



Energy Efficiency Reimagined

NASDAQ: TGEN

2<sup>nd</sup> Quarter  
Investor Presentation



# Safe Harbor Statement



This presentation and accompanying documents contain “forward-looking statements” which may describe strategies, goals, outlooks or other non-historical matters, or projected revenues, income, returns or other financial measures, that may include words such as “believe,” “expect,” “anticipate,” “intend,” “plan,” “estimate,” “project,” “target,” “potential,” “will,” “should,” “could,” “likely,” or “may” and similar expressions intended to identify forward-looking statements. These statements are only predictions and involve known and unknown risks, uncertainties, and other factors that may cause our actual results to differ materially from those expressed or implied by such forward-looking statements. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Forward-looking statements speak only as of the date on which they are made, and we undertake no obligation to update or revise any forward-looking statements.

In addition to those factors described in our Annual Report on Form 10-K and our Quarterly Reports on Form 10-Q under “Risk Factors”, among the factors that could cause actual results to differ materially from past and projected future results are the following: fluctuations in demand for our products and services, competing technological developments, issues relating to research and development, the availability of incentives, rebates, and tax benefits relating to our products and services, changes in the regulatory environment relating to our products and services, integration of acquired business operations, and the ability to obtain financing on favorable terms to fund existing operations and anticipated growth.

In addition to GAAP financial measures, this presentation includes certain non-GAAP financial measures, including adjusted EBITDA which excludes certain expenses as described in the presentation. We use Adjusted EBITDA as an internal measure of business operating performance and believe that the presentation of non-GAAP financial measures provides a meaningful perspective of the underlying operating performance of our current business and enables investors to better understand and evaluate our historical and prospective operating performance by eliminating items that vary from period to period without correlation to our core operating performance and highlights trends in our business that may not otherwise be apparent when relying solely on GAAP financial measures.

# John Hatsopoulos Co-Founder, Chairman Emeritus



- 🏢 Retired President and Vice Chairman of the board of directors of Thermo Electron Corp. (now Thermo Fisher Scientific)
- 🏢 Developed Thermo's famous 'spinout' strategy, resulting in the spinout of 24 public companies from the parent
- 🏢 Raised nearly \$5B from 1990 – 1998 as Thermo's CFO for the parent company and its various spinout subsidiaries
- 🏢 Board of Directors of the American Stock Exchange from 1994 – 2000
- 🏢 Former "Member of the Corporation" of Northeastern University



# Benjamin Locke CEO, Director



- 🕒 Joined company as General Manager in 2013
- 🕒 Director of Business Development at Metabolix from 2001 to 2013
- 🕒 Previously served as Vice President of Research at Innovative Imaging Systems
- 🕒 Led Tecogen to full year profitability in 2017
- 🕒 Enhanced Tecogen Product Offerings
- 🕒 Expanded addressable markets for Tecogen systems
- 🕒 Developing strategic partnerships and acquisitions for future growth



# Tecogen Advanced Modular Energy Systems



Heat, Power, and/or Cooling that is:



## Cheaper

Industry leading efficiency and reduced exposure to expensive electricity



## Cleaner

Proprietary near-zero emissions technology, GHG reductions



## More reliable

Real-time monitoring, blackout protection, and improved grid resiliency



All of Tecogen's equipment is powered by efficient natural gas equipped with Tecogen's patented Ultra Emission Control

# Clean Energy Products



**Microgrid CHP**  
Resiliency and Savings



**Gas Chillers**  
Hot and Cold Water



**Efficient CHP**  
Energy Savings



**Emissions Reduction**  
Criteria Pollutant Elimination



**Clean Energy and Resiliency From Central Electric Utility**

**Energy Production**  
On-site utility



# Sustainable Competitive Advantage



## Proprietary and patented technology

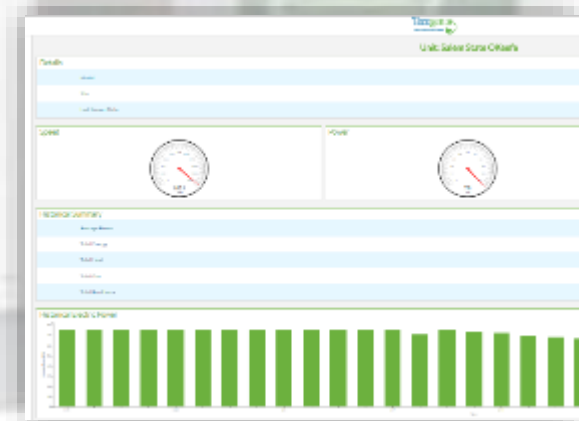
- 🌱 Ultra Emission control
- 🌱 Inverter microgrid architecture
- 🌱 Proprietary PMG technology
- 🌱 Natural gas engine optimization

## In-house engineering and installation

## Fully integrated on-site service and maintenance

## Creates value proposition for customers that drives

- ✓ Revenue Growth
- ✓ Robust Gross Margins
- ✓ Repeat Business



# Born to Innovate



George Hatsopoulos, Henry Ford II, Laurance Rockefeller



2013: Patent awarded for Ultra emissions technology

2014: IPO and listing on NASDAQ: TGEN

2016: Roll out of dramatically upgraded InVerde e+

2017: Acquisition of American DG Energy

2018: ETL certification to ANSI/UL 1741 SA for smart inverters

2000: Investor group led by John and George Hatsopoulos acquires Tecogen

2003: First (and only) engine driven CHP module to obtain full California Electric Rule 21 Certification

2008: Roll out of original InVerde cogeneration unit

Originally founded as an energy technology R&D center within Thermo Electron Corp. (now Thermo Fisher Scientific)



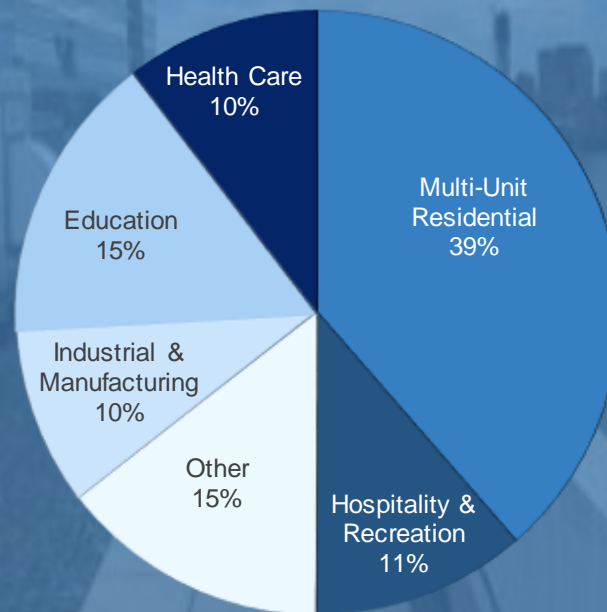
# Diverse Core Customer Base



## Broad Sales Pipeline

- ✓ Direct Sales Effort
- ✓ ESCOs
- ✓ Building Management Companies
- ✓ Engineering Firms
- ✓ Energy Efficiency Consultants

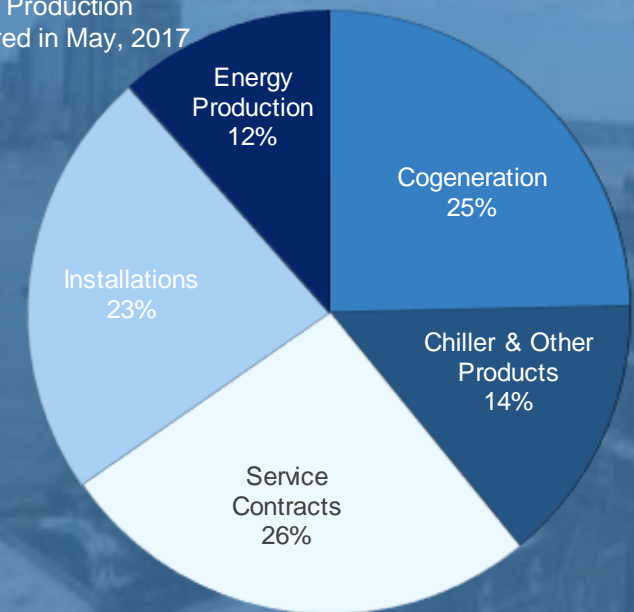
## Installed Base at YE '17



Over 3,000 units installed to-date

## 2017 Revenue by Stream

NOTE: Energy Production revenue acquired in May, 2017



Stable service revenue provide balance to faster growing and more volatile product and installation revenues

