



Interior photo courtesy of Arby's



Equipment photos by Kenneth Hamlett

Arby's Moves The Dial

Arby's systemwide energy efficiency program, spanning six years and 1,000+ company-owned locations, has netted the Atlanta-based, fast-crafted sandwich brand annual energy savings in the millions of dollars. It's also resulted in an edgy new prototype, a U.S. Department of Energy award—and a new lease on life.

By Janice Cha, Fe3, Senior Contributing Editor

Arby's is BACK. Between exchanging tweets about hats with Pharrell Williams during the Grammys, assembling a fond video farewell to longtime Arby's "fan" Jon Stewart, or rolling out a tongue-in-cheek "We Have The Meats" series of ad spots, this 52-year-old, 3,300-plus unit sandwich chain has found new mojo.

Behind the roast beef resurgence, however, is the *real* makeover story. The embrace of energy efficiency at Arby's Restaurant Group has unfolded across six years and within the walls of 1,000-plus company-owned restaurants. The Atlanta-based chain's drive to reduce utility bills has led to millions of dollars in annual utilities savings, a flexible new prototype, recognition by the U.S. Department of Energy and a company-wide culture shift. All this while turning out a mouthwatering menu of "Fast Crafted" sandwiches—the sweet spot between traditional fast food and fast casual.

Ready...Set...Save

Why target energy efficiency? Simple. Energy represents Arby's third largest controllable expense, after food and labor. Faced with rising energy costs in the late 2000s, company leaders made improving operational efficiencies a priority.

"Arby's executives tasked us with finding ways to save money," says Frank Inoa, Senior Director of Operations Engineering and project leader for many of Arby's energy initiatives. "Our corporate restaurants were spending \$30 million-\$32 million a year in utilities—that's about \$32,000 per restaurant annually. So even small savings on the utilities front would impact the bottom line. We decided to go after the low-hanging fruit."

One of Arby's first moves was to reach out to energy and sustainability management firm Ecova, based in Spokane, Wash. Ecova was already working with the company on the energy-bill-payment side of the business, and therefore could report on utilities stats across the chain's then 800 company-owned locations.

Ecova studied Arby's existing energy management ef-

forts, then sent engineering experts to conduct energy and water audits at Arby's restaurants across the country.

"Ecova helped us prioritize our plans, locate industry rebates and identify outliers in energy use," Inoa says. The audits pinpointed 11 low-cost efficiency measures plus several energy-saving capital investments.

The Arby's/Ecova team developed five "keystones"—Data, People, Infrastructure, Marketing & Reporting, and Continual Improvement. The keystones morphed into a grand plan that would eventually weave energy management into both standard operating procedures and indeed the very culture of the Arby's organization.

With groundwork in place, the company committed to a bold goal: to reduce the energy use across its 1,000 company-owned restaurants by 15% by the end of '15.

Hunt Rebates With Ecova

Partnered with Ecova's Energy Rebate Management Service to systematically identify rebate eligibility for water heaters, spray valves, strip curtains, EC motors, coolers, fryers, HVAC, lighting and roofing.

Low-Hanging Fruit

Arby's corporate leaders presented energy initiatives to restaurant owners as a set of smart choices rather than top-down mandates. And they decided to ease into the process, starting with no-cost changes and moving up the cost-ladder as restaurants achieved success. Small, no-cost behavior-based changes included optimizing the on/off schedule, energy rebate management and controlling hot water temperatures.

The on/off schedule, a daily timeline covering what equipment to turn on when, was an easy place to start. Not surprisingly, "we found low adherence to the schedule," says Peter Cryan, Arby's Director, Equipment R&D and New Technology. "In many cases, the schedule could not be easily found in the restaurant." To raise awareness, Arby's created stickers to place on equipment, beefed up training and distributed a one-page tip sheet for managers. The resulting annual utilities savings averaged \$1,300 per restaurant.

Optimizing rebates for energy efficient equipment came next. Ecova took on the role of providing a chainwide Rebate Management Service that would identify rebates, file paperwork and obtain rebate money for participating

restaurants, taking care of the whole process.

Hot water temperatures also underwent scrutiny. “In most of our restaurants, we sanitize using chemicals, so hot-hot water is mainly used for warewashing and hand-washing,” Inoa says. “Researchers found our average hot water temperature setting was about 145°F.”

Restaurants received guidelines on how to adjust hot water tanks to 135°F. The resulting 10°F drop in temperature was not noticeable by guests or staff, yet saved restaurants more than \$150 per restaurant, annually.

