CITY OF LAKE WORTH
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AGENDA
CITY OF LAKE WORTH
CITY COMMISSION WORK SESSION
TUESDAY, FEBRUARY 10, 2015 - 6:00 PM

1. **ROLL CALL:**

2. **PLEDGE OF ALLEGIANCE:** Led by Commissioner Andy Amoroso

3. **UPDATES/FUTURE ACTION/DIRECTION:**

   A. Hector Samario, Siemens Industry, Inc., to provide an update on Energy Performance Contracting Services

4. **ADJOURNMENT:**

If a person decides to appeal any decision made by the board, agency or commission with respect to any matter considered at such meeting or hearing, he or she will need a record of the proceedings, and that, for such purpose, he or she may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based. (F.S. 286.0105)

NOTE: ONE OR MORE MEMBERS OF ANY BOARD, AUTHORITY OR COMMISSION MAY ATTEND AND SPEAK AT ANY MEETING OF ANOTHER CITY BOARD, AUTHORITY OR COMMISSION.

SIEMENS

Building Performance & Sustainability

February 10 2015

City of Lake Worth

Performance Contracting Commission Workshop

Workshop Objectives

Project Overview and Status

- High level discussion of the Project
- Answer any immediate questions
- Develop timeline and/or steps for additional feedback / information

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Project Timeline

Investment Grade Audit (IGA)	May 2014 – Jan 2015
IGA Report Presented to Staff	January 26
Staff reviews IGA Report	January 26 – Feb 9
Various Staff meetings to refine Report	January 29 – Feb 6
2nd Staff Workshop	February 9
Commission Workshop	**February 10**
Update IGA Report & Contract	February 11 – 13
Meetings with new Finance Director	February 11 – 20
IGA Report & Contract submitted to Agenda	March 9
Commission Agenda / Approval	March 17

Agenda

- Audit Process & Baseline Development
- Scope Development
- Cash Flows & Guarantee
- Measurement & Verification
- Questions

Agenda

- **Audit Process & Baseline Development**
- Scope Development
- Cash Flows & Guarantee
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Audit Process & Baseline Development

Site Visits, site visits, site visits….

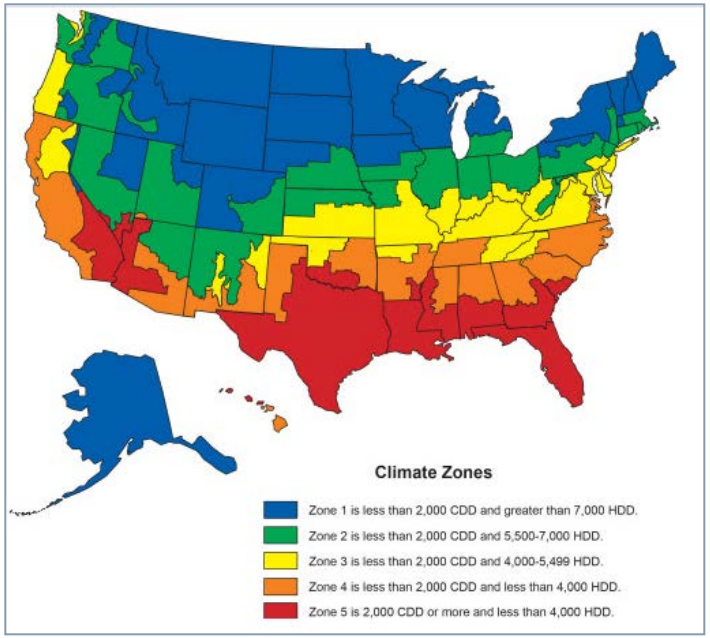
- Assess equipment condition, efficiency, operating hours, age, etc.

