

Direct Energy

Demand Management
Innovation

Spring Environmental Advisory
Council Meeting

May 15, 2015



Agenda

1. Introduction to Direct Energy
2. DE Residential Innovations
3. DE Business Innovations

Introduction to Direct Energy

Who is Direct Energy?

- Direct Energy is **the largest competitive retail energy supplier in North America**, with 6 million customer relationships, multiple brands and 6,000 employees.



- Direct Energy's parent company, Centrica plc, is a leading integrated energy company, with major operations in the UK, Europe and North America.
 - Centrica is a Fortune Global 500[®] company with:
 - £23.9b in revenue in 2012
 - An A- credit rating from S&P
 - Centrica invests in the entire energy chain.



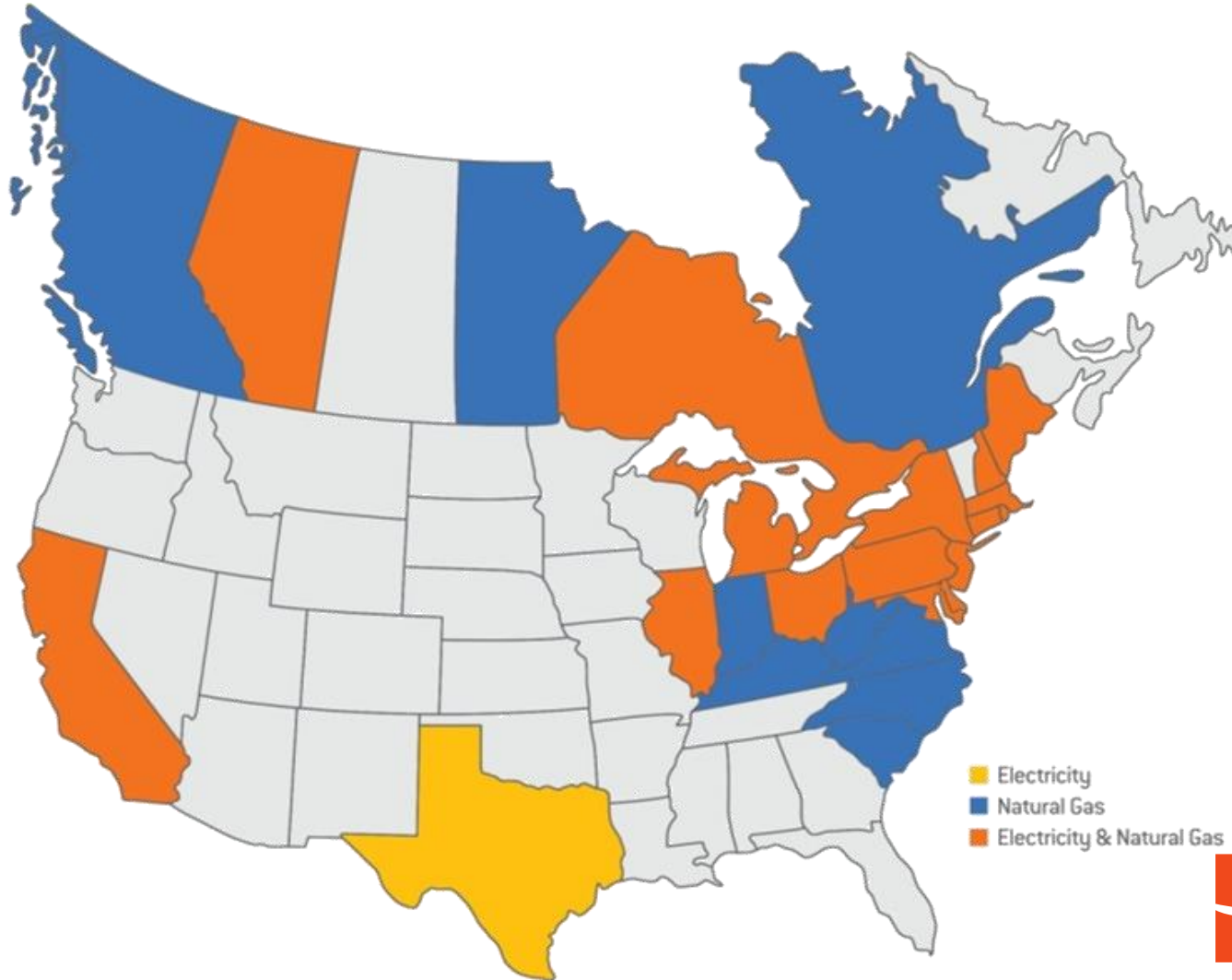
The New Direct Energy Business

#1 Natural Gas
Supplier in
Eastern US

#2 Power
Supplier
in the US

- More than **\$10b company**
- More than **250,000 customers** across North America
- **22 US markets** and five Canadian provinces
- More than **85 TWh** and more than **500 Bcf** supplied
- More than **350 MW** of DR load
- Wholly-owned by Centrica plc with an **A- credit rating** (S&P)

Our Footprint



Direct Energy's Lines of Business

Direct Energy Business

- Natural gas, power and energy management solutions
- Serving small, medium and large sized businesses, public and non-profit institutions and government entities.



Direct Energy Residential

- Largest residential energy supplier in North America with more than 5.8 million customers.
- Natural gas, electricity and green power sales to homes.



Direct Energy Services

- HVAC installation
- Protection plans and repair
- Plumbing, water heaters, and facility maintenance
- Energy management and efficiency services

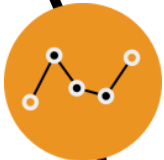


Our Solutions businesses will drive leadership in value-add products & services for our customers

Total Energy Management Propositions



Advisory Services: Best-in-class risk management energy products, sold across all markets, that **tailor a customer's procurement strategy** to their risk & cost preferences – **15 TWh under contract in 2013 with a customer retention of 96%**



