Final Statewide Ex Ante Review Findings – Gas & Electric

Table 1-1: Project Information

IOUs	PG&E, SCG, SDG&E, and SCE
CMPA Sample Dates	2/4/2012 (SCG) & 2/19/2013 (PG&E)
Application IDs	5001101275 (SCG), 2K13145622 (PG&E), 0500435352 (SCE), and other multiple sites
Application Dates	8/10//2011 (SCG), 1/16/2013 (PG&E)
Program IDs	SCG3607 & PGE21011
Program Names	EECIP (SCG), Commercial Calculated Incentives (PG&E)
Program Years	2011 (SCG), 2013 (PG&E)
Itron Project IDs	X044 (SCG), X311 (PG&E)
IOU Ex Ante Savings Date	8/20/2011 (SCG), 7/29/2011 (PG&E FSTC Fisher-Nickel report)
Measure Name	HE Broiler Retrofit
Project Description	Retrofit existing broiler with new energy efficient conveyor broilers
Date of CPUC Staff Final Review	3/7/2014
Primary Reviewer / Firm	Betsy Ricker, Paolo Pecora / ERS
Review Supervisor / Firm	Joseph Ball / Itron
CPUC Staff Project Manager	[redacted] / California Public Utilities Commission, Energy Division
CPUC Staff Policy Authorization (as needed)	
Type of Review (Desk, On-site, Full M&V, Tool)	Desk
CPUC Staff Recommendation	For normal replacement claims, the adjusted ex ante annual energy savings are approved at the following per location levels: **1,899 therms**, **7,809 kWh** and **1.12 kW** peak demand reduction.

Measure Description

Replace existing broiler (Neico 1424) with more energy efficiency broiler (Neico JF143). Typical conveyor broilers cook food products through radiant heating and toast buns on a second conveyor with separate 3 kW electronically-heated platens. The proposed broiler operates in a similar fashion; however, it cooks food with both radiation and convection, allowing the maximum energy input for the burners to be reduced from ~100,000 Btu/hour to ~55,000 Btu/hour. Because of the relative placement of the burners and second conveyor for the buns, the recycled heat also warms the toasting platen, eliminating the need for electric resistance heat for toasting. The newly designed broiler is shorter and uses the convective heat to more efficiently cook the food. There is an added electrically powered fan. Due to the requirements of some regional air quality management districts (AQMDs), conveyor broilers in some regions of California are required to be outfitted with a catalytic converter. Testing by the Food Service Technology Center (FSTC) has shown that installing a catalyst on a conveyor broiler can actually reduce the broiler's natural gas consumption by reflecting more heat back into the broiler. Only those Neico 1424 broilers located in AQMDs that require catalysts are outfitted with these converters. All of the proposed JF143 broilers will be outfitted with a catalyst, regardless of the restaurant's AQMD.

The customer may install the new broiler at 256 locations in California IOU service territories.

Summary of Review

Baseline & EUL

During discussions with SCG in 2012 regarding early versus normal replacement baseline claims, the IOU and customer decided that a normal replacement claim would suffice for all applications, both for corporate owned and franchised owned locations. EUL is 12 years.

Project Costs

Invoices provided for both the pre-existing and new broilers indicated the following installed costs.

Installed Cost Broilers	Baseline Neico 1424 with Catalytic Converter	Baseline Neico 1424 without Catalytic Converter	Proposed Neico JF143 (only with Catalytic Converter)
Chain broiler	$6,250	$6,250	$12,120
Stand, Hoses & Cord	$490	$490	$128
Catalytic Converter	$1,558	$0	$0
Equipment Cost	$8,298	$6,740	$6,740
Freight	$688	$596	None included
Sales Tax	$602	$602	$919
Total	**$9,588**	**$7,937**	**$13,166**

Equipment Operation & Production

The customer contact indicated that [redacted] of their restaurants in California are corporate-owned and [redacted] are franchises. The contact also indicated that the hours of operation vary, but conservatively estimated that, on average, each location's broiler operates for 18 hours per day 364 days each year, with one preheat per day. For the pre-existing broiler, the buns were warmed separately on a lower conveyor using a 3 kW heating element (as described above).

