



CHI Energy Services Daily Report

June 4, 2016

Caribe Condominium

28103 Perdido Beach Blvd Orange Beach, AL 36561 (251)-980-9000

<http://www.Caribe-Resort.net>

Methodology and Electric Savings Report

About CHI Energy Services, Inc.

CHI Energy Services, Inc is an award-winning, nationwide Energy Services Company (ESCO) with core competencies in weatherization and custom energy retrofits serving the residential, commercial and industrial markets. CHI will provide an Engineering Solution by utilization of state of the art technology for each system that will assist your facility to maximize the reduction of the energy consumption. This will be accomplished through operational adjustments by balancing and improving the efficiency of the HVAC System i.e. heating, cooling, ventilation and behavioral changes within the facility. Generally, facilities experience an energy reduction between fifteen to twenty-five percent without compromising the integrity of the facility. A national leader in energy conservation programs, CHI has designed and implemented solutions for demand-side management (DSM) energy reduction programs to various business segments including: multi-unit low, mid and high-rise managed properties, Healthcare Facilities, Medical Office Buildings, Professional Office Buildings, small commercial and large high-profile commercial and industrial properties.

For more than two decades, CHI's team of Certified Measurement and Verification Professionals (CMVP) and Certified Energy Managers (CEM), employ tools and processes built around industry standards and guidelines, such as the International Performance Measurement and Verification Protocol (IPMVP) and ASHRAE Guideline 14. For more information, visit www.chienergyservices.com.

CHI is committed to implementing corrective measures to ensure maximum energy savings demonstrating our willingness to invest in your facility.

“The greatest energy conserved is the energy never consumed.”

Background

In 2015, Main Street Energy, LLC retained the services of CHI Energy Services to perform an M&V (measurement and verification) study on a condominium complex in Orange Beach, AL (on the 'Gulf Shores' area of the Gulf of Mexico). CHI Energy complies with ASHRAE 14 and IPMVP category C (International Performance Measurement and Verification Protocol, whole building analysis) standards.

The purpose of engaging CHI Energy Services was to determine whether a product designed and manufactured by Main Street Energy, LLC., called the "T7 EMI Facility Filter" was providing electrical savings to the building. The building is a 200 tenant, luxury resort condominium complex that is managed by the Owners' Association of the condominium complex.

The building is a 6-story ocean view complex with snack bars, a swimming pools, a workout/fitness center, elevators, guard shack, underground and covered parking, along with the other amenities associated with luxury accommodations.

Main Street Energy, LLC had been retained by the Owners Association to install their T7 Filter in the subpanels of the common areas of BUILDING B, that the Owners Association is responsible for the power bill.

The power bill from the local power company was averaging about \$250,000 a year. The monthly variations are dependent on the season. The weather averages between 45 and 65 during the winter season and between 75 and 92 in the summer season. Humidity during the spring, summer, and fall seasons is high, averaging 90 percent.

When Main Street Energy, LLC met with Jeff Keane, the Facilities Director for all 3 of the Caribe buildings, Jeff's goal was to have Main Street train his electricians and let them do the installations. The people at Main Street explained that there are variations in the sub-panels and each one required an independent assessment to determine the most effective installation of the T7 Filter.

CHI Energy Services was given a full report of the installation process and has attached it to this report as a supporting document in the Appendix. Main Street Energy installed 16 sub-panels in Caribe Building B 'common areas' (and guard shack) with T7 EMI Facility Filters on June 16-17, 2015. The installation took 2 days and did require turning off power to some panels for safety purposes.

CHI Energy Services Analysis Process

CHI Energy Services was not retained to review the engineering of the T7 EMI Facility Filter, but to determine the impact of installing it in the Caribe Building B Common Areas, serviced by a single meter from the local power company. Over the years, CHI Energy Services has developed and refined their M&V analytics systems to generate detailed M&V reports when

our clients allow us to access their power company billing records daily (or by sending us daily meter readings). These individual daily reports are consolidated to create a month-end report. It shows everything you need to see: month's savings and percentages based off that month's electric bills. The report show that the consumption is exactly what was used for that month, along with that month's weather and our predictive, normalized weather analysis. In order to perform these analytics, CHI Energy requires 24 months of power bills prior to the installation occurring. When these power bills are received, CHI Energy then does a 24 month weather analysis for that area, including temperature and humidity range by day. Our system algorithms then perform a linear regression analysis, attempting to find a similar (matching) historical day so we can create a 'squared T' comparison to that day along with the energy consumption. CHI Energy runs these analytics on the daily matches rather than a monthly average to improve the accuracy of the calculations. An average of HDD (heating degree days) and CDD (cooling degree days) is generated from a minimum of 3 comparative sources, including NOAA, degreedays.net, and local aviation reports. We customize the baseline of 65 degrees depending on the location in the country of our client's buildings.