# Substantial Core Business Growth Opportunities



\$40+ billion market  
for clean, reliable  
CHP systems



# Cogeneration (CHP): Electricity and Heat



## Modular and scalable

- 🔌 Best in class electrical efficiency
- 🔌 60-125 kW, scalable to 1MW+
- 🔌 Remote monitoring



- ✓ Proprietary inverter
- ✓ CERTS certified microgrid system
- ✓ Blackout protection

## Ideal for

- Locations with many beds and showers: hotels, dormitories, apartment buildings, prisons
- Light manufacturing and industrial facilities with hot water requirements
- Fitness centers



- ✓ Cost effective heat and power



# Chillers (Mechanical CHP): Heating and Cooling



## The only natural gas engine driven chiller on the market

- 30-60% cheaper to operate than equivalent electric chillers
- 50-400 tons of cooling capacity
- “Free” waste heat and clean carbon dioxide emissions stream may be repurposed for indoor agriculture applications
- Eligible for similar incentives as CHP
- Sales cycle more transactional and predictable

## Ideal for

- Hospitals
- Indoor agriculture
- Light manufacturing and industrial facilities with both cooling and heating requirements
- Sports facilities: Swimming pools, ice rinks



# Ultera Emissions Eliminates Criteria Pollutants



## Non-invasive emissions system

- ☛ Reduces criteria pollutants (NO<sub>x</sub>, NMOC, CO) to near zero fuel-cell equivalent levels
- ☛ Patent protected and insured
- ☛ Installed on virtually all Tecogen equipment
- ☛ Simple retrofit to existing engines with no performance loss
- ☛ Proven in many engine systems: Tecogen, Ford, GM, Caterpillar, Generac, etc.

South Coast Air Quality Management District (SCAQMD) of southern California has reset its Best Available Control Technology (BACT) standard for non-emergency engine-driven generators to a level that rich-burn engines can only achieve when equipped with Ultera

# Ultra Emissions Technology Expansion into Vehicle Markets



AVL 



Significant upside for Ultra emissions technology to automotive, truck and fork truck industries



**SAE**  
INTERNATIONAL®

 **PROPANE**  
education & research  
**COUNCIL**



# Ultera Emissions Development Status



## Propane powered fork trucks



- Fork trucks must meet strict emissions standards
- Affordability, distribution network, and power profile make propane the fuel of choice
- Batteries/ fuel cells greatly compromise performance
- Funded in part by the Propane Council (PERC)
- Test of retrofitted fork truck exceptionally successful
- 2H '18 demonstration with fork truck/engine partner

## Gasoline powered passenger and light duty vehicles

- Successful Phase 1 and 2 testing validated proof of concept in light truck, small passenger vehicle
- Contract in place with research institute to optimize catalyst formations for gasoline powered engines
- Future phases to focus on development of a commercially viable prototype

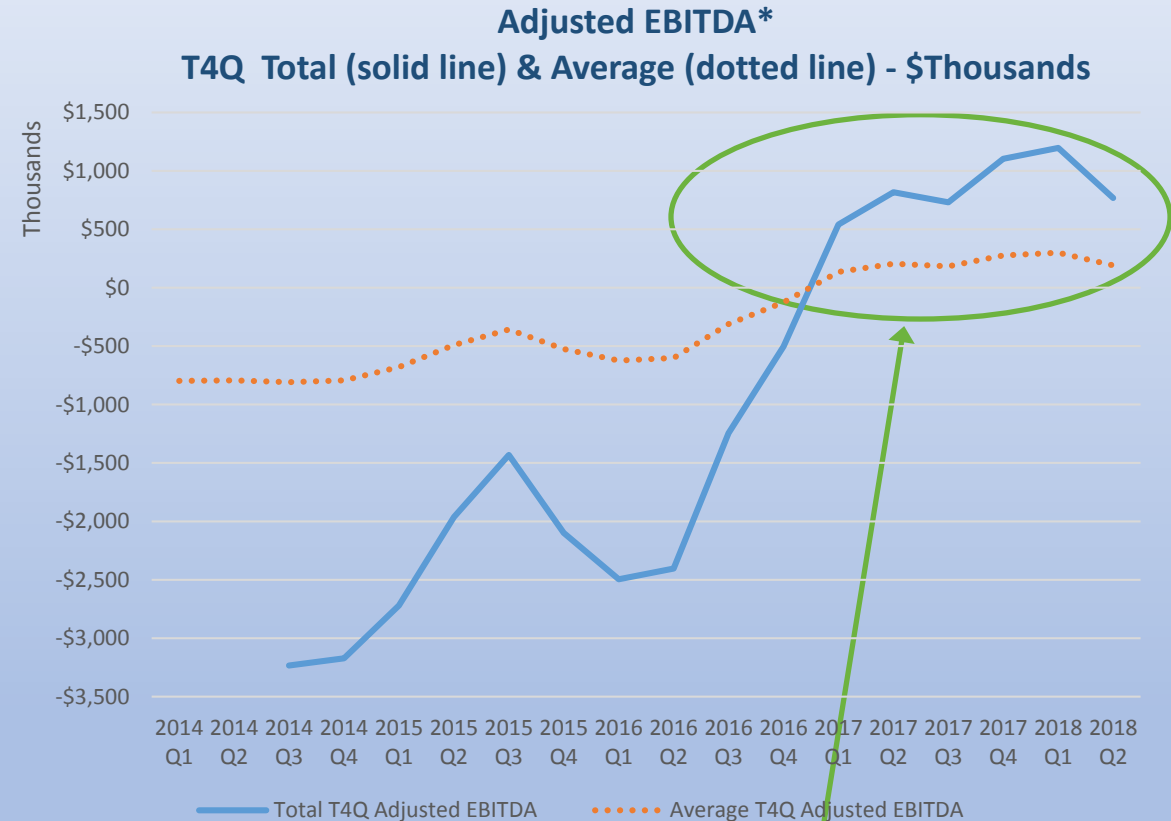


# Sustained Positive Financial Results



- 2Q '18 Revenues of \$8.5 million
- Record T4Q revenue of \$37.4 million
- Revenue growth on T4Q basis year over year of 32.8%
- Record T4Q gross profit of \$14.1 million
- Sustained step change to profitability originally achieved in 3Q'16
- T4Q Adjusted EBITDA\* of \$803K for 2Q'18 vs. \$817K for 2Q'17
- ADG Energy production revenue contributed \$669K to Gross Profit

\*Adjusted EBITDA is defined as net income (loss) attributable to Tecogen Inc, adjusted for interest, depreciation and amortization, unrealized gain or loss on securities, stock based compensation expense, and one-time merger related expenses.



**Sustained step change  
to profitability**

# 2Q'18 Summary of Results



\$ in thousands	2Q'18	2Q'17	YoY Increase (Decrease)		Comments
<b>Revenue</b>					
Products	\$ 2,484	\$ 3,116	\$ (633)	-20.3%	
Service	4,461	3,700	761	20.6%	Gaining traction with turnkey installations
Energy Production	1,508	774	734	94.8%	Full quarter of ADG operations in 2018
Total Revenue	8,453	7,591	863	11.4%	
<b>Gross Profit</b>					
Products	\$ 992	\$ 1,150	\$ (159)		
Service	1,500	1,393	108		
Energy Production	669	444	225		
Total Gross Profit	3,160	2,987	174	5.8%	Additional gross profit from increased sales
<b>Gross Margin: %</b>					
Products	39.9%	36.9%	3.0%		Stronger margins in both cogen and chiller sales
Service	33.6%	37.6%	-4.0%		Installation business brings tighter profit than contract maintenance
Energy Production	44.3%	57.3%	-13.0%		Energy production margin is in line with long term expectations
Total Gross Margin	37.4%	39.3%	-2.0%		
<b>Operating Expenses</b>					
General & administrative	\$ 2,751	\$ 2,406	\$ 344		Q2'18 Includes core operating expenses for ADG's operations
Selling	635	608	28		Additional selling efforts
Research and development	410	219	191		R&D activities in connection with the forklift project
Total Operating Expenses	3,796	3,232	563	17.4%	
Net loss/Comprehensive loss	(754)	(518)	(236)		Additional R&D and selling expenses account for this difference
Adjusted EBITDA (see reconciliation)	\$ (330)	\$ 64	\$ (394)		See detailed reconciliation