Utility Data Analysis (Section B)

- Comparison to Regional Averages (Zone 5)
- Commercial Building Energy Consumption Survey (CBECS)
- Survey included over 5,200 commercial buildings
- “Benchmark” Energy Intensity (kWh/square foot)

Building types & Intensities relevant to Lake Worth

Office	19.2
Public Assembly	17.0
Warehouse & Storage	5.0



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Audit Process & Baseline Development

City of Lake Worth Energy Intensities:

Facility Account	Annual kWH	Max kW	Baseline Annual Cost	Square Footages	kWh per sq ft	$ per sq ft
City Hall	262,920	73	$ 30,700.22	23,412	11.23	$ 1.31
Shuffleboard	39,987	-	$ 4,802.44	5,354	7.47	$ 0.90
Gym	155,625	-	$ 18,690.56	10,800	14.41	$ 1.73
Dept fo Sustainability	384,987	96	$ 44,044.80	25,255	15.24	$ 1.74
Public Service 1	7,746	-	$ 930.32			
Public Service 2	17,806	-	$ 2,138.47			
	25,552		$ 3,068.80	12,271	2.08	$ 0.25
City Hall Annex	201,155	-	$ 24,158.72	15,360	13.10	$ 1.57
Refuse Division	97,995	-	$ 11,769.20	4,800	20.42	$ 2.45
Library	123,620	-	$ 14,846.76	9,572	12.91	$ 1.55
Public Safety	288,800	78	$ 33,605.05	14,800	19.51	$ 2.27
Memorial Park	20,989	-	$ 2,520.78			
Water Treatment Plant	1,248,000	386	$ 156,340.67			
	2,063,520	590	$ 237,213.79			
	3,311,520		$ 393,554.46			
Ocean Rescue 1	3,913	-	$ 469.91			
Ocean Rescue 2	113,786	-	$ 13,665.73			
Pavilion only	4,245	-	$ 509.83			
	121,944		$ 14,645.47			
Totals	**5,035,094**		**$ 596,407**			

Baseline Development

Baseline Energy Consumption

- 4 years of consumption included in calculations
- Appropriate Rate Structure utilized

Report summarizes the following data for each facility:

- Consumption Summary Table
- Electric Baseline Profile
- Exception to the 4 year standard