Our analysis looks not only at the weather, temperature, and consumption, but also the cost of operating our client's buildings. In the analysis of the Caribe, CHI Energy focused daily consumption of KWH using the meter(s) that the local power company bills them. No additional metering was required. Using this process, CHI Energy was able to comply with ASHRAE 14 and IPMVP category C (International Performance Measurement and Verification Protocol, whole building analysis) standards.

Some Variables in our Modeling Software

CHI Energy Services Modeling Software	Features/Notes
Name or describe the software program used for your energy analytics	Custom developed over 20 years
DOE certified? (Yes/No)	YES
ASHRAE 14 Standards? (Yes/No)	YES
IPMVP Standards compliance? (Yes/No)	YES – Category C whole building
Confidence Factor (multiple R)	95% or higher
Analysis period – explain	6 months or longer
Total HDD for period	YES
Total CDD for period	YES
Baseline Temp assumed	65 degrees or regionally calibrated
Is relative humidity considered in your model?	YES
How were daily ranges/ averages generated?	Bill cycle (not calendar month)
Months in average above?	120 or more
Accuracy factor	Provided upon analysis
Square R factor	Provided upon analysis
ANOVA regression DF	Provided upon analysis
ANOVA residual DF	Provided upon analysis
Coefficient Intercepts for: Days, HDD, CDD, Humidity	Provided upon analysis

Our analysis determined that the ONLY change made to common area during the 12 month period of performance measurement and testing was the installation of the T7 Filters. Our savings analysis report is on the following pages. In summary, over the 12 month period we monitored the Caribe Resort, the monthly savings were above 14% and the project paid for itself in a 12 month period. (As a side note, resulting from this project, we were retained to do similar analysis on 2 additional buildings installing the T7 Filters at buildings operated at the Caribe Resort and determined savings achieved were in the 10% range).

S. Todd Hardin

President/Mechanical Engineer

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Savings Analysis – July 2015

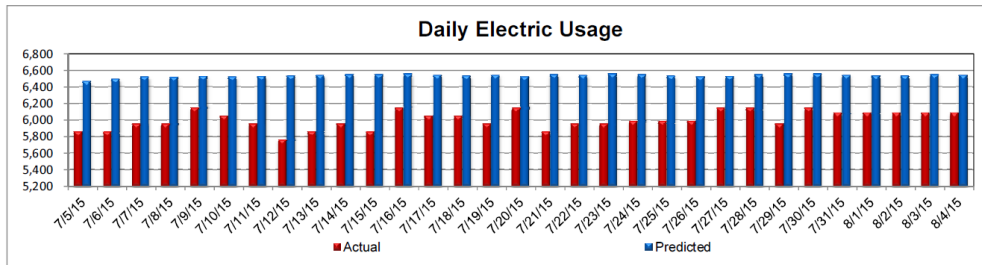
CHI Daily Energy Report

CARIBE CONDOMINIUM

Daily Electric Usage and Savings report ending: 08/04/15

Date	07/05/15	07/06/15	07/07/15	07/08/15	07/09/15	07/10/15	07/11/15	07/12/15	07/13/15	07/14/15	07/15/15	07/16/15	07/17/15	07/18/15	07/19/15
Actual KWH	5,856	5,856	5,952	5,952	6,144	6,048	5,952	5,760	5,856	5,952	5,856	6,144	6,048	6,048	5,952
Predicted KWH	6,464	6,491	6,518	6,511	6,525	6,518	6,525	6,531	6,538	6,545	6,545	6,551	6,538	6,531	6,538
Variance	608	635	566	559	381	470	573	771	682	593	689	407	490	483	586
HDD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CDD	10	14	18	17	19	18	19	20	21	22	22	23	21	20	21
Daily Savings	\$61.61	\$64.33	\$57.32	\$56.64	\$38.55	\$47.60	\$58.00	\$78.12	\$69.08	\$60.03	\$69.75	\$41.27	\$49.63	\$48.95	\$59.35