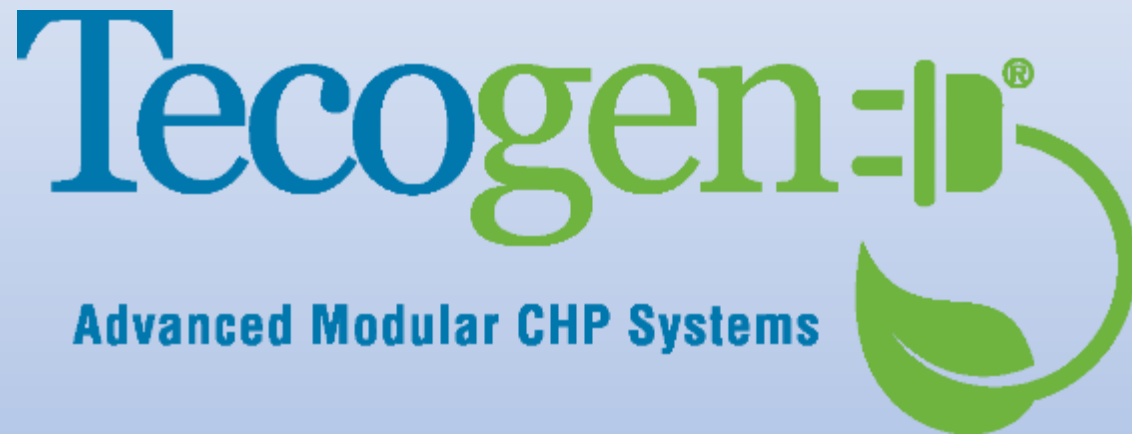
Strong Q2 revenue  
growth

Consistently strong  
gross margin

G&A increase from  
investments in ADG and  
R&D



# Contact Information



## Company Information

Tecogen, Inc.  
45 First Ave  
Waltham, MA 02451  
NASDAQ: TGEN

[www.tecogen.com](http://www.tecogen.com)

## Contact

Benjamin Locke, CEO  
781.466.6402  
[Benjamin.Locke@Tecogen.com](mailto:Benjamin.Locke@Tecogen.com)

John Hatsopoulos, Chairman Emeritus  
781.622.1120  
[John.Hatsopoulos@Tecogen.com](mailto:John.Hatsopoulos@Tecogen.com)

# Appendix



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- 🔊 Board of Directors
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## Tecogen Inc Company Information

NASDAQ Ticker	TGEN
Recent Stock Price	~\$3.15/sh
52-week Range	\$2.30 - \$4.00/sh
Shares Outstanding (06/30/18)	24.82 million
Market Capitalization	~\$77 million
Ownership of Directors, Officers, and their family trusts (06/30/18)	19.6%
Total Assets (06/30/18)	\$51.5 million
Membership: Russell Microcap® Index	

# Management Team



## Benjamin Locke

### Chief Executive Officer

- Joined company as general manager in 2013
- Director of Business Development at Metabolix from 2001 to 2013
- Previously served as Vice President of Research at Innovative Imaging Systems
- Responsible for Tecogen growth and profitability

## Robert Panora

### President, COO

- General Manager of Tecogen's product group since 1990
- Manager of Product Development, Engineering, and Operations since 1984

## Bonnie Brown

### Chief Accounting Officer

- CFO of American DG Energy from 2015 to merger
- Previously CFO of Tecogen from 2007 to 2014
- Joined Tecogen in 2005 as Controller
- Partner at Sullivan, Bille, PC, a regional accounting firm prior to joining Tecogen

## Jack Whiting

### General Counsel

- Prior to joining Tecogen in 2018, was VP, General Counsel & Secretary of GeNO LLC (2012-2017), Levitronix LLC (2009-2011), and American Renal Associates (2002-2008)
- Associate General Counsel of Thermo Electron from 1996 to 2002



# Board of Directors



## Angelina Galiteva

Director, Board Chairwoman

- Chair of the Company since 2005
- Founder and Chair of the Board for the Renewables 100 Policy Institute, a non-profit entity dedicated to the global advancement of renewable energy solutions since 2008
- Chairperson at the World Council for Renewable Energy and Board member of the Governors of the California ISO

## Charles Maxwell

Director, Chair of Audit Committee

- Company Director since 2001
- 40 years of energy sector specific experience with major oil companies and investment banking firms
- Former Senior Energy Analyst with Weeden & Co.
- Board Chairman of American DG Energy, Inc.

## Deanna Peterson

Director

- Company Director since 2017
- Chief Business Officer of AVROBIO since 2016
- Vice President of Business Development at Shire Pharmaceuticals from 2009 to 2015
- Led development, prioritization and execution of Shire's overall corporate and business development strategies

## John Hatsopoulos

Advisor to the board

- Chairmain Emeritus, Retired CEO and Director of the Company organization in 2000 to 2018
- Co-Founder for Thermo Electron Corp., now Thermo Fisher Scientific (NYSE: TMO)
- As Thermo Electron CFO, grew company from a market capitalization of ~\$100 million in 1980 to over \$2.5 billion

## Ahmed Ghoniem

Director

- Company Director since 2008
- Ronald C. Crane Professor of Mechanical Engineering at MIT
- Director of the Center for 21<sup>st</sup> Century Energy and Head of Energy Science and Engineering at MIT
- Associate Fellow of the American Institute of Aeronautics and Astronautics

## Keith Davidson

Director

- Company Director since 2016
- President of DE Solutions, a consulting and engineering firm serving the distributed energy markets
- Former Director of the Gas Research Institute and past President of the American Cogeneration Association
- 25 years of experience in energy and environmental technology development and implementation

## Benjamin Locke

Director

- Company Director since 2018
- Joined company as general manager in 2013
- Director of Business Development at Metabolix from 2001 to 2013
- Former Vice President of Research at Innovative Imaging Systems
- Responsible for Tecogen growth and profitability

# 2Q '18 Financial Metrics: Revenues, Margins, Growth



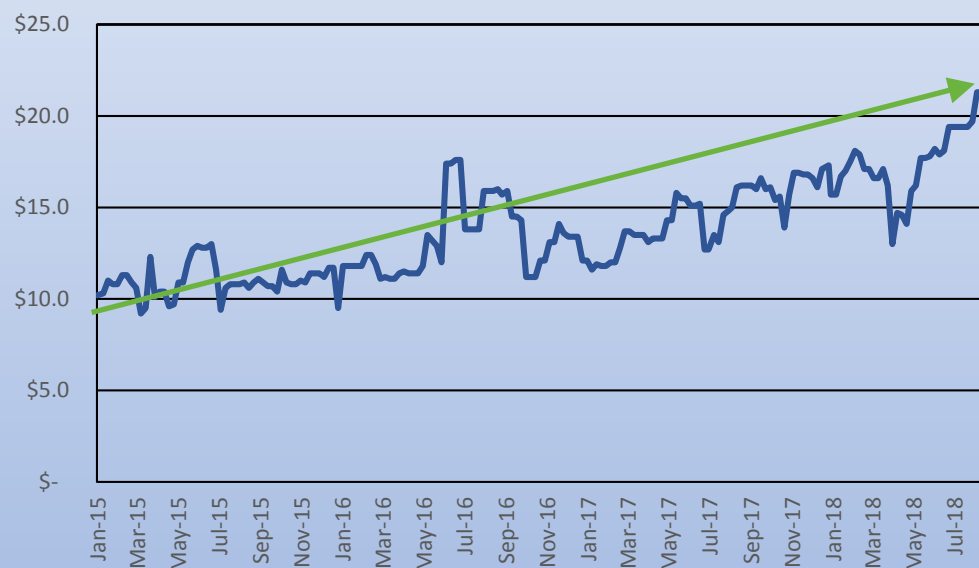
- 🔌 Four diverse revenue streams providing 11.4% growth year over year
  - 🔌 Product gross margin grew to 39.9%, showing 8% improvement
  - 🔌 Long term service contracts provide steady cash flow
  - 🔌 Turnkey installation included in service operations facilitates both product and service revenue
  - 🔌 Energy production revenue from ADGE sites provided \$1.5 million of stable and reliable cash flow with gross margin of 44.3%
- 🔌 Overall gross margin of 37.4%
- 🔌 Total revenue growth on a T4Q basis of 33%