Demand Response: Offering customers the ability to participate in demand side markets & **generate returns** for curtailing load during peak times – **400 MW of capacity under contract in 2013**



Solar: Leveraging a tax & capital efficient investment with an industry-leading partner, to **unlock affordable renewable energy** opportunities – **Invested \$8M to date against \$50M plan**



Efficiency: Enabling customers to **become smarter, more efficient users** of energy through building audits, retrofit engineering, & project management – **Reduced customer usage on average by 10% with over \$1M in annual savings**



Gas Solutions: Creating market leading fuel solutions in oil conversions, & CNG services, to **accelerate the benefits of natural gas** to customers – **Generated 5 BCF of gas demand via conversions, reduced emissions from oil, & saved customers \$14.5M annually**

Sample Customers



Demand-Side Innovations: DE Business

Smart Meter Implementation

All Customers

- Receiving SMI data for all Texas customers
 - Received through a 3rd party vendor
 - Warehouse data in-house for all DE brand customers
 - Customer's provided access through website portal
 - View data
 - Retrieve data

Smart Meter Implementation

DER (Residential)

- What do we use residential SMI data for?
 - Time of Use products
 - Pre-paid product (Go Customers)
 - Provides usage information to customers and incents them to focus on how they consume energy to cut costs
 - E-mail push to customers with interval data
 - Details energy usage
 - Provides information on creative ways for them to reduce energy consumption
 - Customer billing

Smart Meter Implementation

DEB (Business)

- What do we use business SMI data for?
 - Time of Use products
 - Block & Index
 - PowerPortfolio
 - Market Based Rate Products
 - Demand Side Products
 - ERS Program
 - LARS (Load Acting as A Resource)
 - Coincident Peak Advisory Services (4CP Program)
 - Demand Response
 - Allow customers to share in the benefit of reducing or shifting usage when high prices occur
 - Provide upfront discounts for the capability to curtail some agreed upon amount & duration



