Value Proposition



Ancillary Recommendations

- **Online Ordering**
- **Capacitor:**
 - Costs approximately \$1,000
 - Save up to 7% on energy bills that charge for reactive power: ~\$1,750 per year
 - Reduce total electricity consumption by 1.4%
- **Robotics System**
 - Costs \$200 to \$400 per month
 - Ability to sense the environment in real-time using visual car counting, employee feedback, and point-of-sale data
 - Machine learning algorithm to inform employees on efficient cooking operations



Order Online!



Questions

Thank You!

Appendix 1 – Energy Star Equipment

Table 1: Estimated economic and energy savings from restaurant equipment replacement from Energy Star Guide for Restaurants (Energy Star, 2010)

Item	Improved Efficiency % ¹	Lifetime ³ (yr)	Savings by energy type (\$)			Total savings	
			ELE	GAS	WATER	\$	MMBTU ²
Steamer	60%	12	\$1,100	-	\$1,000	\$2,100	37
Holding cabinet	65%	10	\$650	-	-	\$650	22
Fryer	30%	10	-	\$470	-	\$470	58
Oven	10-25%	10	-	\$360	-	\$360	44
Griddle	10-25%	10	-	\$175	-	\$175	22
Freezer (reach in)	30%	9	\$175	-	-	\$175	6
Ice Machine	15%	7	\$130	-	\$18	\$148	4
Refrigerators (reach in)	30%	10	\$55	-	-	\$55	2
HVAC	15% ³	15	\$4,800	-	-	\$4,800	162
Dishwasher	25%	10	\$720	-	\$300	\$1,020	24
Bulbs (assumes 10)	75% ²	10	\$330	-	-	\$330	11
Subtotal			\$7,960	\$1,005	\$1,318	\$10,300	392
Average Good Burger store Saving						\$26,000⁴	2060⁵
Change%						40%	19%

- 1) Energy Star Benefits (2014)
- 2) Calculated based on average U.S. commercial electricity and gas price in 2012 (EIA, 2014a, EIA, 2014b)
- 3) Katsigris & Thomas (2008)
- 4) Assuming total sales of \$750,000, a 10% profit margin, and 3% energy cost based on total costs (BBCC, 2014)
- 5) Assuming 686 kBTU/sf/yr and 3,000 square feet per store (BBCC, 2014)

Appendix 2 – Behavioral Best Practices

Table 2: Estimated economic and energy savings from restaurant best practices suggested by Energy Star Guide for Restaurants (Energy Star, 2010)

Item	Behavioral Change	Savings by energy type (\$)			Total	
		ELE	GAS	WATER	\$	MMBTU ¹
Steamer	reduce idle (1 <u>hr</u>)	\$250	-	-	\$250	8
Fryer	reduce idle (4 <u>hr</u>)	-	\$400	-	\$400	49
Combined oven	reduce idle (2 <u>hr</u>)	\$400	-	-	\$400	14
Griddle	reduce idle (3 <u>hr</u>)	-	\$250	-	\$250	31
Broiler	reduce idle (3 <u>hr</u>)	-	900	-	\$900	111
Pipes/sinks	fix leaks	-	-	\$1,000	\$1,000	0
Subtotal		\$650	\$1,550	\$1,000	\$3,200	213
Average Good Burger store					\$26,000²	2060³
% Change					12%	10%

- 1) Calculated based on average U.S. commercial electricity and gas price in 2012 (EIA, 2014a, EIA, 2014b)
- 2) Assuming total sales of \$750,000, a 10% profit margin, and 3% energy cost based on total costs (BBCC, 2014)
- 3) Assuming 686 kBTU/sf/yr and 3,000 square feet per store (BBCC, 2014)

Appendix 3 – Cash Flow Model

Table 3: Cash flow to corporate with 50% of franchisees participating starting in 2015

Year	2014	2015	2016	2017	2018	2019	2020
Program costs							
Marketing & Admin	\$5,000	\$4,500	\$4,050	\$3,650	\$3,280	\$2,950	\$2,660
Initial pilot	\$5,000						
Reward		\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Cost per store							
Annualized equipment/ service cost		\$1,480	\$1,480	\$1,480	\$1,480	\$1,480	\$1,480
Training cost		\$240	\$240	\$240	\$240	\$240	\$240
Revenue per store							
Fee to participate		\$1,770	\$1,770	\$1,770	\$1,770	\$1,770	\$1,770
Cash flow	(\$10,000)	\$169,000	\$170,000	\$170,000	\$170,000	\$171,000	\$171,000