	Quarter Ended June 30,			
\$ in thousands	2018	2017	YoY Growth	% of Total Rev
Revenue				
Cogeneration	\$ 1,289	\$ 1,838	-29.9%	15.2%
Chiller	1,195	1,278	-6.5%	14.1%
Total Product Revenue	2,484	3,116	-20.3%	29.4%
Service Contracts and Parts	2,165	2,223	-2.6%	25.6%
Installation Services	2,297	1,477	55.5%	27.2%
Total Service Revenue	4,461	3,700	20.6%	52.8%
Energy Production	1,508	774	94.8%	17.8%
Total Revenue	\$ 8,453	\$ 7,591	11.4%	100.0%
Cost of Sales				
Products	\$ 1,492	\$ 1,966	-24.1%	
Services	2,962	2,307	28.4%	
Energy Production	840	331	154.0%	
Total Cost of Sales	\$ 5,294	\$ 4,604	15.0%	
Gross Profit				
	\$ 3,160	\$ 2,987	5.8%	37.4%
Net loss attributable to Tecogen Inc.	\$ (754)	\$ (294)		
Net loss to 2017 Comprehensive loss	\$ (754)	\$ (518)	\$ (236)	
Gross Margin				
Products	39.9%	36.9%		
Services	33.6%	37.6%		
Aggregate Products and Services	35.9%	37.3%		
Energy Production	44.3%	57.3%		
Overall	37.4%	39.3%		

# Consistent Financial Progress



Weekly Backlog Data: Product and Installation Services  
\$ Millions



Steady growth in the backlog translates directly to revenue and bottom-line growth

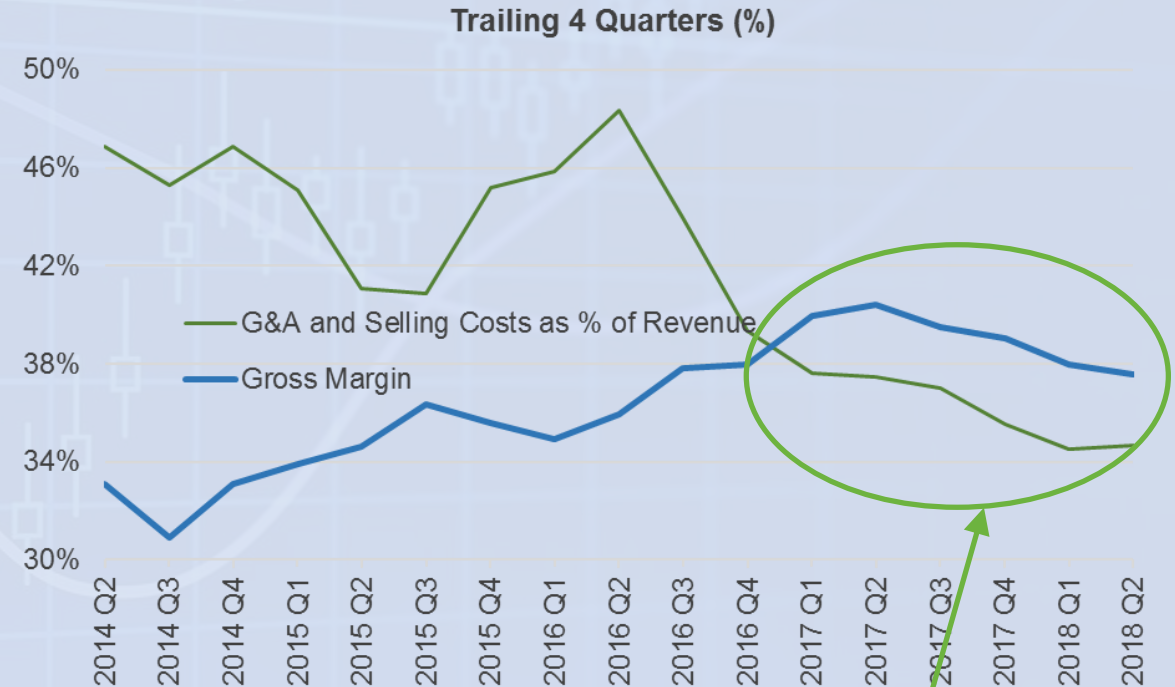
## ADJUSTED EBITDA\* 2Q '18 Compared to 2Q '17

Adjusted EBITDA	2Q'18	2Q'17
<b>Non-GAAP financial disclosure</b>		
Net loss attributable to Tecogen Inc.	\$ (754,350)	\$ (293,540)
Interest & other expense, net	64,014	30,685
Income tax expense	38,864	-
Depreciation & amortization, net	187,069	178,595
EBITDA	(464,403)	(84,260)
Stock based compensation	38,062	48,842
Merger related expenses	96,800	99,773
Adjusted EBITDA	\$ (329,541)	\$ 64,355

\*Adjusted EBITDA is defined as net income (loss) attributable to Tecogen Inc, adjusted for interest, depreciation and amortization, stock based compensation expense and one-time merger related expenses.



# Consistent Financial Progress



Energy production revenue acquired in May, 2017

Declining operating costs as a percent of revenue demonstrates scalability with revenue growth

# InVerde e+ Data



## Best in class efficiency: 33% electrical, 94% overall (LHV)

- ☞ Ideal for markets with commercial electric rates over \$0.12/kWh
- ☞ Variable speed operation from 10kW to 125 kW with superior part-load efficiency
- ☞ Fully scalable to multi-MW system
- ☞ Cloud-based real-time performance monitoring
- ☞ Indoor and outdoor installation
- ☞ Dimensions (indoor 7'6"x4'0"x5'9" / outdoor 7'10"x4'11"x6'4")
- ☞ Weight (indoor 4,300 lbs / outdoor 4,800 lbs)
- ☞ Acoustic Level: 69 dBa @ 20'
- ☞ Operating Temperature Range: -4° to 104° F (-20° to 40° C)

## Smart Inverter Technology

- ☞ UL 1741 and UL 2200 certified
- ☞ Unique CERTS-Microgrid capability enables grid-independent operation
- ☞ Only inverter-based CHP system that meets NFPA's Type 10 Emergency Power Supply System rapid blackstart standard
- ☞ Demand Response capable for automatic dispatching