Farther Up The Tree

Successes from the initial programs led Inoa’s team to think a little bigger, in the form of low-cost, high-impact gadgets: aerators, spray valves, toaster dampers, strip curtains and walk-in cooler upgrades.

Aerators on hand sinks (costing less than \$40/restaurant) and low-flow sprayers for pot sinks

together saved Arby’s operators about \$490/year in utilities and reduced water use by up to 20%. Meanwhile, toaster damper kits with heat shields and vinyl strips for walk-in entrances kept heat in its rightful place. These low-cost, no-fuss tweaks paid for themselves in less than two years.

Another program targeted walk-ins, “most of which still had older, less-efficient compressor motors,” Inoa says. The team created guidelines on how and why to upgrade those motors to electronically commutated (EC) units, which would save about 70% of the energy used by the older system. The guidelines also encouraged operators to update fan blades and replace gaskets to save energy. Switching to Energy Star-rated reach-in refrigerators and freezers from Beverage-Air and Traulsen achieved 40% savings in energy costs over older units and a 1.3-year payback.

Energy Tracking 101

The Arby’s snowball continued its roll. “Small successes in the early stages gave us momentum to make a case for

larger investments and to continue the program,” Inoa says.

Two years into its “15% by ’15” challenge, Arby’s rolled out an energy management system coupled with major changes to its restaurant cooking platform.

The company realized early on that it needed to track energy use. Ecova researchers had found each Arby’s restaurant essentially doing its own thing. Interior temperature settings varied from location to location, as did systems for regulating temperatures and maintaining rooftop units.

“Getting people to change their behaviors was important—but if we didn’t also have a way to track energy savings, the changes would not last,” Inoa says.

Enter Powerhouse Dynamics, a Newton, Mass.-based



Create An On/Off Equipment Schedule

Saved up to \$1,300 per store through a chart indicating sequence and timing to turn equipment ON in the morning and OFF during slow times or near day’s end.

company specializing in controls and electricity-use analytics. Arby’s initially deployed Powerhouse’s SiteSage Energy Management System to help standardize thermostat settings and prevent such things as letting the a/c or heat blast overnight.

As Inoa, Cryan and their team became familiar with the system’s capabilities and its smartphone interface, they extended the SiteSage system into the kitchen to track energy, water and equipment performance across every location for viewing in real time via the Internet.

“We had initially started energy tracking with third-party suppliers and utility companies in Georgia and Alabama,” Cryan says. “But with Powerhouse, we can now do it all internally. For example, I can change out a toaster at our



ENERGY EFFICIENCY INNOVATION TIMELINE

Equipment ideas conceived for lowering energy, smaller footprint and better operating costs to support Arby’s future development prototype of in-lines and end-caps.

- 2011**

Energy idea conceived: change Arby’s equipment package to reduce energy use, allow smaller footprint and streamline operating costs to support future development of in-line and end-cap prototype.
- 2012**
 - Q1** GOAL: 15% energy use reduction by 2015, systemwide.
 - Q2** Arby’s/Ecova partnership established.
 - Q3** Five “keystones” of energy efficiency plan mapped out.
 - Q4** Establish goals based on ’11 baseline.

- 2013**
 - Q1** Arby’s deploys Efficiency Matters program.
 - Q2** Aerators & low-flow valves roll-out. Damper kits on toasters save \$900/year/restaurant in energy.
 - Q3** Strip curtains, EC motors, SiteSage roll-out.
 - Q4**
 - Marshall Air fry dump improves temps by +25°F; saves \$500/year in energy.
 - Frymaster/Manitowoc low-oil fryers save 50% in energy use (compared with previous model) and 25% in oil use.
 - MenuMaster OnCue microwaves work 20% faster than previous units.

- 2014**
 - Q1** LED light roll-out (70 units).
 - Q2** LED neon banding roll-out.
 - Q3** LED light roll-out (40 units).
 - Q4** Henny Penny fryers added, giving a 35% savings in oil use and 50% in energy (compared to models used in 2011). Marshall Air warming cabinets hold fried chicken crisp, improve product quality and double hold times.
- 2015**
 - Q1** Arby’s joins DOE’s Better Building Challenge; sets goal of 20% reduction by 2020.
 - Q2** Delight deli line approved; Arby’s recognized at White House DOE event. Controlled irrigation pilot test begins.
 - Q3** Arby’s Alto-Shaam Cook & Hold ovens approved. Improves beef quality and yield, eliminates equipment (and hood), saves more than 65% in energy compared with convection ovens.
 - Q4** GOAL MET! 15% systemwide energy reduction achieved!