Gas Savings Verification

The IOUs provided 8 sets of pre- and eight (8) sets of post-implementation gas metered data at corporate sites (note: SCG comprised four of the eight sites while PG&E and SDG&E provided 2 post-M&V sites a piece). Post-measurements were conducted at the same locations that had pre-M&V conducted. One of the eight sites contained half the requested two week monitoring period; when compared to all the other sites the natural gas savings was significantly lower than the other seven sites. The store manager was contacted to see if anything unusual happened with this broiler. She stated that the broiler was having problems during the first two months of operation, cycling off during peak periods (lunch and dinner) causing the unit to cycle into re-heat mode. Therefore, this site was removed from the sample for being deemed an outlier. Compared to the FSTC test results, the post-install onsite M&V results represented, on average, a 0.4% increase in annualized energy consumption, or a statistically insignificant difference.

Electric Savings Verification

The IOUs provided pre-implementation electric amperage data for 18 corporate sites (note: PG&E comprised 14 of the 18 sites, SDG&E provided two electrical pre-M&V sites, and SCE submitted two pre-M&V electric data for two sites) and post-implementation amperage data for eight of matching PG&E sites. Due to the consistency in data, it was determined that only eight sites would need to be monitored during the post-installation M&V period. Comparing this sample to the FSTC baseline test results, the in situ degraded broilers represented, on average, a 12.2% increase in weekday electricity consumption over the non-degraded 1424 broilers.

CPUC staff observed that the eight post-M&V sites were biased to represent locations with longer operating hours, which representing a 32% increase in kWh savings over FSTC test results; therefore, CPUC staff adjusted the hours using weighted averages and included all 16 pre-install sites, and determined the average electric energy savings and peak kW reduction at these sites. These were compared to the annual savings estimated by the FSTC. The annual electrical savings and demand reduction were based on the measured data and represented an average increase of 9.5% in kWh savings and average increase of 3.1% in peak demand reduction estimate as compared to the FSTC-estimated savings.

Review Conclusion

For normal replacement claims, the adjusted ex ante annual energy savings are approved at the following per location levels: **1,899 therms**, **7,809 kWh** and **1.12 kW** peak demand reduction. **Incentives shall be subject to an incremental cost cap of 50% for all ROB and NR measures.**

For valid early replacement claims, the in situ broiler nameplate must be well documented and the ex ante annual energy savings for the RUL period are approved at the following per location levels: 2,049 therms, 9,438 kWh and 1.21 kW peak demand reduction.

Table 1-3 Energy Savings Summary, Project Costs & Incentive

Description	IOU Ex Ante Claim	CPUC Staff Recommendations
First Year kWh Savings	7,131 per location	For normal replacement claims, 7,809 per location
First Year Peak kW Savings	1.09 per location	For normal replacement claims, 1.12 per location
First Year Therms Savings	1,892 per location	For normal replacement claims, 1,899 per location
kWh Savings (RUL Period)	N/A	For locations with valid early replacement claims where there exists RUL (replaced within 12 year EUL) the kWh savings is 9,438 per location
Peak kW Savings (RUL Period)	N/A	For locations with valid early replacement claims where there exists RUL (replaced within 12 year EUL) peak demand reduction is 1.21 per location
Therms Impact (RUL Period)	N/A	For locations with valid early replacement claims where there exists RUL (replaced within 12 year EUL) the therm savings is 2,049 per location
kWh Savings (RUL thru EUL Period)	7,131 per location	7,809/location

Description	IOU Ex Ante Claim	CPUC Staff Recommendations
Peak kW Savings (RUL thru EUL Period)	1.09 per location	1.12/location
Therms Savings (RUL thru EUL Period)	1,892 per location	1,899 per location
Annual Non-IOU Fuel Impact (RUL Period)	N/A	N/A
Annual Non-IOU Fuel Impact (RUL thru EUL Period)	N/A	N/A
Project Costs for Baseline #1 (RUL)	N/A	For locations with a valid early replacement claim where there exists RUL (replaced within 12 year EUL) full project costs apply = $13,166
Project Costs for Baseline #2 (EUL minus RUL period)	**Baseline 1424 Broiler** w/ Catalytic Converter = $9,588; w/o Catalytic Converter = $7,937; **Proposed JF143 Broiler** (only with Catalytic Converter) = $12,248	Freight charges were assigned $0 on all six invoices submitted. IMC = $3,578 for locations requiring emissions controls IMC = $5,229 for locations not requiring emissions controls
Project Incentive Amount	$1,892.00 per location (Gas) $750.79 per PG&E (Elec) location	Incentives shall subject to an incremental cost cap of 50% on all ROB and NR measures. **The Statewide Customized Manual needs to be corrected to explicitly say that IMC applies to projects with ROB and NR baselines, in addition to new loads and non-operational equipment.**