Energy savings can pay back initial investment in as few as 2-5 years

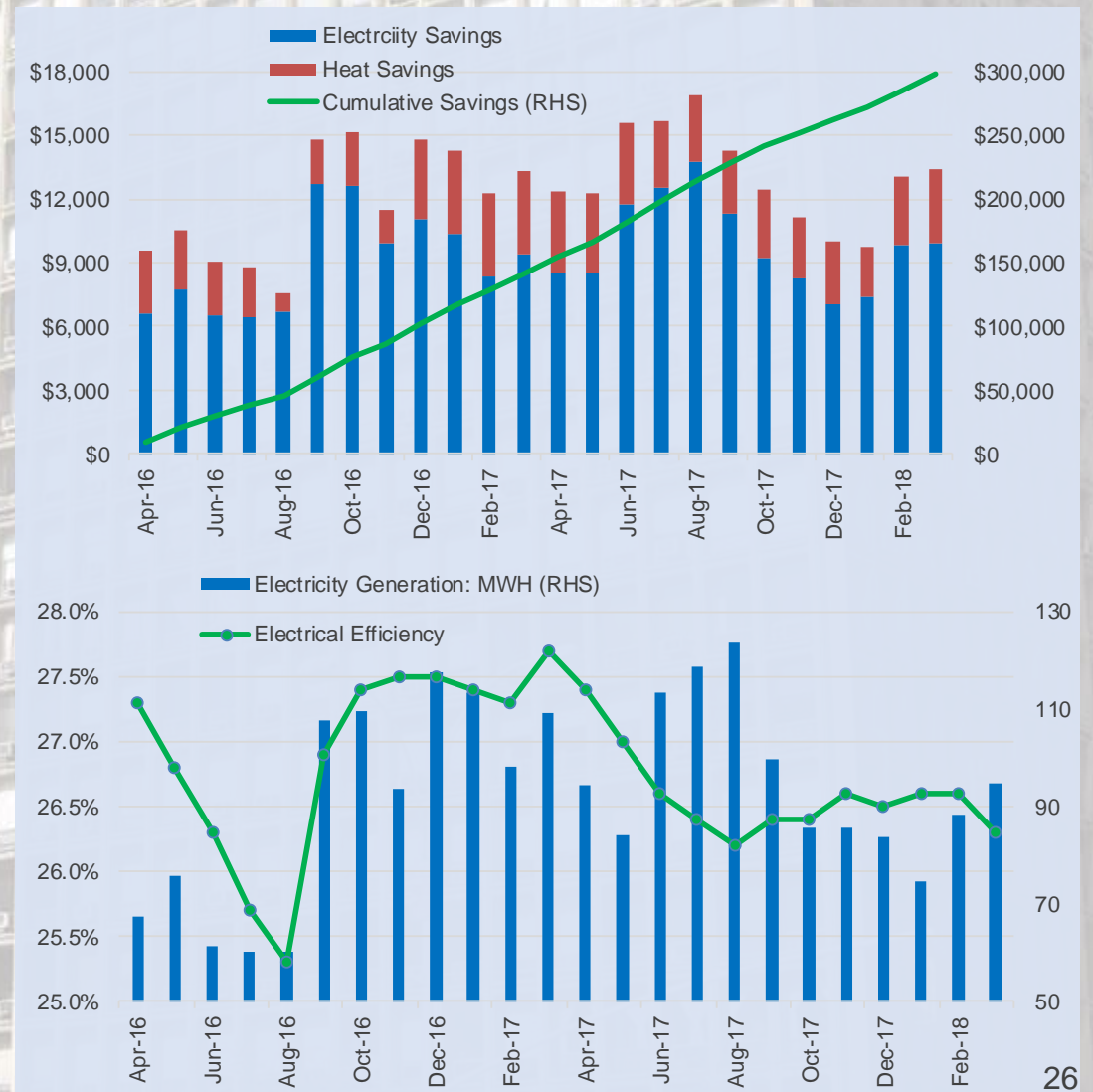
# Cogeneration Case Study



## Location: 205 West End Ave, New York City

- What: Two InVerde's that went into service in April, 2016
- Cumulative Savings: \$300 thousand over first 24 months of operation
- Expected Payback Period: 4 to 6 years before NYSERDA rebate
- Total Electric Generation: 2,219 MWH-hours
- Average Electrical Efficiency: 27.1%
- Total Efficiency: 63.3% with 51.5% of captured heat utilized

Source of Operational Data: NYSERDA DG Integrated Data System





# Tecochill Data



## Only natural gas engine driven chiller available

- 🔌 Widely deployed across North America
- 🔌 Utilizes less than 1% of the electricity of competing electric chillers, which can be supplied by small retail generator (<3kW)
- 🔌 Eliminates exposure to on-peak electric demand charges
- 🔌 Cloud-based real-time performance monitoring and system control
- 🔌 Variable engine speed operation for excellent part load performance and longer life



	RT Series	STx Series	DTx Series
Cooling Capacity (tons)	50	150-200	300-400
Dimensions			
Length	18'4"	13'10"	14'3"
Height	7'11"	4'4"	7'0"
Width	5'6"	6'9"	7'7"
Operational Weight (lbs)	8,300	11,750	23,650



# Indoor Agriculture



## Rapidly growing market poised for exponential growth

- 🕒 To grow 5x over five years according to Agrilyst
- 🕒 Cannabis is primary near-term driver
- 🕒 Leafy greens, herbs, and tomatoes are also attracting capital
- 🕒 Typically located near urban centers
- 🕒 Often have older infrastructure and higher electricity rates
- 🕒 Tecochill chillers virtually eliminate need to upgrade electrical infrastructure
- 🕒 Removes heat generated by lighting and dehumidifies the air
- 🕒 Virtually pure carbon dioxide exhaust can be utilized to help speed plant growth



Tecochill natural gas powered chillers provide a unique value proposition for indoor farming

# Ilios Data

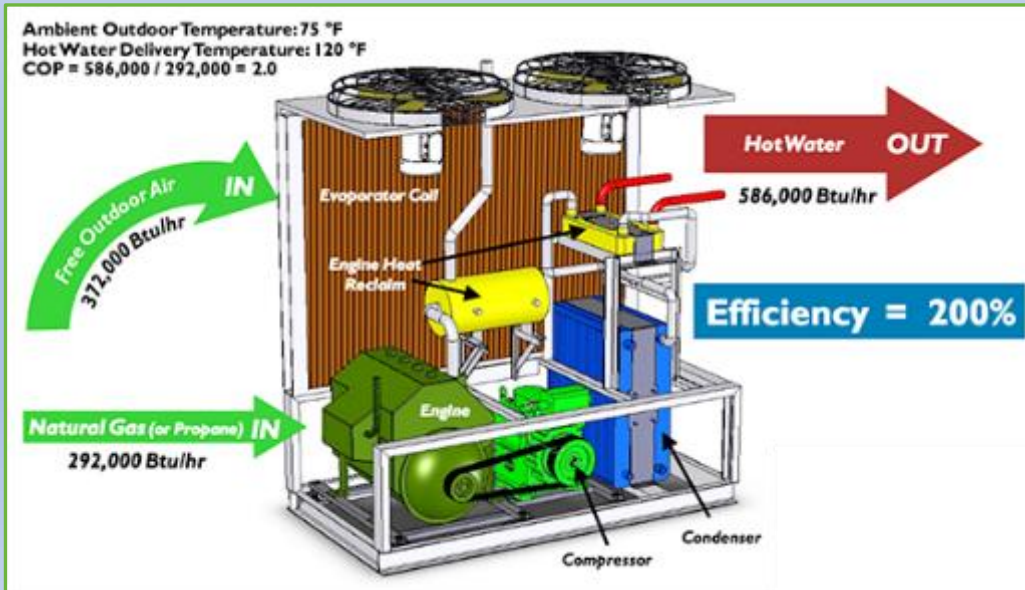


## World's most efficient water heater

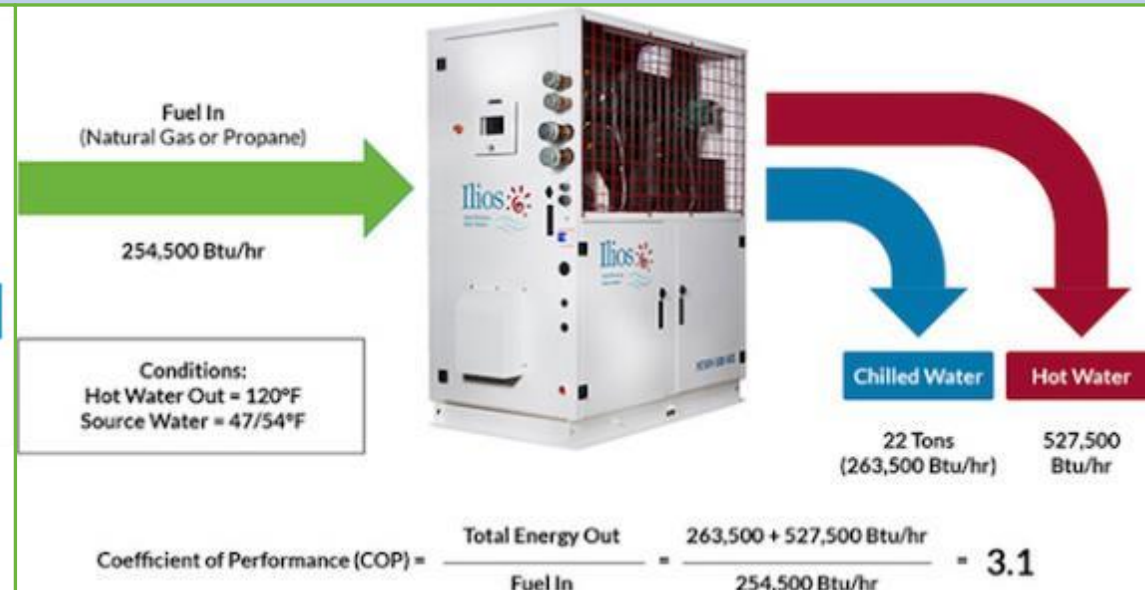
- 2-3x the efficiency of a conventional boiler
- Can generate 15 to 25 tons of free cooling while producing hot water
- Dimensions: 5'x3'x6'
- Weight: 3,200 lbs