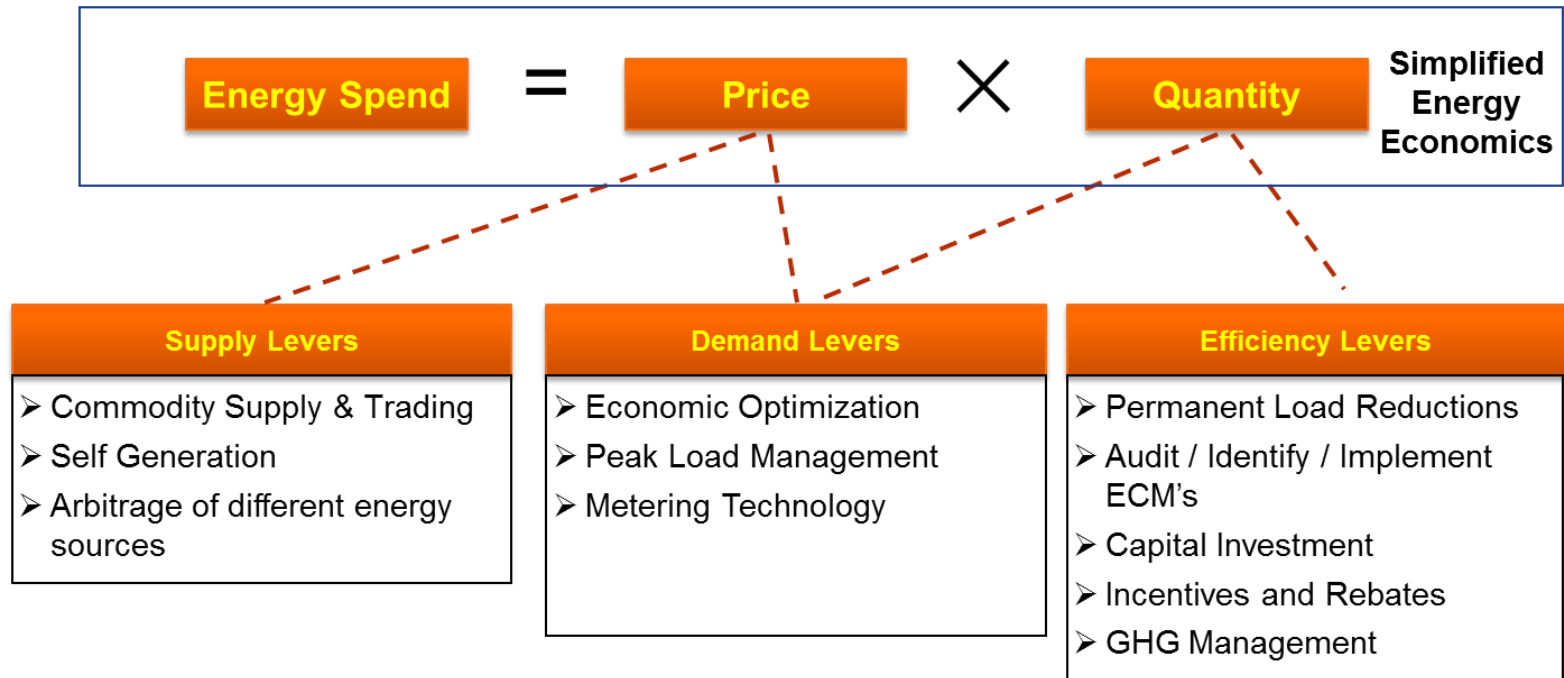
Smart Meter Implementation

Benefits

- Provide more accurate demand forecasts
 - Create new usage profiles to better suit customers consumption
 - More accurate costing
 - Reduced risk premiums
- Improved billing
 - Data received in near real time
 - Bills sent to customers in a timely manner
 - Verify our assumptions against actuals
- Develop customized energy solutions for customers
- Create customized reports for customers
 - Provides them with a better understanding of their usage
 - Incentives them to reduce consumption



Energy Spend Formula



Energy Spend Formula

Smart Meters



- Supply Levers**
- Commodity Supply & Trading
 - Self Generation
 - Arbitrage of different energy sources

