

NATURAL GAS ENERGY ANALYSIS PROGRAM (NGEA)

CENTERPOINT ENERGY

Prepared by: Tanuj Gulati, Sr. Energy Engineer

Tuesday, May 21st of 2014

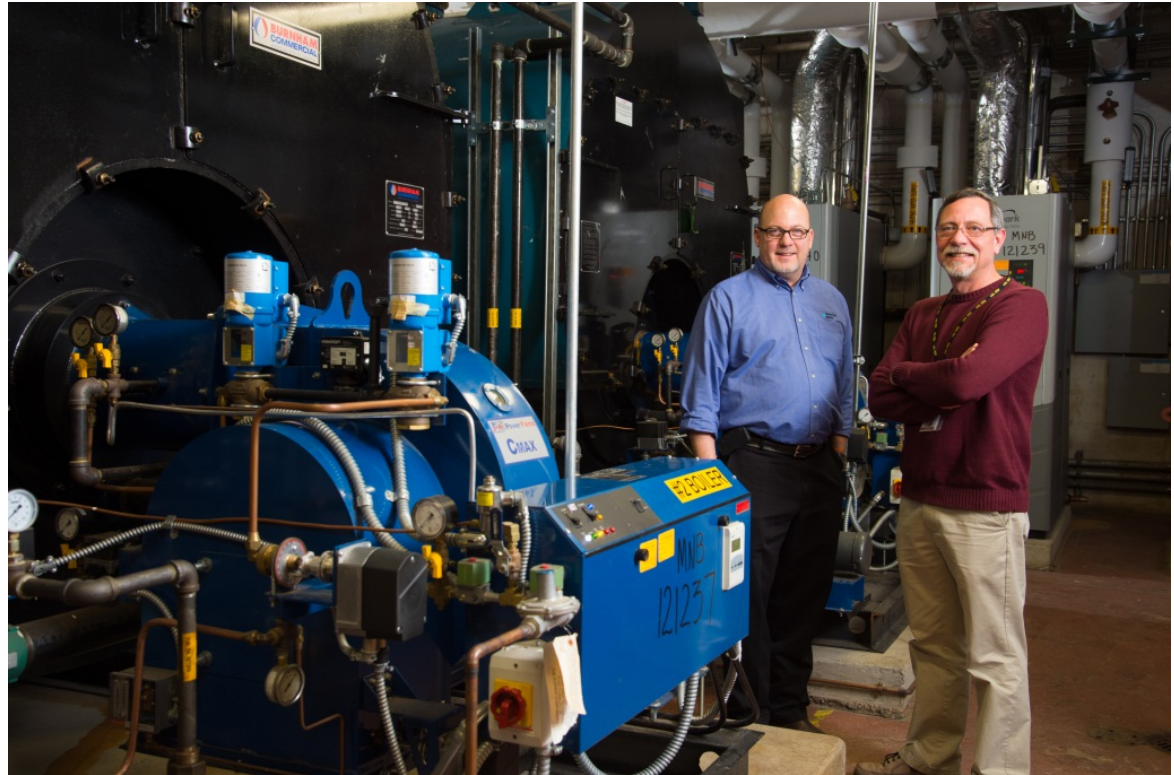
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INTRODUCTION

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INTRODUCTION

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ANALYSIS TYPES

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ANALYSIS TYPES

Analysis	Facility Size	Scope	Co-Pay
Basic	Small Volume Firm (A&B)	Basic Review with High Level Report	\$50
Comprehensive**	Mid-volume (Firm C, Dual Fuel SVA)	Comprehensive review with detailed technical report and calculations	\$200
Custom***	Large-volume (Dual Fuel SVB, LVI)	Same as Comprehensive; targeted to special customer needs/preferences	Based on facility size, services provided†
Ad-hoc services	Any size facility	May include infrared scans, steam trap surveys, other customized services	Based on facility size, services provided†

*Co-pays for facilities with multiple CenterPoint Energy accounts will be determined by the highest-usage account.