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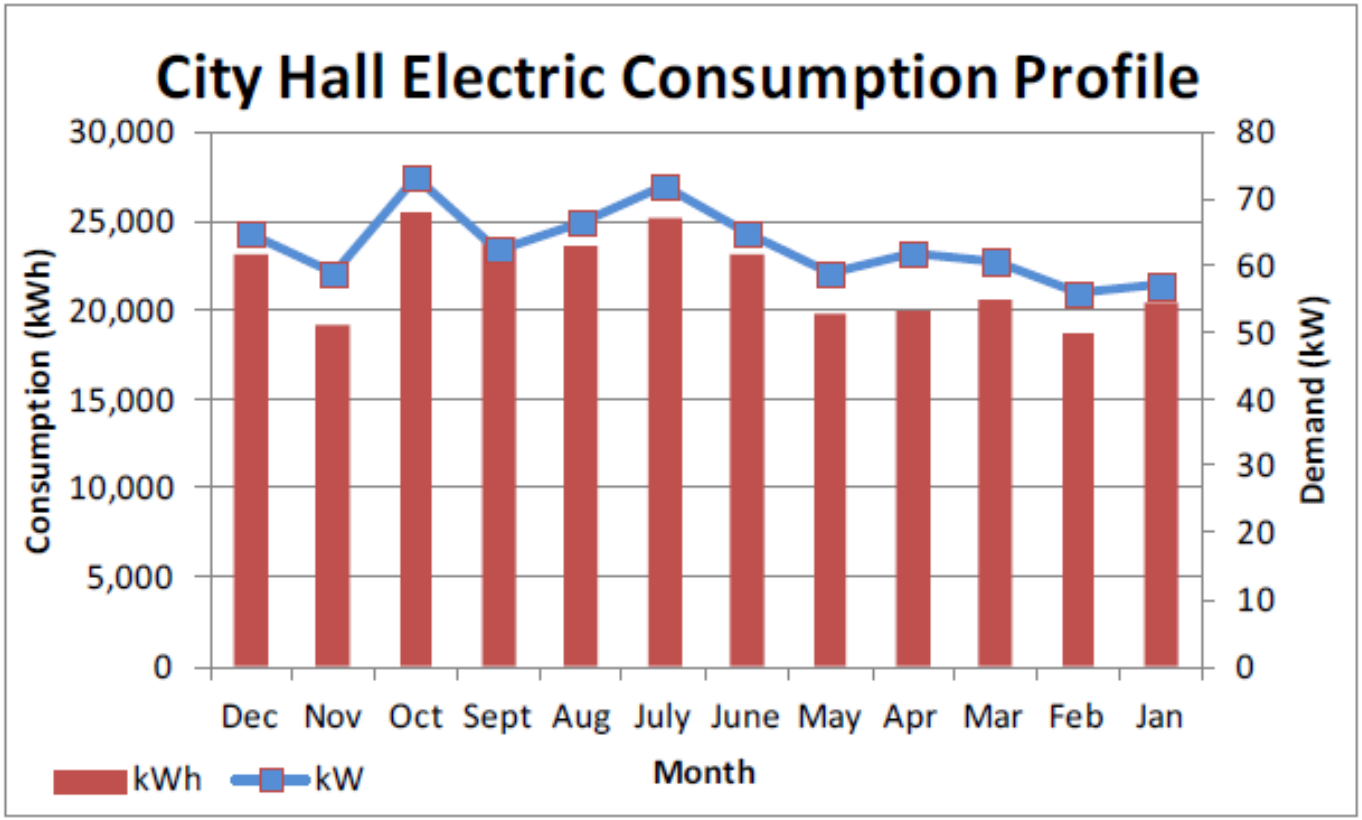
Baseline Development

CITY HALL: - ELECTRIC CONSUMPTION SUMMARY

Billing Date	ELECTRIC				Calculated Electric Baseline Total
	Consumption (kWh)	Consumption ($)	Demand (kW)	Demand ($)	
Dec	23,160	$ 1,737.93	65	$ 940	$ 2,677.53
Nov	19,080	$ 1,431.76	59	$ 853	$ 2,284.36
Oct	25,440	$ 1,909.02	73	$ 1,061	$ 2,970.42
Sept	24,000	$ 1,800.96	62	$ 905	$ 2,705.76
Aug	23,580	$ 1,769.44	67	$ 966	$ 2,735.14
July	25,200	$ 1,891.01	72	$ 1,044	$ 2,935.01
June	23,100	$ 1,733.42	65	$ 940	$ 2,673.02
May	19,860	$ 1,490.29	59	$ 853	$ 2,342.89
Apr	19,980	$ 1,499.30	62	$ 896	$ 2,395.40
Mar	20,520	$ 1,539.82	61	$ 879	$ 2,418.52
Feb	18,660	$ 1,400.25	56	$ 809	$ 2,209.35
Jan	20,340	$ 1,526.31	57	$ 827	$ 2,352.81
Totals	**262,920**	**$ 19,730**	**73**	**$ 10,971**	**$ 30,700**