## Air-source Heat Pump



## Water-source Heat Pump





# Ultra Emission Technology

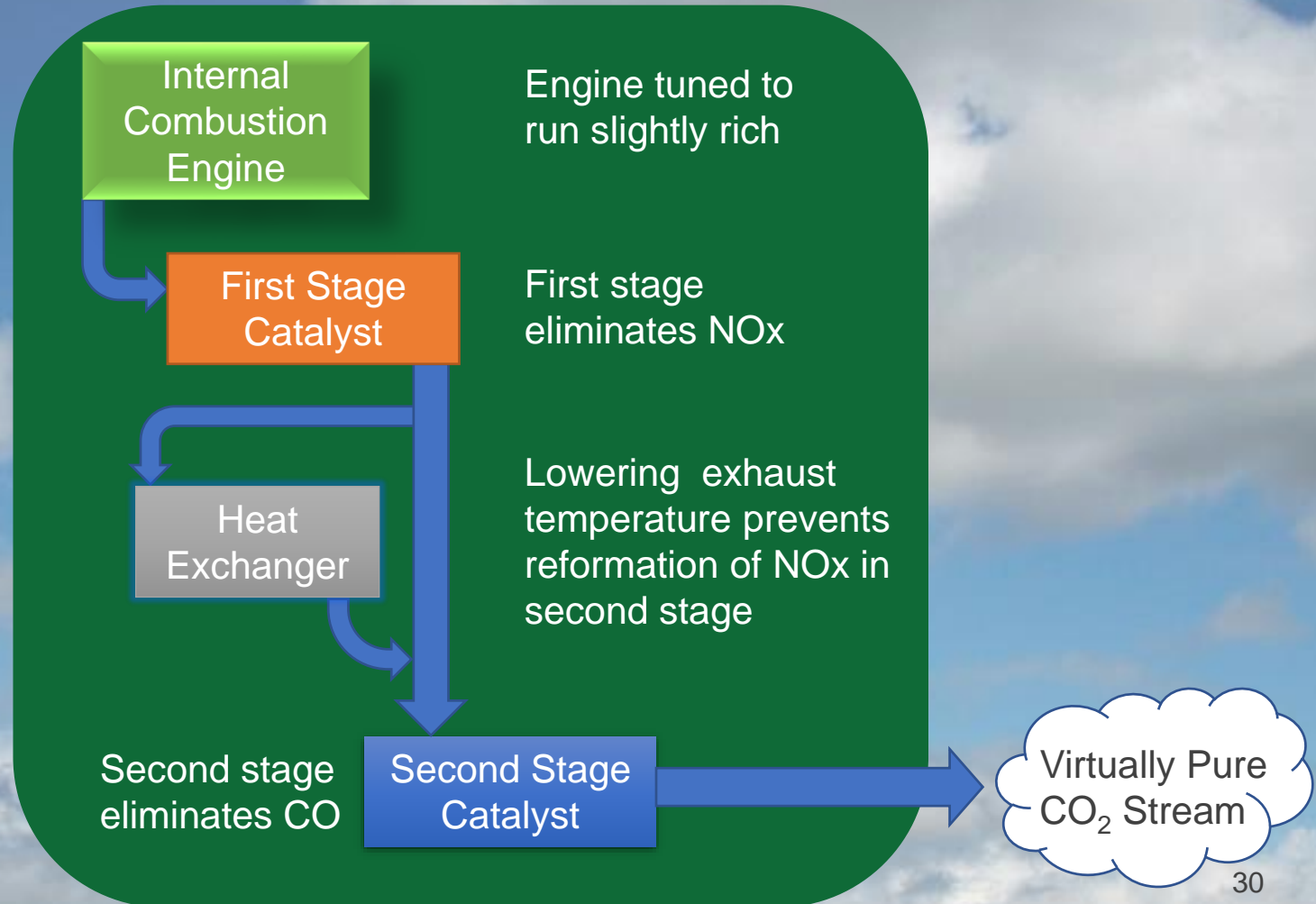


Fuel Cell Slayer: Enables internal combustion engine to achieve emissions similar to a fuel cell

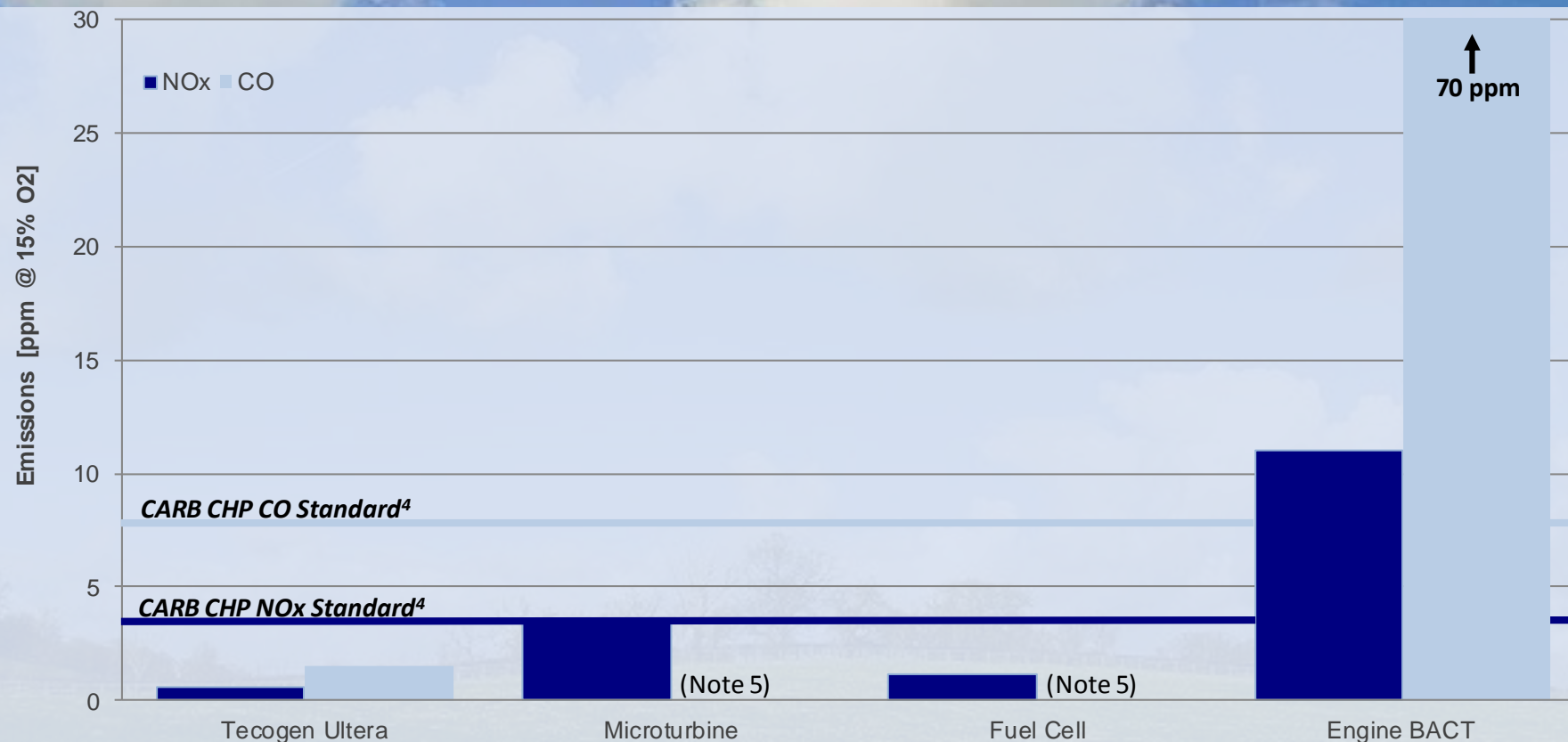
Design fits well within existing fork truck architecture and does not require significant reengineering



Ultra on roof of outdoor InVerde



# Stationary Emissions Reduction Comparison



1) Tecogen emissions based upon actual third party source test data

2) Microturbine and Fuel Cell NOx data from California Energy Commission, Combined Heat and Power Market Assessment 2010, by ICF International

3) Stationary engine BACT as defined by SCAQMD prior to reset of BACT to Rule 1110.2 standard on 2/2/18.

4) Limits represent CARB 2007 emission standard for Distributed Generation with a 60% (HHV) Overall Efficiency credit

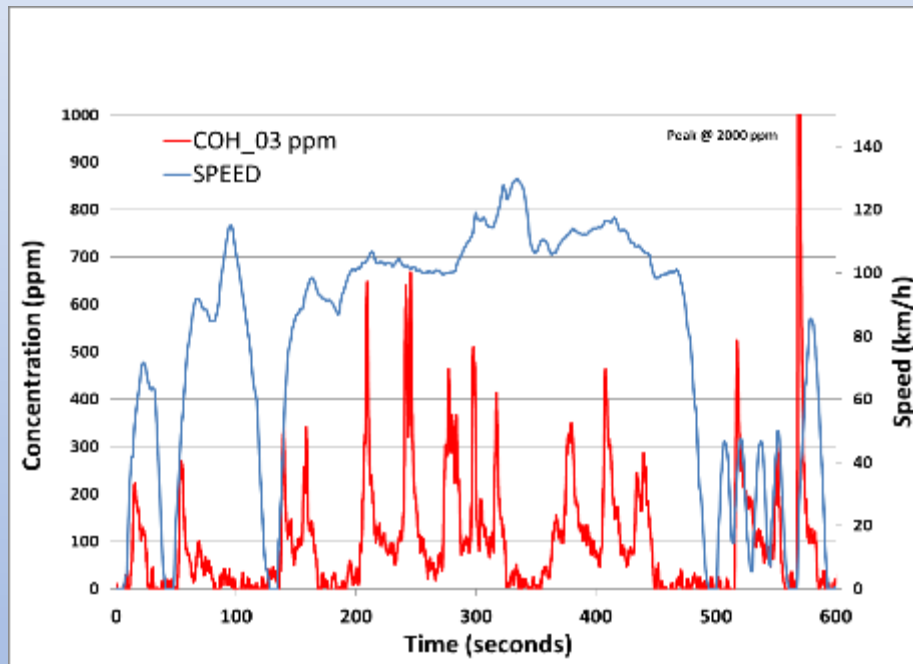
5) CO data not available for microturbine and fuel cell