Date	07/20/15	07/21/15	07/22/15	07/23/15	07/24/15	07/25/15	07/26/15	07/27/15	07/28/15	07/29/15	07/30/15	07/31/15	08/01/15	08/02/15	08/03/15	08/04/15
Actual KWH	6,144	5,856	5,952	5,952	5,984	5,984	5,984	6,144	6,144	5,952	6,144	6,086	6,086	6,086	6,086	6,086
Predicted KWH	6,518	6,545	6,538	6,551	6,545	6,531	6,518	6,525	6,545	6,551	6,551	6,538	6,531	6,531	6,545	6,538
Variance	374	689	586	599	561	547	534	381	401	599	407	452	445	445	458	452
HDD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CDD	18	22	21	23	22	20	18	19	22	23	23	21	20	20	22	21
Daily Savings	\$37.87	\$69.75	\$59.35	\$60.71	\$56.79	\$55.44	\$54.08	\$38.55	\$40.59	\$60.71	\$41.27	\$45.74	\$45.06	\$45.06	\$46.42	\$45.74



CHI Daily Energy Report

CARIBE CONDOMINIUM

CHI Electric Stats

30 Day Electric KWH Summary Totals	
Actual KWH Used	186,048
Predicted KWH	202,473
KWH Variance	16,425
Variance %	8.11%
Total Monthly Savings	\$1,663.39
Price per KWH	\$0.1013

Daily Electric Savings Totals	
Daily Electric KWH Savings	\$45.74
Total Daily Savings	\$45.74

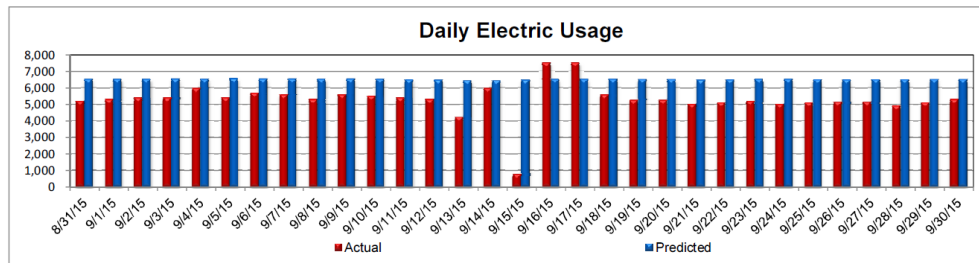
Savings Analysis – September 2015

CHI Daily Energy Report

CARIBE CONDOMINIUM

Daily Electric Usage and Savings report ending: 09/30/15

Date	08/31/15	09/01/15	09/02/15	09/03/15	09/04/15	09/05/15	09/06/15	09/07/15	09/08/15	09/09/15	09/10/15	09/11/15	09/12/15	09/13/15	09/14/15	
Actual KWH	5,184	5,280	5,376	5,376	5,952	5,376	5,664	5,568	5,280	5,568	5,472	5,376	5,280	4,224	5,952	
Predicted KWH	6,505	6,511	6,511	6,518	6,511	6,538	6,518	6,518	6,511	6,518	6,511	6,471	6,451	6,424	6,424	
Variance	1,321	1,231	1,135	1,142	559	1,162	854	950	1,231	950	1,039	1,095	1,171	2,200	472	
HDD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CDD	16	17	17	18	17	21	18	18	17	18	17	11	8	4	4	
Daily Savings	\$133.74	\$124.69	\$114.97	\$115.65	\$56.64	\$117.69	\$86.48	\$96.21	\$124.69	\$96.21	\$105.25	\$110.90	\$118.59	\$222.82	\$47.82	
Date	09/15/15	09/16/15	09/17/15	09/18/15	09/19/15	09/20/15	09/21/15	09/22/15	09/23/15	09/24/15	09/25/15	09/26/15	09/27/15	09/28/15	09/29/15	09/30/15
Actual KWH	768	7,488	7,488	5,568	5,232	5,232	4,992	5,088	5,184	4,992	5,088	5,136	5,136	4,896	5,088	5,280
Predicted KWH	6,451	6,511	6,505	6,505	6,498	6,498	6,451	6,471	6,505	6,505	6,485	6,471	6,485	6,485	6,498	6,498
Variance	5,683	(977)	(983)	937	1,266	1,266	1,459	1,383	1,321	1,513	1,397	1,335	1,349	1,589	1,410	1,218
HDD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CDD	8	17	16	16	15	15	8	11	16	16	13	11	13	13	15	15
Daily Savings	\$575.52	(\$98.91)	(\$99.59)	\$94.85	\$128.20	\$128.20	\$147.75	\$140.07	\$133.74	\$153.18	\$141.42	\$135.21	\$136.56	\$160.87	\$142.78	\$123.34