**Traditional analysis, serving most customers.

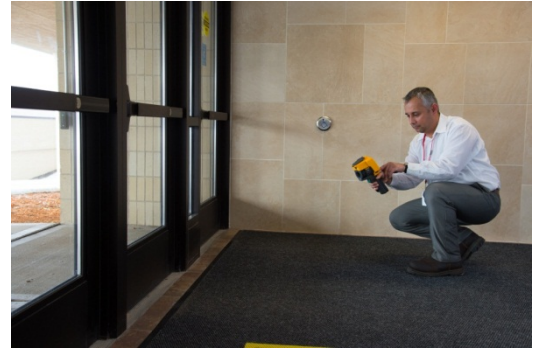
***For larger facilities; not to be considered an Industrial Audit, Process Efficiency or Recommissioning project.

†Ad-hoc services will be bid for customer approval, in consultation with energy audit professional and CenterPoint Energy.

Ad-hoc SERVICES

Special ad-hoc services are also available, based on the particular needs of your facility, including:

- Infra Red Scans
- Steam Trap Surveys
- Orsat or other combustion tests
- Other diagnostic services, based on need and interest



There is an additional cost for these services, which are bid for customer approval and subsidized by CenterPoint Energy.



BUSINESSES THAT CAN BENEFIT

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BUSINESS TYPES

- Commercial Office Buildings
- Warehouses
- Multi-family
- Industrial
- Retail
- Restaurants
- Health Care Facilities
- Schools and Colleges
- Churches
- Hotels and Motels



REPORT FORMAT

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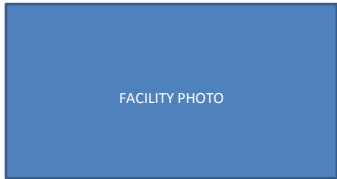
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Customer Name
Customer Address

NATURAL GAS ENERGY ANALYSIS
Analysis Date



Visit CenterPoint Energy's Web Site:
www.CenterPointEnergy.com/BusinessRebates

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Customer Info

- Customer Details
- Account and Premise Number
- CenterPoint Energy Rate/Service
- Business Type
- Analysis Type
- Auditor's Info.
- CenterPoint Energy's Contact Info.
- Program Contact Info.
- Executive Summary
 - Basic Facility Info
 - Key Findings and Recommendations
 - Safety related items, for immediate attention
- Facility Benchmark
- Equipment End Use – pie chart
- Recommendations – simple language and rebates

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Executive Summary

Customer is residential condominium building located in MN. The building is five stories high and has approximately 80 units. Amenities include an indoor pool, laundry room, and a patio for each condo. On mm/dd/yyyy, CenterPoint Energy received a request from customer name for a Natural Gas Energy Analysis at the condo. According to the Board President of customer name, there have been concerns with energy loss around doors and windows in the building. Charlotte Campbell and Tanuj Gulati, representatives from Energy Insight, Inc., visited the site on mm/dd/yyyy to conduct the assessment. The representatives inspected all natural gas-powered HVAC and laundry equipment in the facility and identified several energy measures that the condo can implement that would result in energy savings. Most notably, it was discovered that the makeup air unit (MAU) that serves the pool area is bringing in 100% fresh air and is running 24/7. By installing controls on the MAU and exhaust fans to slow their speeds when the pool area is unoccupied, the building will see significant gas savings.

The following is a summary of the top recommendations for Customer to implement and the potential savings comprise of approximately 17% of total gas used in the facility:

1. Install variable frequency drive controls on MAU and exhaust fans in the pool area.
2. Reconfigure existing ducts in the pool area to allow recirculation of 80% conditioned air rather than bringing in 100% fresh air.
3. Install a boiler reset control that would modulate the leaving water temperature based on the outside air temperature.