# AVL Automotive Emissions Test Results

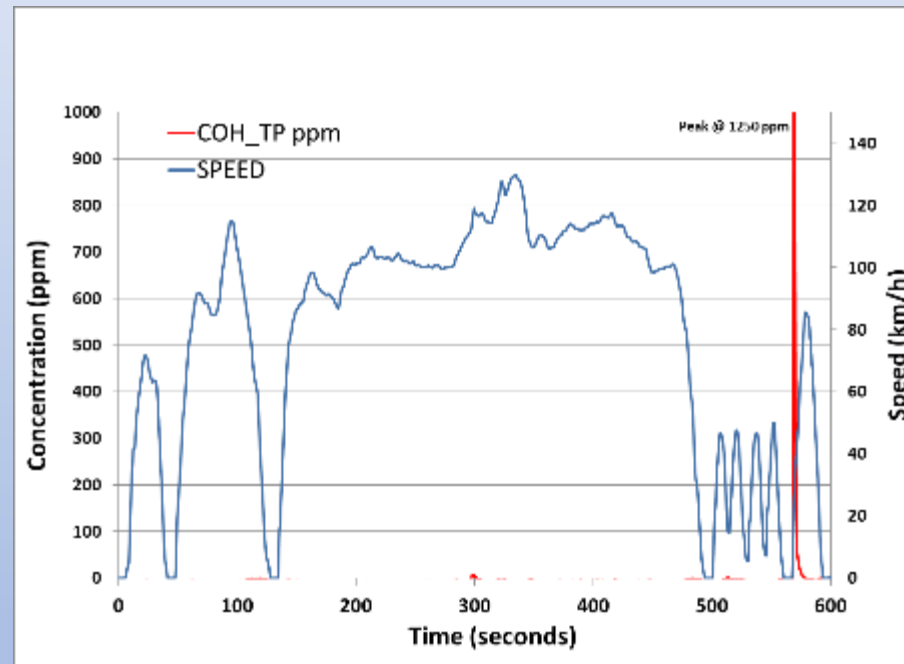


## Ultra Reduction of CO Concentration – US06 Cycle

Standard Vehicle Emission System



With the addition of the Ultra System



Graphs present the reduction of measured CO concentration where CO concentration (ppm) is represented by the red line and the vehicle speed (in km/h) is represented by the blue line and depicts patterns of acceleration and deceleration.