CHI Daily Energy Report

CARIBE CONDOMINIUM

CHI Electric Stats

30 Day Electric KWH Summary Totals	
Actual KWH Used	163,584
Predicted KWH	201,261
KWH Variance	37,677
Variance %	18.72%
Total Monthly Savings	\$3,815.54
Price per KWH	\$0.1013

Daily Electric Savings Totals	
Daily Electric KWH Savings	\$123.34
Total Daily Savings	\$123.34

Analysis May 2016

CHI Monthly Energy Report

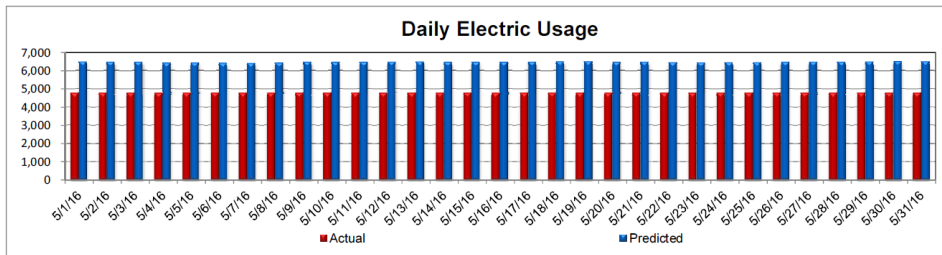
CARIBE CONDOMINIUM

MAY 2016

Daily Electric Usage and Savings report ending: 05/31/16

Date	05/01/16	05/02/16	05/03/16	05/04/16	05/05/16	05/06/16	05/07/16	05/08/16	05/09/16	05/10/16	05/11/16	05/12/16	05/13/16	05/14/16	05/15/16
Actual KWH	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750
Predicted KWH	6,471	6,458	6,458	6,404	6,411	6,392	6,386	6,404	6,458	6,444	6,444	6,464	6,471	6,444	6,444
Variance	1,721	1,708	1,708	1,654	1,661	1,642	1,636	1,654	1,708	1,694	1,694	1,714	1,721	1,694	1,694
HDD	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
CDD	11	9	9	1	2	0	0	1	9	7	7	10	11	7	7
Daily Savings	\$146.68	\$145.53	\$145.53	\$140.97	\$141.54	\$139.91	\$139.42	\$140.97	\$145.53	\$144.39	\$144.39	\$146.10	\$146.68	\$144.39	\$144.39

Date	05/16/16	05/17/16	05/18/16	05/19/16	05/20/16	05/21/16	05/22/16	05/23/16	05/24/16	05/25/16	05/26/16	05/27/16	05/28/16	05/29/16	05/30/16	05/31/16
Actual KWH	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750
Predicted KWH	6,444	6,458	6,485	6,475	6,444	6,464	6,431	6,418	6,431	6,431	6,458	6,464	6,458	6,471	6,491	6,485
Variance	1,694	1,708	1,734	1,725	1,694	1,714	1,681	1,667	1,681	1,681	1,708	1,714	1,708	1,721	1,741	1,734
HDD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CDD	7	9	13	12	7	10	5	3	5	5	9	10	9	11	14	13
Daily Savings	\$144.39	\$145.53	\$147.82	\$147.25	\$144.39	\$146.10	\$143.25	\$142.11	\$143.25	\$143.25	\$145.53	\$146.10	\$145.53	\$146.68	\$148.39	\$147.82



CHI Monthly Energy Report

CARIBE CONDOMINIUM

MAY 2016

CHI Electric Stats

31 Day Electric KWH Summary Totals	
Actual KWH Used	147,254
Predicted KWH	199,864
KWH Variance	52,610
Variance %	26.32%
Total Monthly Savings	\$4,483.81
Price per KWH	\$0.0852

Daily Electric Savings Totals	
May Monthly Electric KWH Savings	\$4,483.81
May Monthly Percentage Savings	26.32%

Appendix – Installation Notes

(please note: Local code allowed the installation of the T7 inside the electric panel)



Caribe Resort Orange Beach, AL

June 16, 2015 Installation
Information and Pictures



Participants

- Jeff Keane – Caribe Resort Dir facilities
- Toby – head electrician (850-450-1291)
- AJ - assistant electrician
- Bobby Boyd – Main Street
- Jim Owings – Main Street