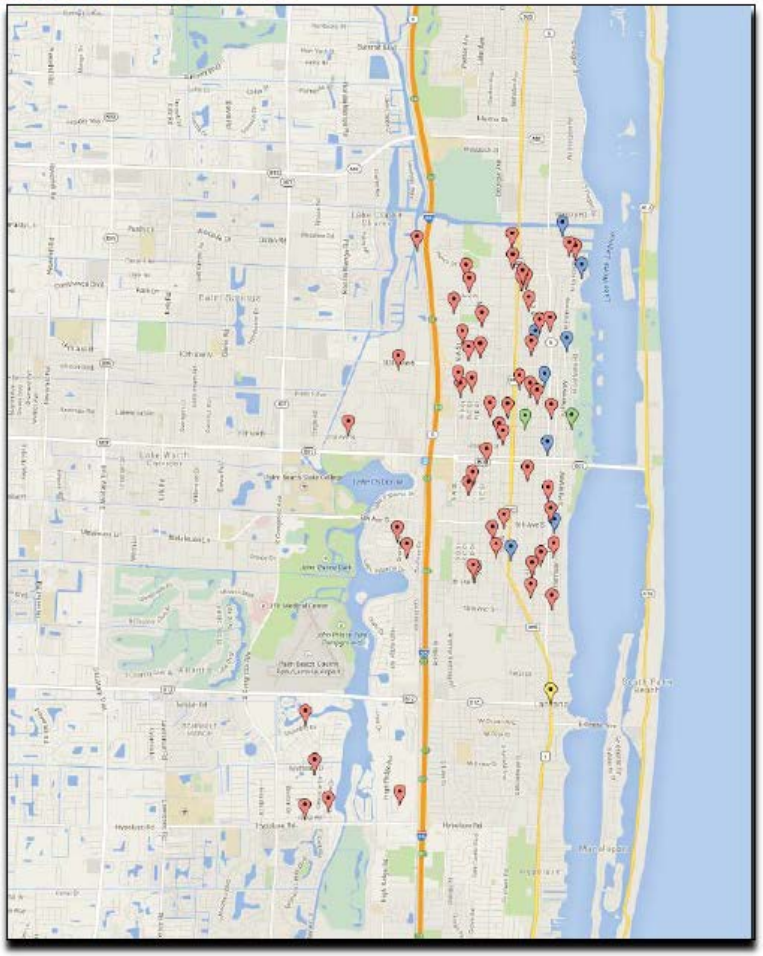
Baseline Development

CITY HALL: - ELECTRIC BASELINE PROFILE



Baseline Development

LOCATION OF TEST METERS



WATER METER TEST RESULTS (5/8")

Ref #	Manufacturer	Serial #	Reading (kgal)	Minimum Flow		Intermediate Flow		High Flow		Weighted Average Accuracy (%)
				Rate (gpm)	Accuracy (%)	Rate (gpm)	Accuracy (%)	Rate (gpm)	Accuracy (%)	
1	BADGER	30,668	766,530	0.25	0.0%	2.00	0.0%	15.00	98.0%	14.7%
2	BADGER	13,145,592	59,630	0.25	64.0%	2.00	101.0%	15.00	99.0%	95.2%
3	BADGER	29,782	2,733,120	0.25	100.0%	2.00	98.0%	15.00	99.0%	98.5%
4	BADGER	33,063	48,250	0.25	98.0%	2.00	100.0%	15.00	99.0%	99.6%
5	BADGER	32,241	289,340	0.25	96.0%	2.00	101.0%	15.00	98.0%	99.8%
6	BADGER	37,595	63,490	0.25	96.0%	2.00	100.0%	15.00	99.0%	99.3%
7	BADGER	35,111	408,520	0.25	98.0%	2.00	99.0%	15.00	99.0%	98.9%
8	BADGER	32,271	310,160	0.25	94.0%	2.00	101.0%	15.00	99.0%	99.7%
9	BADGER	34,844	29,010	0.25	94.0%	2.00	101.0%	15.00	99.0%	99.7%
10	BADGER	34,863	658,810	0.25	96.0%	2.00	100.0%	15.00	99.0%	99.3%
11	BADGER	37,276	196,000	0.25	98.0%	2.00	99.0%	15.00	99.0%	98.9%
12	BADGER	37,386	200,350	0.25	96.0%	2.00	100.0%	15.00	99.0%	99.3%
13	BADGER	30,598	751,730	0.25	92.0%	2.00	101.0%	15.00	97.0%	99.1%
14	BADGER	37,958	297,220	0.25	94.0%	2.00	99.0%	15.00	99.0%	98.3%
15	BADGER	37,036	190,410	0.25	100.0%	2.00	98.0%	15.00	99.0%	98.5%
16	BADGER	36,258	80,580	0.25	0.0%	2.00	100.0%	15.00	99.0%	84.9%
17	BADGER	31,645	155,710	0.25	94.0%	2.00	99.0%	15.00	99.0%	98.3%
18	BADGER	34,804	34,820	0.25	98.0%	2.00	98.0%	15.00	98.0%	98.0%
19	BADGER	29,109	2,036,110	0.25	94.0%	2.00	101.0%	15.00	99.0%	99.7%
20	BADGER	35,949	613,190	0.25	0.0%	2.00	101.0%	15.00	89.0%	84.1%
21	BADGER	36,041	302,730	0.25	94.0%	2.00	100.0%	15.00	99.0%	99.0%
22	BADGER	34,730	242,170	0.25	100.0%	2.00	96.0%	15.00	99.0%	97.1%
23	BADGER	29,740	643,020	0.25	0.0%	2.00	100.0%	15.00	98.0%	84.7%