**CO is nearly eliminated by the Ultra System**

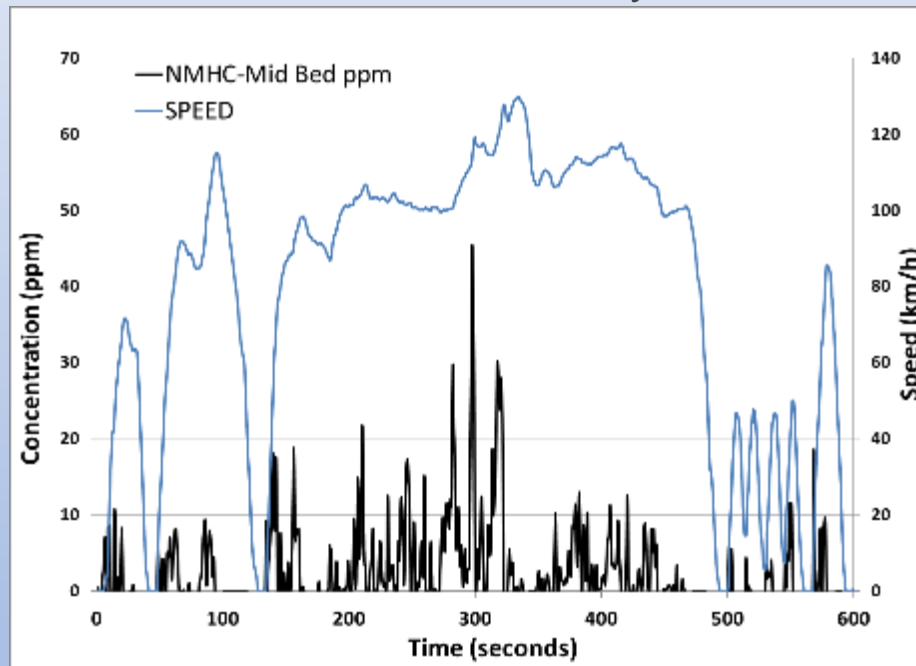


# AVL Automotive Emissions Test Results

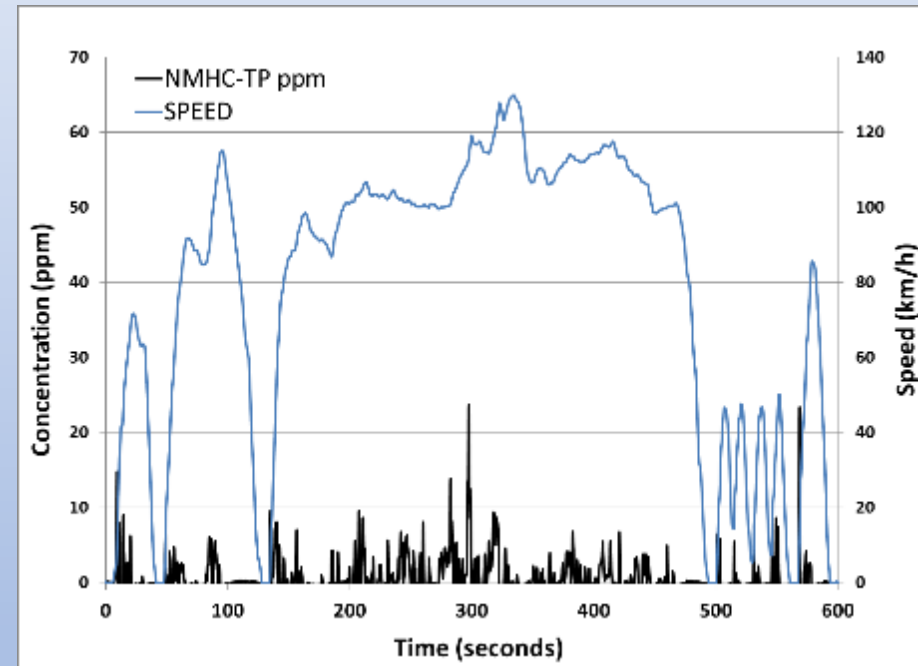


## Ultra Reduction of NMHC Concentration – US06 Cycle

Standard Vehicle Emission System



With the addition of the Ultra System

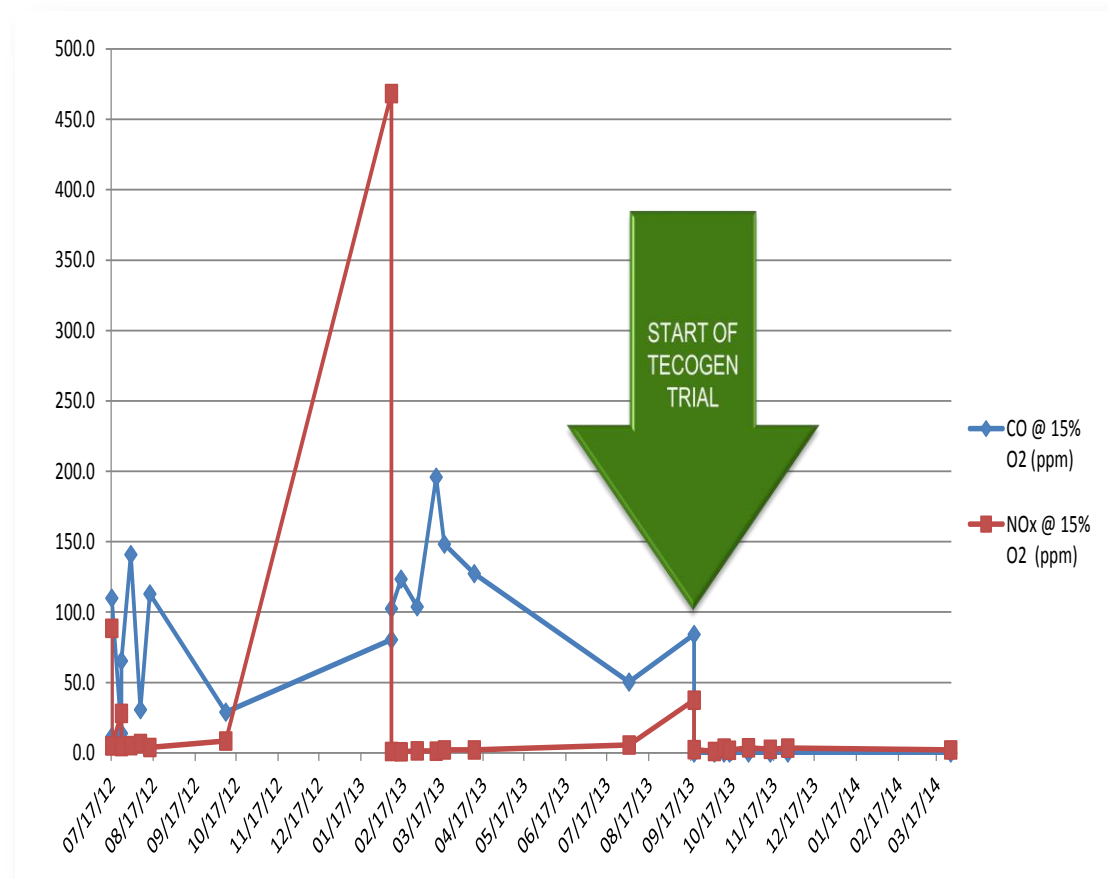


Graphs present the reduction of NMHC (non-Methane hydrocarbons) where NMHC concentration (ppm) is represented by the black line and the vehicle speed (in km/h) is represented by the blue line and depicts patterns of acceleration and deceleration.

# Stand-By Generator Emissions Test Results



Ultera Performance on Caterpillar 15 Liter Natural Gas Generator

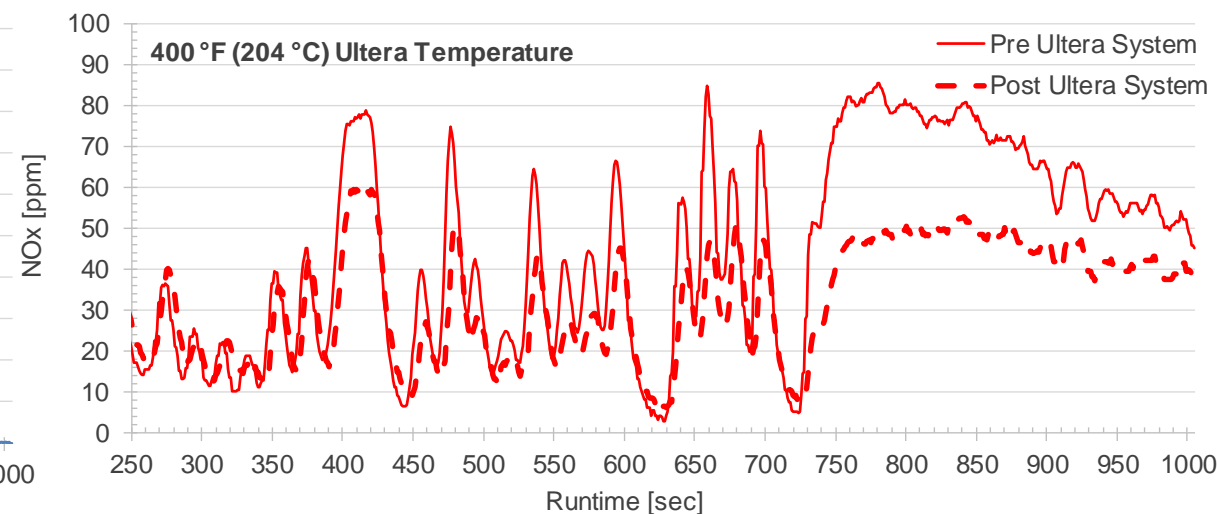
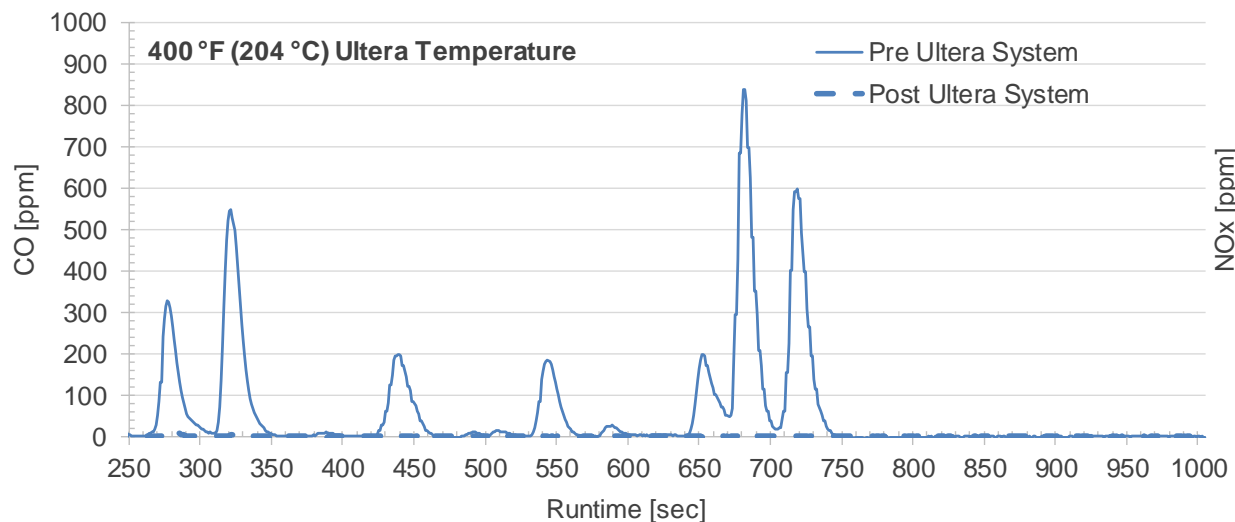


# Forklift Truck Emissions Test Results



## Heavy Lift Test: Exceptional Results

- 🌱 99% CO reduction
- 🌱 58% THC reduction
- 🌱 24% NOx reduction

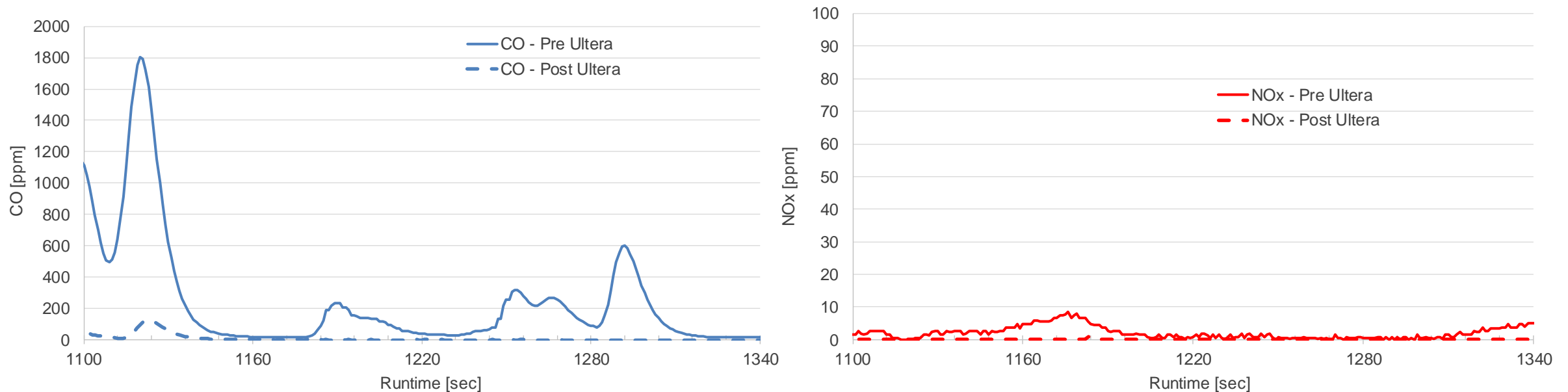




# Forklift Truck Emissions Test Results



## Low NOx Tuning Test (low loading)



Near-zero NOx levels achieved with simple engine control tuning (reprogramming)