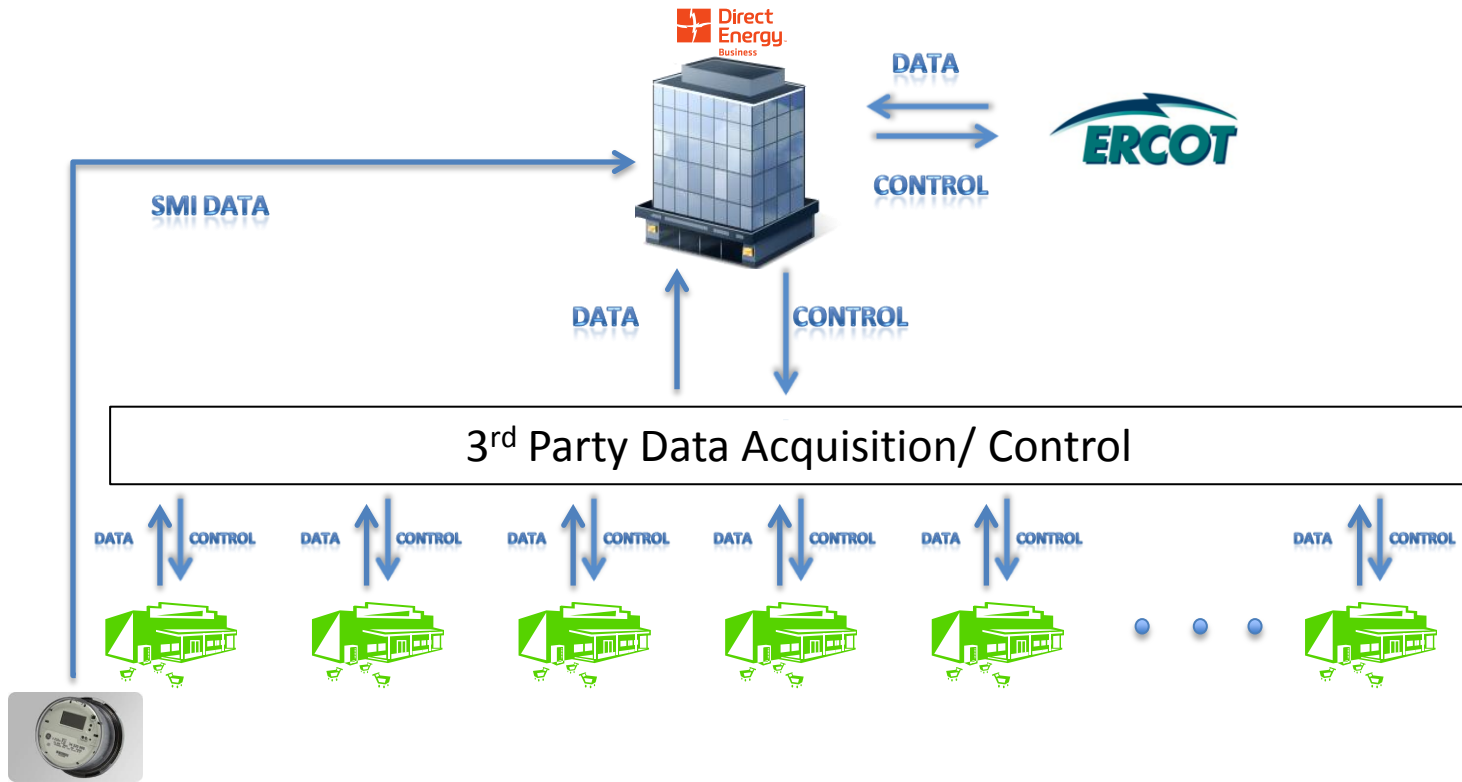
- Demand Levers**
- Economic Optimization
 - Peak Load Management
 - Metering Technology

- Efficiency Levers**
- Permanent Load Reductions
 - Audit / Identify / Implement ECM's
 - Capital Investment
 - Incentives and Rebates
 - GHG Management

Sample Customer

- Large Retail Customer
 - ~ 100 sites
 - Approximately 500,000 MWh annually
 - DEB provides ERS (Emergency Response Services)
 - Discrete equipment control
 - Multiple sites with generation

Sample Customer



SMART METER

(TYPICAL FOR ALL SITES WHERE AVAILABLE)



Panoramic Power by Direct Energy

- A sub-metering solution
- Hundreds of sensors can be installed in a few hours with no disturbance of daily operations.

