



Mgmt: NAI Emory Hill Real Estate Group
7250 Parkway Drive, Hanover, MD

Project: FADRS™ (pronounced faders)
Smart Grid Technology Showcase utilizing
patented Artificial Intelligence, Prediction &
Human Centric Technology.

Contractors:
Consolidated Energy Design (Patent Holders)
Third Party BAS Contractor (Installation)

Funding Agency:
Maryland Energy Administration (MEA)
Grant 2015-05-517S5
“Novel Demand Response & Advanced
Energy Management System”

PRE Conditions: 5 Story Tenant Occupied Office Building; 81,000 square feet
85 Water Source Heat Pumps
Gas Heat Electric Cool Make Up Air Rooftop Unit
Typical Building Automation System (BAS) for space heating/cooling.

POST Conditions: **CONTROLS ONLY – No New HVAC Equipment or Lighting Retrofit**

- FADRS™ Painless Demand Response®
- FADRS™ Enhanced Building Automation System
- ~100 Power Quality Sub Meters (Deep granularity) + KYZ Pulse meter

ALL ECMs either overlaid on top of existing BAS or reporting to existing BAS FULLY AUTOMATED control (No Human Intervention). Bidirectional control in real time.

Completion Date: FADRS™ Enhanced Building Automation System Performance:
March 2016 (HVAC Energy Savings from April 2016 onward)

Year Three Normalized Baseline (NBL) for HVAC = 1,795,665 KWh (\$195,383)
AI Achieved Maximum HVAC Energy Savings by end of Year 3
616,798 KWh (\$ 67,049) 34.3%

FADRS™ Painless Demand Response® Performance:
(8/2/18 Summer Capacity Test)
172 KW down to 118 KW = **31.4%** DR Reduction

IPKeys is the Curtailment Service Provider for this project and their **PJM formula Calculations are found on reverse side.**



EXHIBIT A

ELECTRIC SAVINGS AT MEA PROJECTS AFTER 3 YEARS

Building 7250

	KWh (NBL)	Dollars	Dollars/SF (81,000 SF)	KWh W/FADRS™	Dollars W/FADRS™	Dollars/SF (81,000 SF)	KWh Saved	\$ SAVED	% SAVED	
YEAR ONE 4/16-3/17	1,741,798	\$ 188,796	\$ 2.33	1,223,152	\$ 132,579	\$ 1.64	518,646	\$ 55,664	29.8%	
YEAR TWO 4/17-3/18	1,664,195	\$ 185,058	\$ 2.28	1,139,777	\$ 126,743	\$ 1.56	524,418	\$ 58,505	31.5%	
YEAR THREE 4/18-3/19	1,795,665	\$ 195,383	\$ 2.41	1,178,867	\$ 128,271	\$ 1.58	616,798	\$ 67,049	34.3%	
Achieved energy savings of 34.4% at the end of Year 3 because our patented FADRS™ AI system learned how to run the building more efficiently over time.							TOTAL SAVED OVER 3 YEARS	1,659,862	\$ 181,218	

DEMAND RESPONSE TEST

PJM Customer Usage Review

Customer	Emory Hanover
Utility Acct #	
Nom ICAP	121.26
FSL	130
Zone	BGE
Cap Loss Factor	1.089
PLC	262.83

Test Results
Pass

Customer required to reduce usage to or below this level.

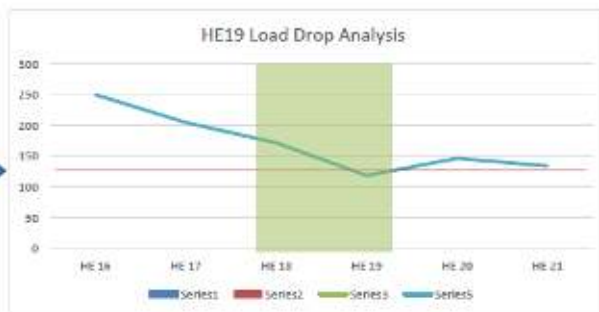
TEST
2018-08-02

August 2, 2018
18:00:00 PM Test Event Start
19:00 PM Test Event End



HE 1	110.9
HE 2	110.2
HE 3	111.2
HE 4	110.2
HE 5	113.8
HE 6	112.6
HE 7	168.8
HE 8	218.0
HE 9	255.2
HE 10	255.5
HE 11	268.6
HE 12	272.5
HE 13	273.2

Target FSL 130kW



FSL ANALYSIS			Average Across Event
		HE 19	
Nom ICAP	121.26		
Comm ICAP	121.26		
FSL (MW)	130		
Metered Load	118.80		
PLC (MW)	262.83		
DR Factor	0.957		
PPH	1.0892		
Cap Loss Factor	1.09		
Reduction ICAP MW	133.45669		133.457
Shortfall ICAP	-12.1967		110%
Shortfall UCAP	-13.2846		Pass

Tested HE19 kW Value **118.8**
Load Reduction **53.4**
Percentage of Reduction **31%**

Reduction (MW) = PLC - (Metered Load * Capacity Loss Factor)

Shortfall ICAP = Committed ICAP - Reduction MW

Shortfall UCAP = Shortfall ICAP * DR Factor * Forecast Pool Requirement