Safety Issues:

- None identified

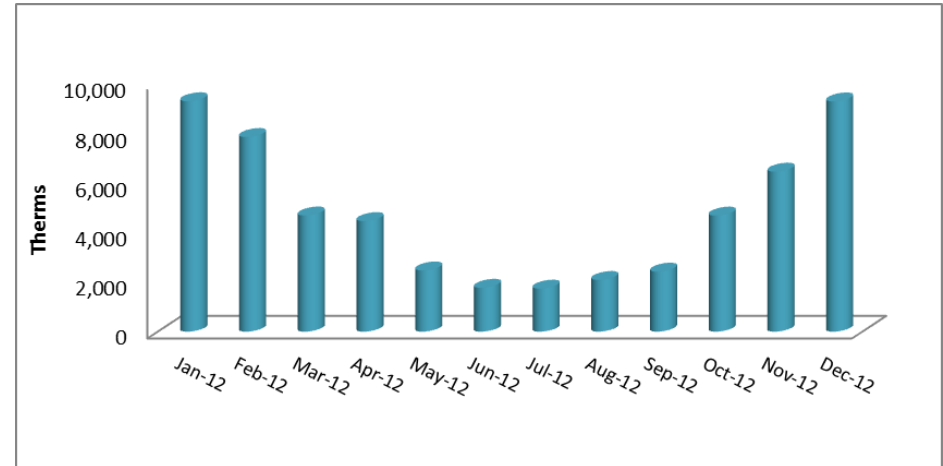
Executive Summary

- Basic Facility Info
- Key Findings and Recommendations
- Safety Related Items for immediate attention

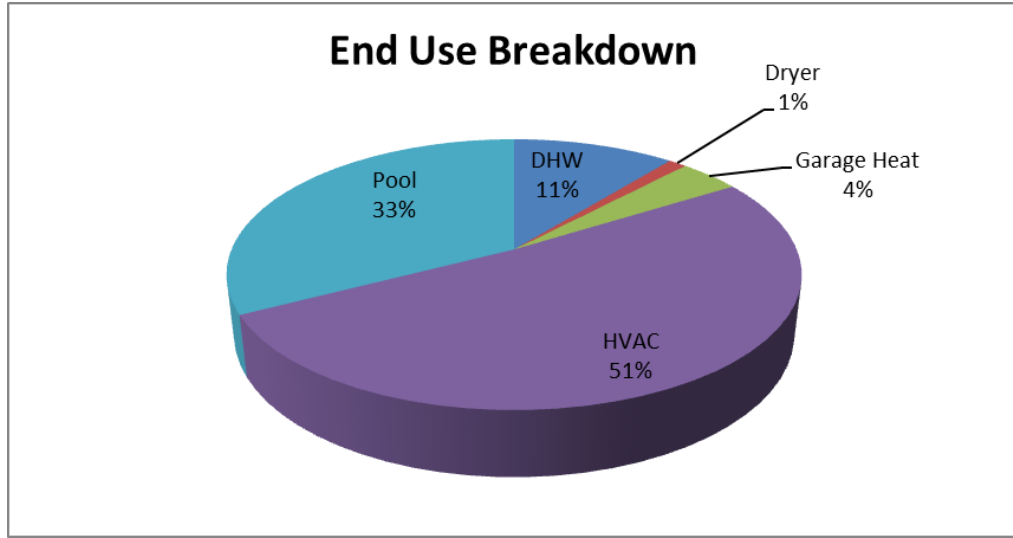
Month/Day/Year	Monthly Cost	Total Usage (Therms)	\$/Therm
Jan-12	\$4,545.95	9,280	\$0.490
Feb-12	\$3,618.73	7,840	\$0.462
Mar-12	\$2,173.51	4,679	\$0.465
Apr-12	\$1,624.17	4,453	\$0.365
May-12	\$899.54	2,466	\$0.365
Jun-12	\$785.13	1,767	\$0.444
Jul-12	\$798.39	1,733	\$0.461
Aug-12	\$1,035.99	2,083	\$0.497
Sep-12	\$1,113.91	2,418	\$0.461
Oct-12	\$2,278.74	4,675	\$0.487
Nov-12	\$3,387.55	6,445	\$0.526
Dec-12	\$5,044.82	9,272	\$0.544
TOTAL	\$27,306.43	57,111	
AVERAGE	\$2,275.54	4,759	\$0.478

Energy Usage and Equipment Details

- Past 12 months of energy usage in tabular and graphical format
- Equipment End Use Analysis in tabular and graphical format