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Panels and Install Readings

Panel Name	T7 Serial Number	Neutral Main Current in Amps	T7 current in Amps	Notes
Garage Level Electric Room				
400A	0171	6.1	.2-.3 running	
200A	0175	9.2	.15	
200A-2	0198	5.1	.13	
AJ (w AJ)	0031	9.96	.21-.3 range	
111	0166	9.3	.14	
21M	0192	11.7	.52	
1st Floor				
Club (suite 100 office)	0197	9.4	.1-1.1	
CUB dining chain to CUB1 Suite 200 (supply closet)	0188	10.72	.37	2 panels – main and sub dining chained – 1 filter for the 2 panels
HS (fitness center)	0180	11.7	.10	
2nd Floor				
2EM5	0174	5.35	.08	
2MBP	0173	7.3	.10	
2EM4	0178	13.4	.14	
2MPC	0182	6.7	.10	
BOCKP				
2EM2	0187	3.7	.07	
2EM3	0172	5.63	.10	
POCK area PEQ	No install	4		2 neutrals, all pumps
Guard Shack				
G (w GS)	0177	4.2-6.5 racing	.13	

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Panel 1 – 4HPA – electric closet garage



The Neutral bus bar is 'U-shaped' so the T7 wires were installed at each end of the 'U' without moving any neutral wires in the panel

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Panel 2 – 2HPA electric closet garage



The Neutral bus bar is 'U-shaped' so the T7 wires were installed at each end of the 'U' without moving any neutral wires in the panel

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Panel 3 – 2HPA-2 electric closet garage



The Neutral bus bar is straight on the right side so the T7 wires were installed at each end of the neutral bus bar (top and bottom) without moving any neutral wires in the panel

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Panel 4–AF or A1 electric closet garage



The Neutral bus bar is 'U-shaped' so the T7 wires were installed at each end of the 'U' without moving any neutral wires in the panel

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8

Panel 5 4ELI electric closet garage



The Neutral bus bar is 'U-shaped' so the T7 wires were installed at each end of the 'U' without moving any neutral wires in the panel

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Panel 6 2EM electric closet garage



The Neutral bus bar is 'U-shaped' so the T7 wires were installed at each end of the 'U' without moving any neutral wires in the panel

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Panel 7 CUA 1st Floor (Suite 100)

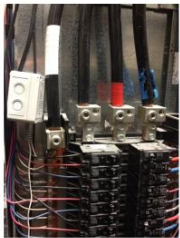


The Neutral bus bar is straight on the right side so the T7 wires were installed at each end of the neutral bus bar (top and bottom) without moving any neutral wires in the panel

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8 Panels CUB and CUB1 Suite 200 supply closet
daisy chain – 1 unit on 2 panels



The Neutral bus bar in the first panel has the top slot with the T7 coiled lead. The T7 straight lead is run to the last slot in the neutral bus of the sub-panel (sharing the neutral bus on the feeding panel) The install was done without moving any neutral wires in the panel

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Panel 9 HS fitness center



The Neutral bus bar is straight on the left side of the panel so the T7 wires were installed at each end of the neutral bus bar (top and bottom) without moving any neutral wires in the panel

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Panel 10 EM5 – 7th floor



The Neutral bus bar is straight on the left side of the panel so the T7 wires were installed at each end of the neutral bus bar (top and bottom) without moving any neutral wires in the panel

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Panel 11 2HBP 7th Floor



The Neutral bus bar is straight on the right side so the T7 wires were installed at each end of the neutral bus bar (top and bottom) without moving any neutral wires in the panel

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Panel 12 2EM4 7th floor



The Neutral bus bar is straight on the right side so the T7 wires were installed at each end of the neutral bus bar (top and bottom) without moving any neutral wires in the panel

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Panel 13 2HPC 7th floor



The Neutral bus bar is straight on the right side so the T7 wires were installed at each end of the neutral bus bar (top and bottom) without moving any neutral wires in the panel

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Panel 14 2EM2 roof 1



The Neutral bus bar is straight on the right side so the T7 wires were installed at each end of the neutral bus bar (top and bottom) without moving any neutral wires in the panel

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Panel 15 2EM3 roof 2



The Neutral bus bar is straight on the right side so the T7 wires were installed at each end of the neutral bus bar (top and bottom) without moving any neutral wires in the panel

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Panel 16 G (GS) guard house



The Neutral bus bar is straight on the right side so the T7 wires were installed at each end of the neutral bus bar (top and bottom) without moving any neutral wires in the panel

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