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Scope Development & Selection

Site Visits, site visits, site visits….

- Assess equipment condition, efficiency, operating efficiencies and hours, age, etc.

Facility Improvement Measures (FIM) that were NOT Included

- Plug Load Management
- Geothermal Heating & Cooling (Ocean Rescue)
- Pump Controls (Ocean Rescue)
- Diatomaceous Earth Filtration (Ocean Rescue)
- Salt water Chlorination System (Ocean Rescue)
- Heat Exchanger (Golf Club)
- HVAC Option B (Library – “back-up” HVAC design)
- Chillers (Public Safety & City Hall)
- Sports Lighting

Scope Development & Selection

Scope of Work

- Lighting (interior & exterior)
- Water Conservation (including irrigation well)
- Building Insulation
- Small HVAC replacement
- Ocean Rescue LED Pool Light
- Solar Renewable Energy at Landfill (2MW)
- Advanced Metering Infrastructure (AM)
- LED Streetlights (City-wide)

- **Compressed Natural Gas (CNG) – moved to phase II**

Renewable Energy (Solar)

- 2 MW Solar Electric System
- Leader in Renewable Energy
- Located at City's Landfill
- Great use of existing land
- City-owned alternative energy
- Scalable to over 10MW
- Reduce Peak Demand (save $$)