#	Location	DESCRIPTION	Quantity	HP	BTU/Hour	Hours/Year	Load Factor	Th/Year
1	Laundry Room	Maytag Commercial Dryers	8		24,000	726	50%	697
2	Boiler Room	Hot Water Boiler	1		1,701,000	2,518	80%	34,267
3	Boiler Room	Hot Water Boiler	1		2,520,000	1,295	70%	22,844
Total		TOTAL USAGE			4,245,000			57,808



Install Controls on MAU and Exhaust Fans – Currently, the MAU and exhaust fans in the pool area are running at full speed even when the area is unoccupied. According to the personnel on site, if the MAU is ever shut down, the windows fog up. Based on past experience, we believe that installing a VFD to control the MAU and exhaust fans based on occupancy would alleviate the fogging issue. This measure would result in gas and electric savings and qualify for rebates through both utilities.

Recycle Fresh Air – Currently, the MAU is constantly supplying the pool area with 100% fresh air. With proper CO sensors in place, the room would only need to be supplied with 20% fresh air to be adequately ventilated. By mixing the exhaust and intake air at an 80:20 ratio, 80% of the air can be recycled back into the room, thereby reducing the amount of fresh air that would need to be conditioned. Alterations in the current duct design would resolve this issue. It is recommended that an HVAC contractor be contacted to discuss the details of this project.

Install High-Speed Garage Doors – To reduce the amount of heat loss out of the garage, consider upgrading to high speed garage doors.

Summary of Opportunities

- Recommendations defined in simple language
- Recommendations with associated prescriptive rebates

Install Energy Efficient Boilers – Consider replacing existing boilers with modulating condensing hot water boilers. These units recycle the waste heat from the flue gases to preheat cold water entering the boiler, so efficiencies typically range between 90 and 96 percent. Instead of running the existing 1,701,000 BTU/Hr boiler through the summer to provide pool and domestic hot water, modulating boilers can control the output of the burner to match the load needed. These units qualify for prescriptive rebates through CenterPoint Energy; download the fact sheet for more details:

http://www.centerpointenergy.com/staticfiles/CNP/Common/SiteAssets/doc/122767_BoilerRebate_FactSheetFINAL.pdf

Infrared Heaters – Both garages are currently being heated by forced air heaters that are pointed at the doors. Every time a garage door opens, the units are effectively pushing conditioned air directly outside. Consider replacing these heaters with infrared low-intensity tube heaters, which heat the structure rather than the air. These units qualify for rebates through CenterPoint Energy; download the fact sheet for more details:

http://www.centerpointenergy.com/staticfiles/CNP/Common/SiteAssets/doc/122768_HeatingSystems_FactSheetFINAL.pdf

REPORT FORMAT

EC M#	Description	Annual Cost Saved	Annual Therms Saved	Annual kWh Saved	Est. Project Cost	Estimated CNP Rebate	Payback	% Reduced
1.	Makeup Air Unit's Exhaust Fan Control	\$2,276	2,488	10,863	\$6,000	custom	2.6	4.3%
2.	Boiler Reset Control	\$822	1,720		\$2,350	\$150	2.7	3.0%
3.	Exhaust Air Recirculation	\$2,697	5,641		\$7,500	custom	2.8	9.8%
4.	Pool Cover	\$487	1,018		\$2,888	custom	5.9	1.8%
5.	Full Condensing Boiler	\$3,815	7,979		\$40,000	\$7,400	8.5	13.8%
6.	Window Upgrade	\$147	307		\$1,600	custom	10.9	0.5%

The following is a list of actions that are recommended for the customer to prioritize:

- **MAU and Exhaust Fans** – Contact local HVAC contractors and get three bids for adding controls on the pool makeup air unit and exhaust fans and for reconfiguring the ducts for 80% fresh air recirculation. Contact CenterPoint Energy and your local electric utility for potential custom rebates prior to the start of the project. For more information about custom rebates through CenterPoint Energy, download this fact sheet: http://www.centerpointenergy.com/staticfiles/CNP/Common/SiteAssets/doc/122764_CustomProcess_FactSheetFINAL.pdf
- **Boiler Reset Controls** – Contact local HVAC contractors to discuss options for installing boiler reset controls that would modulate the leaving water temperature from the boilers based on the outside air temperature. Consult with CenterPoint Energy prior to the start of the project for potential rebates. For more information, download this fact sheet for boiler system and component upgrade rebates: http://www.centerpointenergy.com/staticfiles/CNP/Common/SiteAssets/doc/122767_BoilerRebate_FactSheetFINAL.pdf
- **Boiler Tune-Up** – According to the personnel on site, a boiler tune-up is performed once per year. Be sure to get in touch with CenterPoint Energy prior to moving forward with the project for potential rebates. You may download the boiler tune-up rebate application here: <http://www.centerpointenergy.com/staticfiles/CNP/Common/SiteAssets/doc/CNP1099.pdf>