1 Snap



- Easy install
- Wireless
- No disruption
- No maintenance
- Unlimited scale

2 Connect



- Plug & Play
- Cellular or WiFi

3 Set Up



- Role definition
- Executive reports and alerts
- Set goals
- Measure benchmarks

4 Start Saving



- Scheduled reports
- Real time alerts
- Online analytics
- Manage chain-wide

Demonstration Projects

Project	Description
O&R Pomona Load Pocket	Addresses load pocket issues with combination of solar and CHP
Central Hudson Smart Meter RFP	Synthetic smart meter with disaggregated customer data shown through the existing My Account dashboard. Limited to DER customers.
Wappinger's Falls NY Prize	Microgrid proposal including solar through DEB/Solar City and energy efficiency measures through DEB
Solar Plus Storage Residential Pilot	Provide integrated solar plus battery storage unit to residential customers; First pilot underway in MD
Solar Plus Storage Commercial	Interface with utility and customer's onsite BMS/ BAS system to create dispatchable resource optimized between customer use and capacity/ancillaries markets

Demand-Side Innovations: DE Residential

Bill of the Future

“Bill of the Future” is an idea of what your Direct Energy bill could look like

Would you buy \$100 worth of groceries sight unseen with the bag stapled shut? No. I have a vision where your energy bill is the same as shopping. First of all, you receive your energy bill when you want it – daily, weekly monthly – not when utility wants to send it to you. And it’s itemized: \$5 for watching TV, \$5 for your fridge sitting in basement, \$10 for doing your laundry. And with a swipe on your phone, you can turn all appliances on or off. And you can see whether every appliance is more efficient than those of your peers. And at a touch of a button you can see how much you would save if you replaced one appliance with another. And at the touch of another button you can see if there is a service company in your area. I think that’s a pretty compelling place to be.

Bill of the Future

Direct Energy. [PAY YOUR BILL](#) [CUSTOMER LOGOUT](#)

DirectYour ENERGY Summary

Usage & Alerts | Itemized Usage | Home Comparison | Home Profile

Last Bill Amount February 28 – March 31 \$211.90

Amanda, you experienced an unusual spike in usage on March 25th. [Click here for more details and tips!](#)

Your Month Over Month Usage

7 Day Outlook

Day	S	M	T	W	T	F	S
Temp	73°	80°	58°	57°	52°	53°	80°
Usage	\$6.66	\$7.02	\$6.56	\$5.29	\$4.09	\$4.96	\$7.02

Based on your current usage trend, we estimate your total usage charges for this month to be approximately \$218.

Please keep in mind that cost and usage information provided in your Usage Summary are only estimates and may vary widely. Your actual billed amount can vary from this estimate due to usage patterns and other factors.

Itemized Usage
Amanda, your HVAC is 40% of your usage this month. [Click here to save.](#)

Home Comparison
Amanda, your water heater usage is higher than similar homes. [Find out more!](#)

Usage & Alerts
Amanda, your usage spiked on March 25th! [Get the details here!](#)

Direct Energy. [PAY YOUR BILL](#) [CUSTOMER LOGOUT](#)

DirectYour ENERGY Usage & Alerts

Usage & Alerts | Itemized Usage | Home Comparison | Home Profile

February 28 – March 31 \$211.90

Billed Monthly Last 30 Days

Day	S	M	T	W	T	F	S
Usage	5	\$\$\$ 6	7	8	9	10	11
Usage	12	13	14	15	16	17	18
Usage	19	20	21	25	23	24	25
Usage	26	27	28	29	30	31	

Highest Day: \$9.66 (March 5th)
Average Day: \$7.21
Lowest Day: \$3.83 (Feb 18th)

Alert Ticker

ALERT ONE: On March 25th, starting from 8:00 PM until March 26th at 10:00 AM your usage increased by 80%.

ALERT TWO: On March 10th, starting from 9:00 AM until March 12th at 5:00 PM your usage increased by 100%.