- 2016**
 - Q1** eHACCP and electronic equipment monitoring via SiteSage rolled out.
 - Q2** Releases first “PurposeFULL” report showcasing efficiency efforts.
 - Q3** In progress: Digital dashboard to monitor kitchen metrics, including POS, holding temps, beef cooking, drive-thru times and more.
 - Q4** In progress: Live-tracking facilities and equipment maintenance.





Shift To Cook & Hold Ovens

Custom-made, touchscreen Alto-Shaam Cook & Hold ovens equipped with SiteSage eliminate the need for separate beef-holding cabinets and hoods. The ovens record individual roast cook times and temperatures for HACCP, too.

flagship restaurant in Atlanta and compare readings from before and after. We're able to test new equipment and get real-time data and actual dollar amounts. We get graphs showing when the toaster is using heat vs. in idle mode. It's really beneficial."

Powerhouse provides big picture comparisons as well. "We receive monthly reports showing how much it costs restaurants that don't follow the on/off schedules, or stay within HVAC parameters," Cryan says.

Currently in the works between Arby's and Powerhouse is a new eHACCP program, "monitoring all cooking and holding equipment for times, temperatures and with alert and maintenance set points," Cryan notes.

Rethinking Roasting

Meanwhile, Arby's kitchen equipment engineers were equally busy evaluating every aspect of menu production. Re-thinking ovens and the fry station led to upgrades and ultimately a radically new cookline and prototype.

Traditional Arby's kitchens would produce the menu's signature roast beef using a double-stacked convection oven and separate holding cabinet and they required a hood overhead. "We would temper the frozen beef for three days, then bake it at a low temperature for four hours. The ovens and hood would be running all day long—and they can be noisy," says Cryan, a former Arby's operator himself.

In addition to baking, managers had to follow HACCP guidelines and track time and temperature for each piece of meat at each stage of the cooking and holding process. "Managers would be reaching for the HACCP clipboard 50 to 70 times a day," Cryan says. "To record the data, they'd have to stop what they'd been doing, wash their hands and put on new gloves."

Under the new system, engineers replaced the convection oven, holding oven and hood with three to four Alto-Shaam Cook & Hold ovens, called "pods" for their small size, plus a countertop Cadco convection oven. The pods were rolled out to all company-owned restaurants in '15.

The pods were customized with SiteSage monitoring controls, with two control options: one for day-part cooking and one for overnight cooking. Each oven holds four roasts. Probes monitor roast temperatures and send the data to SiteSage's online tracking site, so no one has to jockey clipboards anymore.

"The three Cook & Hold ovens plus the countertop convection oven together use less energy than our previous half-size holding cabinet," Cryan says. "We verified this with third-party testing. And they don't require a water supply for humidity either."

Workers like the new cooking platform. "When roasts finish cooking, the oven switches into holding mode and

the beef stays put until it's needed at the slicer," Cryan says. "Team members no longer have to stop what they are doing to transfer beef to another piece of equipment."

"Saving an hour of labor per day, at \$8.15/hr., adds up to about \$3,400 per restaurant per year, or about \$3.4 million for our 1,000 company-owned restaurants," Cryan notes.

Finessing The Fry Station

Both the fryer and the fry dump station earned makeovers as well. For starters, the high-efficiency fryer units, supplied by Henny Penny and Frymaster/Manitowoc, save an average of \$2,700 per restaurant per year as a result of energy and oil savings. The switch led to savings of more than 50% in energy, including gas and electric.

The fry dump station, custom-made by Marshall Air, sports a new design for better hot-holding. "There are no doors to open or close, so service times are faster," Cryan says. "Instead, fries sit in a raised area over a heat pad to allow a little air flow. That [arrangement] plus the heater above the fries has improved our holding temps by 25°F after a 7-min. hold time." The unit also saves \$400 per restaurant annually in energy costs.

"We have been seeing huge savings, and it's not because we're putting less meat on sandwiches or using a lower quality cheese," Cryan says about the equipment upgrades. "I've had franchisees tell me, 'I never thought I could save \$2,000 a year in energy by changing out a fryer.'"

Exterior Excellence

In addition to its kitchens, Arby's overall building package, HVAC and lighting—interior, parking lot and signage—underwent examination for new and better options. "Our restaurants spend about \$28,000 a year on electricity alone," Inoa says. "Of that, some 35%-50% is used on HVAC and rooftop units."