Action Plans and Next Steps

- Directions to move forward on top 3 to 4 recommendations
- Steps with more guidance

Step 1 – You’ve already taken the first step toward increased energy efficiency and savings by having this Natural Gas Energy Analysis, identifying energy-saving opportunities for your facility.

Step 2 – Next, use this report as a guide to obtain bids from several qualified contractors for the retrofit or replacement of existing inefficient equipment with new, higher efficiency units, or for implementing other recommendations and improvements suggested by the auditor.

Step 3 – Finally, work with your CenterPoint Energy Key Account Manager or other representative, your contractors and others to explore rebate opportunities and install recommended systems and equipment in your building to improve energy efficiency, comfort, reliability and energy savings.

REPORT FORMAT

Custom Calculations

POOL COVER	
RECOMMENDATION:	Installing a pool cover will reduce the amount of water vapor lost through the air cycling process inside the pool area. For every pound of water saved a corresponding Therm is saved, thus reducing boiler run time.
ENERGY COSTS:	\$0.478 /Therm
Heating Hours Covered:	2,920 hours/year
Room Temperature:	75 °F
ASSUMPTIONS:	
Constants	
Saturation Vapor Pressure at Water Surface	1.19 in Hg.
Latent Heat of Vaporization @ Surface Temperature	1,000 Btu/lb
Activity Factor	0.5
Area Calculation	
Pool Length	52 ft
Pool Height	15 ft
Pool Area	780 ft ²
Estimated Data	
Boiler Efficiency	70%
Pool Heat Exchanger Efficiency	75%
Evaporation Reduction Due to Cover	80%
Water Lost	
No Cover	66,787 lb/year
Cover	13,357 lb/year
SAVINGS:	
Fuel Saved =	1,018 Therms/Year
Annual Savings =	\$487 /Year
FULL INSTALL COST:	
Equipment Cost =	\$1,887.60
Labor Cost =	\$1,000.00
Full Install Cost =	\$2,887.60
Simple Payback =	5.9 Years

Covered

- ✓ Building Envelope
- ✓ HVAC
- ✓ Controls
- ✓ Kitchen and Laundry Equipment
- ✓ Water Heaters

Not Covered

- ✗ Industrial Process Equipment
- ✗ Lighting and Electrical Systems
- ✗ Fire Suppression Systems and Alarms
- ✗ Life Safety and Osha Regulations
- ✗ Solar and Wind Technologies



COMMON RECOMMENDATIONS

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COMMON RECOMMENDATIONS

- Building Envelope
- Weather Stripping
- High Speed Doors
- Boilers
- Water Heaters
- Furnaces
- Makeup Air Units
- Exhaust Fans
- Rooftop Units
- Air Handling Units
- Unit Heaters
- Infrared Heaters
- Radiators
- Heat Exchangers
- Variable Frequency Drive Controls
- Steam Traps
- Boiler Burners
- Reset and Cut Out Controls
- Stack Dampers
- Linkageless Controls
- Digital Controls
- Thermostat
- Building Automation System
- Laundry Equipment
- Kitchen Appliances
- Exhaust Hood Controls
- Dish Washers
- Low Flow Faucets



TESTIMONIAL

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Testimonial

“The Natural Gas Energy Analysis provided great insight and suggestions for potential improvements, including items that we may not have considered. It was a great value, and provided us with an energy management plan to implement over time.”~ Jodi Hale, Electric, Etc.