Bill | Day | Week | Month | Year

March - April 2014

*Please keep in mind that predicted cost and usage information provided by Direct Your Energy are only estimates and may vary widely.

Direct Energy. [PAY YOUR BILL](#) [CUSTOMER LOGOUT](#)

DirectYour ENERGY Itemized Usage

Usage & Alerts | Itemized Usage | Home Comparison | Home Profile

February 28 – March 31 \$211.90

Billed Monthly Last 30 Days

View bill for this period February 28 – March 31.

Total Usage: 2000 kWh
Total Charge: \$211.90

- Heating & Cooling: 480 kWh - \$96.00
- Refrigerator: 44 kWh - \$8.80
- Water Heater: 180 kWh - \$36.00
- Other: 35 kWh - \$7.00
- Pool Pump: 111 kWh - \$22.20
- Fixed Charges: \$11.90
- Appliances: 66 kWh - \$11.10

Inner Ring: Current Month vs. Outer Ring: Last Month

Amanda, your top tip to save this month is with your HVAC system!
Like most customers, the heating and cooling in your home accounts for about half of your overall bill. Try adjusting your thermostat by just a couple of degrees for savings, or click here to see our options to purchase a Nest Learning Thermostat for only \$179!

Usage & Alerts
Look at your usage compared to temperature for the day, week, month or year. Compare trends, and threshold alerts for unusual spikes in usage.

Home Comparison
Want to know how your usage compares to your peers in similar homes?

Home Profile
Let Direct Energy help you save energy in your home with our Home Inventory feature.

Bill of the Future

Welcome, AMANDA R 1614 Serenity St, Deer Park, TX 77030-4360 | Help | En Español | Logout | CALL US 1-866-461-1986

Direct Energy. [PAY YOUR BILL](#) > CUSTOMER LOGOUT

DirectYour ENERGY Home Comparison **LET US HELP YOU SAVE!** LEARN HOW

Usage & Alerts Itemized Usage Home Comparison Home Profile >

< February 28 – March 31 \$211.90 >

Billed Monthly Last 30 Days

In general, compared to homes like yours you use...

Less **The Same** More Yours = 1,000 kWh Theirs = 1,100 kWh

Appliance	Me	Average
Heating & Cooling	48%	53%
Electric Water Heater	22%	11%
Electric Dryer	10%	10%
Refrigerator	22%	25%

Amanda, it looks like your water heater may need repair!
We can help! Our sister company, Benjamin Franklin, is available at 999-999-9999 for a free evaluation.

Benjamin Franklin
THE PROFESSIONAL HOME CARE

Usage & Alerts: Look at your usage compared to temperatures for day, week, month or year. Compare trends and monitor alerts for unusual spikes in costs. [LEARN MORE](#) >

Itemized Usage: See a detailed breakdown of your usage for the appliances in your home. [LEARN MORE](#) >

Home Profile: Let Direct Energy help you save energy in your home with our home inventory features. [LEARN MORE](#) >

Welcome, AMANDA R 1614 Serenity St, Deer Park, TX 77030-4360 | Help | En Español | Logout | CALL US 1-866-461-1986

Direct Energy. [PAY YOUR BILL](#) > CUSTOMER LOGOUT


DirectYour ENERGY Home Profile **LET US HELP YOU SAVE!** LEARN HOW

Usage & Alerts Itemized Usage Home Comparison Home Profile >

Direct Energy has a wide variety of tools, products, and services that can help you save money in your home. The more accurate your home profile is, the better and more personalized recommendations we can make for you.

Your Home Profile

 3 Bedrooms Pool - Yes
2,500 Square Feet 2 Stories
Year Built - 1900 Single-Family Home

 Heating - Electric Stove - Electric
Cooling - Electric Washer - Electric
2 Water Heaters Dishwasher - Unknown
Electric 8 yrs Refrigerator - Unknown

Usage & Alerts: Look at your usage compared to temperatures for day, week, month or year. Compare trends and monitor alerts for unusual spikes in costs. [LEARN MORE](#) >

Itemized Usage: See a detailed breakdown of your usage for the appliances in your home. [LEARN MORE](#) >

Home Comparison: Want to know how your usage compares to your peers in similar homes? [LEARN MORE](#) >

Smart Water Tank

Sequentric Energy Systems has received a patent for its breakthrough technology, the Smart Grid water heater. The first of its kind, the water heater is designed to have grid-interactive and variable-capacity water heating capabilities, allowing grid operators to manage the electricity needed for heating water by the second. Because of this real-time technology, utility companies can now control and guarantee a constant supply of hot water for all customers.