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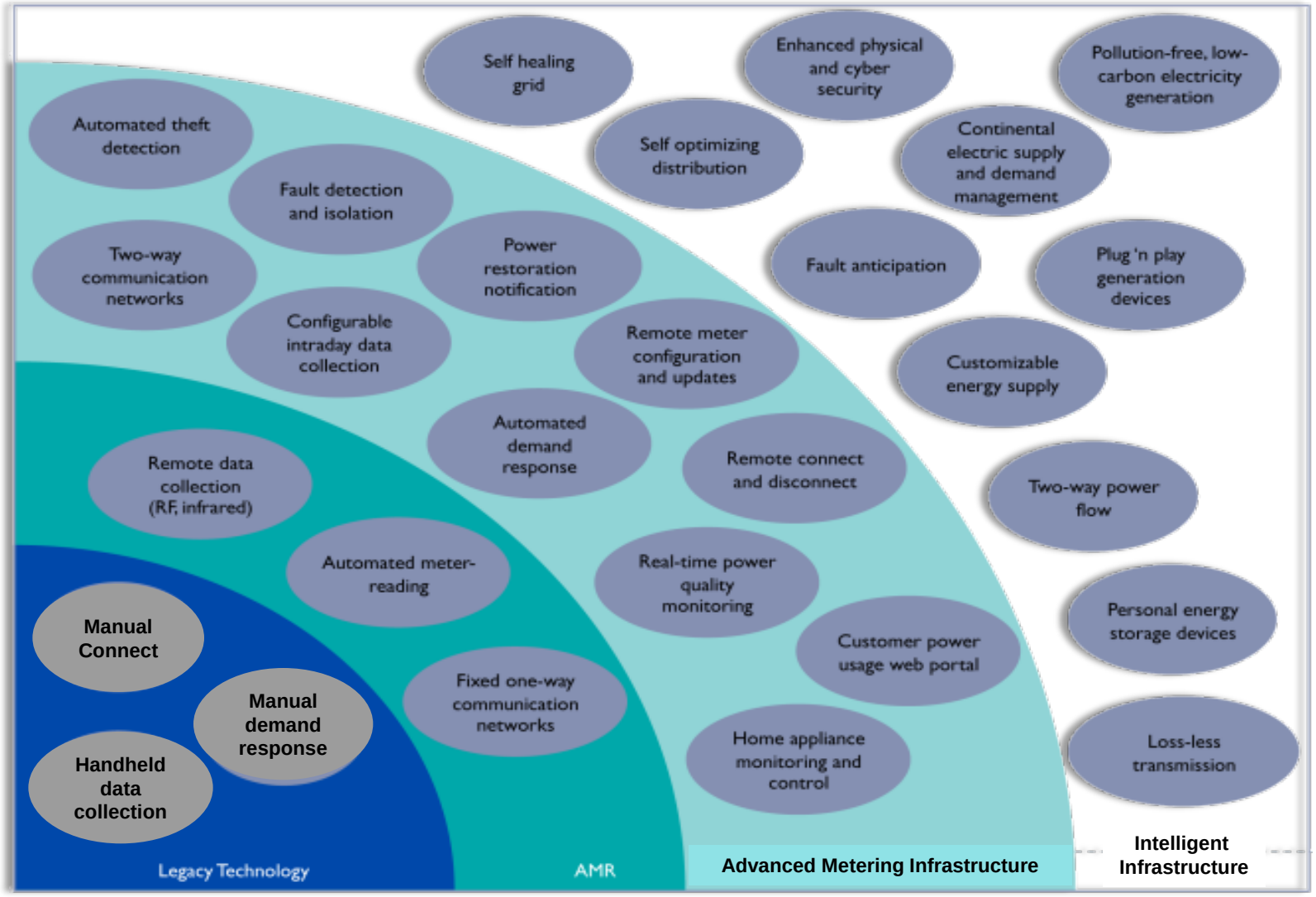
Evolution of Metering



Technology Maturity

LED Street Lights

- Improved visibility & safety
- Reduced energy consumption (60 - 65%)
- Uniformity of lighting levels
- Standardization of inventory
- Ease of maintenance & operations
- Replace old & worn light covers
- 100,000 hour life (over 20 years)
- Dark Skies compliant
- Light temperature
  - color rendering considerations

Compressed Natural Gas (CNG) Station

- **Working with City & Florida Gas Utility (FGU)**
  - Next step is to review City's contract with Florida Public Utilities Company (FPUC)
  - Determine City's options with regard to existing pipeline
- **Clarify Location Options**
  - Easy access to existing fuel source & outside customers (cities, county, private, etc.)
- **Financial Benefits**
  - Offset cost of existing pipeline
  - Gas-distribution revenues to City
  - New electric customer
  - Reduce City fleet fuel costs
- **Establish base load**
  - City's fleet (long-term conversion)
  - Outside users (government & private)

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Projected Scope, Savings and Cash Flows