Testimonial

“We were very impressed with the auditors’ thoroughness, knowledge and level of detail. Many of their recommendations were no-cost or low-cost items that will save energy or provide quick payback with a minimal investment. They checked everything – from rooftop to basement – and were friendly, professional and easy to work with. Overall an excellent value for a reasonable co-payment!” ~ Lori Zellman, Central Square

”

Testimonial

“

“With a 33-year old property in which nothing has been done over the years to improve energy efficiency, I knew we’d need expert help. The auditors quickly understood our needs and concerns, and worked with us to develop an approach based on our corporation’s strategic objectives. Although many recommendations were made, we plan to focus on initiatives with shorter payback periods. I rarely say this, but I was very impressed – with their expertise, with the report, with the whole package. They knocked this out of the park.”~ John Dahl, TB

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HOW TO REQUEST A NGEA

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HOW TO REQUEST A NGEA

To request your Natural Gas Energy Analysis, contact:

- Your CenterPoint Energy account manager
612-321-4330 (1-800-234-5800, x. 1-4330)
- Business Customer Hotline
612-321-4939 (1-877-809-3803)
- Email us
MN-NaturalGasEnergyAnalysis@CenterPointEnergy.com

What defines Us

/ We promise passion and commitment for energy efficiency

Our Passion

is to help organizations make real, lasting conservation improvements that optimize energy usage and reduce power consumption.



Our Commitment

is to educate and assist decision makers in their efforts to implement proven energy-saving strategies in their facilities and operations.

Our Promise

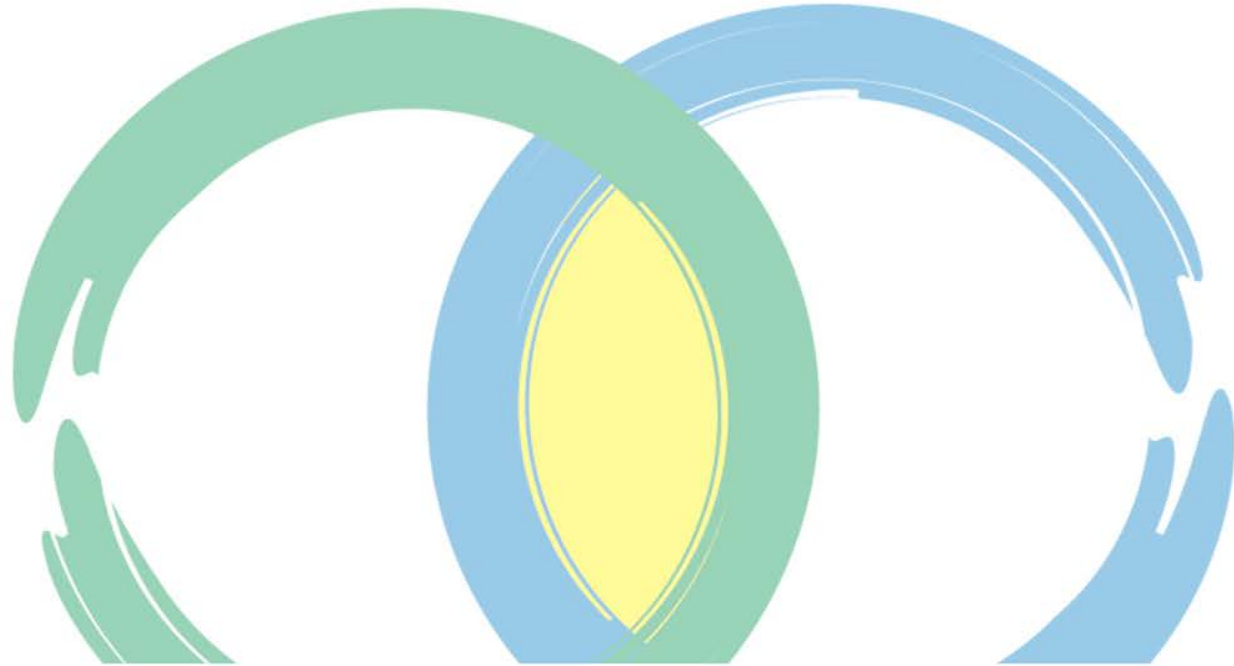
is to work tirelessly and diligently to help companies transform themselves into sustainable, socially responsible organizations, while strengthening their bottom lines.

Questions



Thank You

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