Objectives

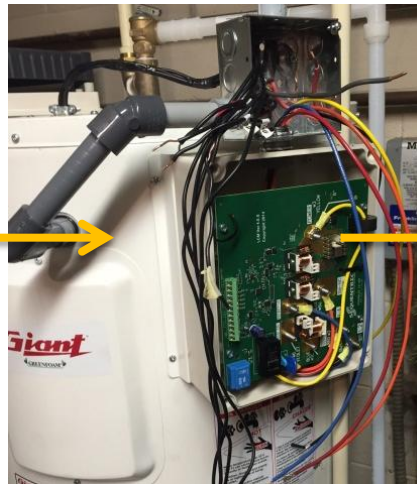
- 150 tanks in market
 - Houston, TX
 - Pittsburgh, PA
 - Smithville, TN
- Test, document and verify use cases
 - ✓ Autonomous – Normal functionality
 - ✓ Full Control
 - ✓ Peak Shifting
 - ✓ Load Curtailment
 - ✓ Frequency Regulation
 - Sub .5 second response time



Tanks in the Market



Rey, Houston Technician, in the field



Load Control Module fitting



1st completed tank installed, Les Crittenden



Market	Completed	Scheduled	Total
Houston	38	12	50
Pittsburgh	41	9	50
Middle TN	23	12	35
Total	102	35	135



Benjamin Franklin Truck, Houston

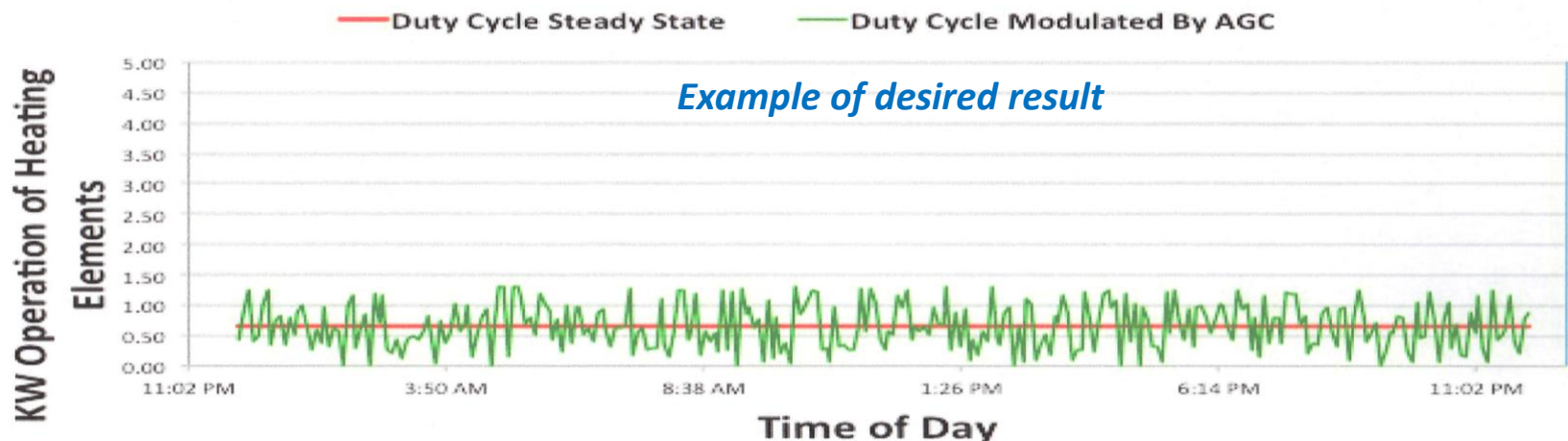
Frequency Regulation Test

Frequency regulation would enable DE to utilize its smart water heater fleet to help grid operators balance grid frequency in real-time, i.e. complying with FFRS standards in place in ERCOT 2018.