Arby's new HVAC program encourages operators to do regular maintenance on heating and cooling units, and to upgrade to units with high Seasonal Energy Efficiency Ra-

tio numbers. Annual savings for upgraded HVAC systems tally about \$1,200 annually per restaurant.

As for lighting, LED technology is saving Arby's operators up to \$2,600 in annual electricity costs for interior fixtures, about \$1,800 per year savings for parking lot lighting, and nearly \$2,590 for exterior signage.

Arby's operators have replaced high wattage metal halide lighting with LED lighting across 1.7 million sq. ft. of restaurant parking. The retrofit resulted in an average 53% reduction in energy in participating restaurants. In '15, Arby's received two awards from the Lighting Energy Efficiency in Parking Campaign for its efforts to improve energy efficiency through outdoor lighting initiatives.

The LED band exterior lighting is brighter, low voltage, cool to the touch, durable and safer and easier to install



Exterior photo courtesy of Arby's

than the previous neon band lights.

On the water-saving front, Arby's worked with Garland, Texas-based Weathermatic, Ecova and SiteSage to control watering schedules and frequency according to weather. During a six-month pilot test in '15 at 85 locations, Arby's saved 7.4 million gal. of water—an average of about 25% less water use per restaurant.

An "Inspiring" New Proto

On March 31, '15, Arby's Restaurant Group announced that it had surpassed its "15% by '15" goal—and proceeded to up the proverbial ante with an even steeper challenge. The company became the first restaurant chain to take part in the DOE's Better Buildings Challenge. Participating com-



panies must develop a showcase project and pledge to reduce energy use across all units by at least 20% by '20.

"We've worked over the past few years to reduce the footprint and reduce the cost to build—from the equipment package to the building itself," Cryan says. Radical re-engineering led to a space- and labor-efficient new kitchen layout that has become Arby's nimble, modern, energy-efficient model for future growth—and Arby's entry into the Better Buildings Challenge.

Arby's Inspire restaurant design, which debuted in '14, is rolling out to franchise and company-owned restaurants across the country—and eventually to the entire system. Its dramatic makeover features a contemporary, box-shaped exterior with natural-wood siding and white stucco, set off by Arby's signature red accents. Inside, the restaurant celebrates its heritage with elements such as the Guest Service

bell near the door and wallpaper. Modern materials, an array of seating styles and Wi-Fi appeal to today's guests.

"We're seeing sales upticks of at least 15% in restaurants where operators remodeled to the Inspire design," notes Jason Rollins, Arby's Manager of Corporate Communications. "In some cases, more than 20%."

For Arby's operators, Inspire's genius lies in the tighter, more open kitchen plan that frees up new space for guest seating while boosting labor efficiencies and showcasing the just-made freshness of Arby's menu items.

"You'll never see sandwiches sitting in a chute," Rollins adds. "Employees make them to order, and slice meat fresh and on the spot."

The new kitchen design makes more efficient use of the footprint. "We rotated the cookline 90° and merged the production line with the front counter as well as opened up the kitchen in our Inspire Delight line units," Cryan explains, summarizing the major kitchen changes in a few words. "Employees do prep work up

front in view of guests standing at the register. The slicers are there, too, so people can see us slicing produce and meats. Since the drive-thru window is right next to the fry station, our manager can work the drive-thru line, but also turn around and help out on the dining room expo line if things get backed up." (See pg. 44 for cool kitchen details.)

"By contrast, our legacy restaurants still have the kitchen in the back. Workers have to walk to the back to pull beef and do prep,"

Cryan says. "If they are needed at the serving line, you'd have to call them to the front to help out. With the Delight line design, workers are always up front."

"Overall speed of service has ticked up a notch as a result," notes Jill Ashmore, Arby's V.P. of Systems Operations. "The crew is more efficient, resulting in labor savings, and the prototype's compact footprint has expanded site opportunities to include inline, end-cap and nontraditional locations."

"We're looking at military bases, food courts and universities, whereas in the past, we were primarily focused on stand-alone buildings," Rollins adds.

To date, Arby's has tracked 38% in energy savings at the Atlanta flagship restaurant, compared with that restaurant's usage stats from previous years. Operators at some 250 locations have opened in or remodeled to the Inspire design.

A Look Ahead

From the Twitterstorm that led to Arby's buying Pharrell William's iconic hat for charity, to Arby's unprecedented award from the DOE, the "slice it thin, pile it high" sandwich chain has made great strides over the past six years. And industry leaders are taking note.