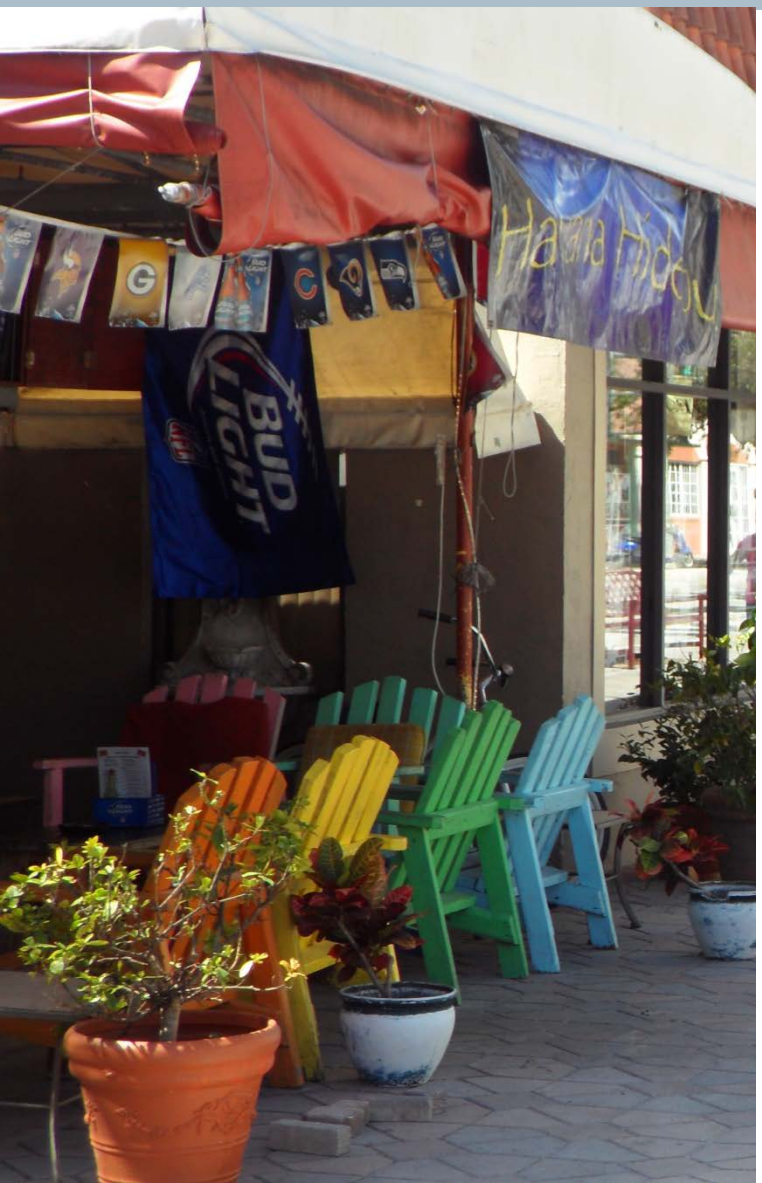
Scope of Work

- $20M - $25M Project
- Annual Guaranteed Savings $2M - $2.5M

Compressed Natural Gas (CNG)

- $5M Project
- $500,000+ Annual Savings

Agenda



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M&V Options

Protocols

Defines standard terms and suggests best practices for quantifying the results of energy efficiency investments in energy and water efficiency projects. Developed by a coalition of international organizations, the Protocol has become the national measurement and verification standard in the US and many other countries. IPMVP serves as a common framework to determine energy and water savings associated with Performance Contracting Projects.

Options

- Option A - Retrofit Isolation – Key Parameters
- Option B – Retrofit Isolation – All Parameters
- Option C - Whole Facility
- Option D - Calibrated Simulation
- Option E – Stipulated

Measurement & Verification

Plan – Maintenance & Verification (M&V)

Solar

- Continuous monitoring through data acquisition website
- Bi-annual preventative maintenance
- Annual panel cleaning
- Annual grounds upkeep
- System upkeep including materials and labor

AMI

- Annual water meter replacement & bench testing

Facilities

- Pre-construction & post-construction measurements (1 time)

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