We know that the technology is capable of achieving the desired sub-second response time but are awaiting a controlled, accurate testing environment to conduct a validation test of this capability during the pilot.

In 2014 PJM paid \$40/hr./MW for external frequency regulation service. Minimum bid is 1/10 KW. 2500 SWH's are required for 1 MW, 250 for 1/10 MW.

**\$40/hr x 24hrs/day x 365/yr = \$350K/yr/MW of Frequency Reg service for PJM.
Divided by 2500 SWH's = \$140/yr of continued revenue per SWH (DE, Customer, Sequentric License, Utility?)**



Develop Commercial DE SWH

- **Design a commercial grade DE Smart Water Heater product with Giant and Sequentric**
- **Electronics incorporated within the manufactured Water Heater**
 - Internal Load Control Module
 - Cellular communication signal vs homeowners internet
 - Subcontract electronic component manufacturers
 - Standardize Giant water heater design specs
- **Develop a Customer App for marketing and data knowledge**



Other DE Residential Innovations

- **Smart Appliances from LG**

- LG presents Smart Appliances with Smart ThinQ™ technology for individuals who want to know exactly what's going on in their homes at all times. These intelligent appliances deliver convenience, connectivity, and performance by connecting you with your home from wherever you are. Monitor the status of your laundry, control when you run the dishwasher, receive mobile alerts when your refrigerator drinking water filter needs to be changed, and more. The Smart ThinQ™ app, helps you control energy usage and turn appliances on and off from your smartphone, tablet, or laptop.

- **SmartThings**

- SmartThings provides a Hub to instantly connect to different sensors, locks, light switches, outlets, thermostats, and other compatible devices in the home. These devices can then communicate with each other and to homeowners through their smart phones, using the SmartThings app to allow the phone to function like a remote control. SmartThings is compatible with hundreds of smart devices from a variety of manufacturers, and customers can add many other popular smart devices to create a fully connected home.

- **Nest Learning Thermostat**

- The Nest Learning Thermostat automatically adjusts temperature settings based on learning customers' energy use patterns and eliminates programming hassles by creating a personalized temperature schedule. With heating and cooling accounting for approximately 50 percent of the average household energy bill, Nest can make a noticeable difference by helping reduce energy consumption by up to 20%. The Nest Thermostat takes the local weather into account when making adjustments, which is a major benefit when considering the temperature swings across the United States. Nest users can also monitor and adjust their home's comfort system remotely by mobile phone, tablet or computer.

- **Nest Smoke + CO Detector**

- Nest's smoke and CO detector, Nest Protect™, uses a human voice to tell you if smoke or carbon monoxide are in your home. By speaking to you instead of blinking a light or beeping, Nest Protect gives you the knowledge you need verbally and provides specifics like, "Emergency. There's carbon monoxide in the bedroom." It continuously monitors its sensors, battery levels, and software so that you know exactly when you'll need to change the batteries in your Nest Protect without the frustration of a low-battery chirp. Monitor your Nest Protect through the Nest smart phone app for full control over the things you can't see or smell in your home.

- **hue Light Bulbs from Philips**

- hue™ merges the energy efficiency of LED light bulbs with cutting-edge connectivity to deliver a new experience in home ambiance. Thanks to hue technology, you can turn lights on and off, change the color of individual bulbs, set light timers and alarms, use your lights as a method of home security, and activate the lights in your home hands-free. With the smart phone app, you can monitor and control your lights remotely and set brightness, color, and white levels from any location.

Contact Information

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References

- The global Fortune 500® was published in July 2013. (slide 2)
- The supply numbers represent total electricity and natural gas supplied/projected to be supplied in 2013. Power numbers are based on the June 2013 KEMA Retailer Landscape, published September 2013. (slide 3)
- As of November 2013, we were serving more than 80% of the Fortune 100 companies (slide 6).