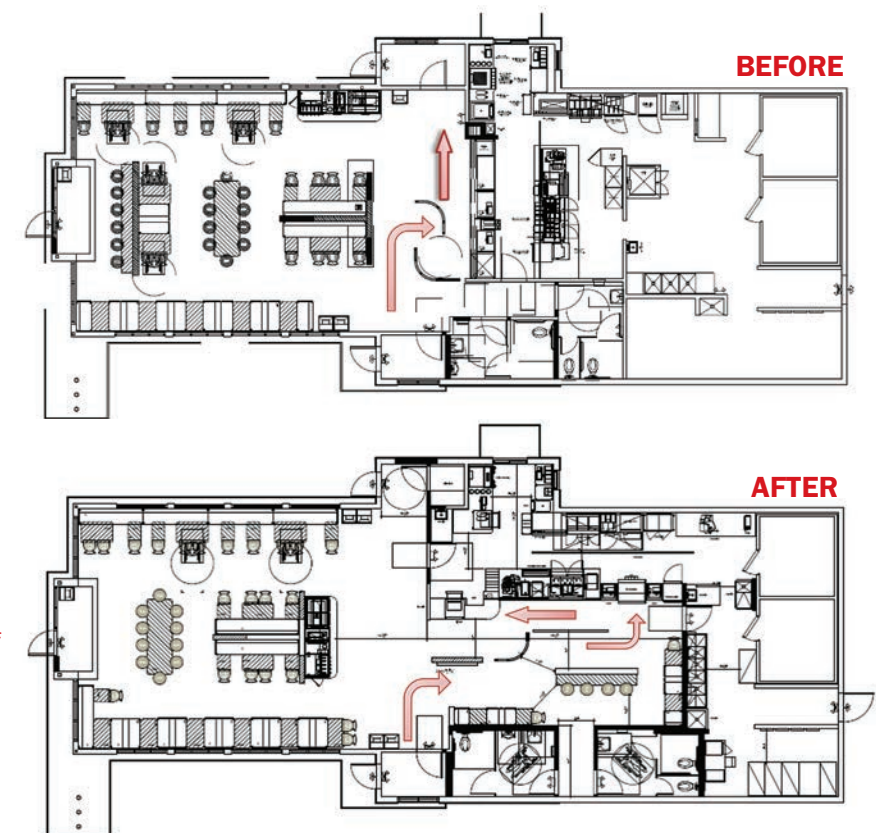
"Arby's is a thought leader in asset and energy management," says Powerhouse Dynamics V.P. of Business Development Jay Fiske. "Arby's leaders have supported the company's growth with significant bottom-line improvements through their efficiency program. [We see Arby's] at the leading edge of an industry-wide movement toward operational efficiency through connected equipment, automation and cloud-based analytics."

Ecova's Senior Energy Manager Paul Kuck agrees. "Arby's success in achieving a [more than] 15% energy reduction can be attributed to their investment in the program and their commitment to both operational and capital improvements. Arby's has been an excellent partner in allowing Ecova to drive efficiency with data and insights. The results speak for themselves."

Arby's path to energy-smart operations is one that will continue into the foreseeable future. With 1,000-plus company-owned locations and growing, there is always something to tweak, upgrade, maintain or revise.

Inoa, however, sums it up best. "Arby's success in becoming an energy-efficient restaurant company boils down to one thing: commitment—from our leadership and [from] our team members to transform how we operate our restaurants," Inoa says. "Do we have 100% compliance yet? Of course not. But it's the new *culture* that's making the difference." **fer**

The Delight deli line (r.) makes better use of space by rotating the cookline 90° and merging production with front counter action.



Key Equipment & Systems

- Ecova energy and sustainability management program
- T&S Brass spray valves
- Antunes damper kit w/heat shield (for toasters)
- Kason Easimount strip curtains
- FridgeWize EC motors and fan blades
- GasketGuy gaskets
- Powerhouse Dynamics SiteSage Energy Management System
- Alto-Shaam Cook & Hold ovens
- Cadco convection oven
- Frymaster/Manitowoc FilterQuick fryers
- Henny Penny Evolution Elite fryers
- Marshall Air fry dump station, chicken warming cabinet, slicer warmer
- Beverage-Air/Alti Group refrig., freezers
- Traulsen/ITW FEG refrig., freezers
- Carrier or Lennox HVAC system
- Gexpro LED interior lighting conversion program
- FSG and Regency Lighting LED exterior lighting conversion program
- Lektron LED neon banding conversion program
- Duro-Last white roof
- A.O. Smith Cyclone Mxi condensing water heater
- Rinnai tankless water heater
- Weathermatic web-based irrigation system